Towards a Just Transition Impact Assessment Framework

By

Adebayo Gbenga Majekolagbe

Submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

at

Dalhousie University
Halifax, Nova Scotia
December 2022

In loving memory of Meinhard Doelle
without whom I would not be here.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The need to transition from a fossil fuel powered socio-economic system has never been as urgent as it is today. The climate is changing more drastically, and the impacts of a changing climate are more expansive and devastating than previously anticipated. This mandates the design and implementation of ambitious response measures to avoid the most harmful impacts of climate change and address existing impacts. The socio-economic impacts of the transition on communities, workers, and the developmental objectives of states are often referenced in the contestations against transition measures or arguments for cautious transition policy design and implementation. Just transition, as recently developed and promoted in climate change scholarship and law, primarily addresses the socio-economic impacts of transition measures.

Just transition is a contested notion. Its definitions range from status quo enforcing to transformation engendering. Traditionally, just transition focuses on local jobs and workers. Its application within the climate change context retains this traditional focus. From its recognition in the Paris Agreement to its incorporation in domestic transition laws and policies, just transition is essentially interpreted as jobs transition. Further, the scholarship and law of just transition are primarily normatively built on the distributive and procedural conceptualizations of justice. Also, although planning is construed as central to a just transition, there is no clarity on how abstract proposals on just transition can be translated into practice. In this thesis, I show that the focus of the traditional just transition narrative on fossil fuel jobs, its emphasis on distributive and procedural justice, and the failure to embed just transition into planning and decision making have resulted in unjust ends for social and ecological systems both locally and globally.

This thesis addresses the limitations in traditional just transition discourse. Using Amartya Sen's capability approach to justice, I propose key characteristics of just transition, establishing that human and ecological wellbeing should be the primary objectives of just transition. Addressing the deficit of just transition in addressing global justice concerns, I frame a global approach to just transition adapting the common but differentiated responsibilities principle under international climate change law. Given its recognition in laws across the world as the primary planning and decision-making tool, impact assessment has been proposed in this thesis as a useful tool for mainstreaming justice into transition planning. I show how existing impact assessment modes can be deployed for just transition ends, and how the growing field of climate change and impact assessment can be just transition compliant. The just transition impact assessment framework developed in this thesis draws from the capability approach framing of just transition, the global approach to just transition, and the reframing of impact assessment for just transition ends.

LIST OF ABBREVIATIONS

BIA	Biodiversity Impact Assessment
BTA	Border Tax Adjustment
CBAM	Carbon Border Adjustment Mechanism
CBD	Convention on Biological Diversity
CBDR	Common but Differentiated Responsibilities
CC&IA	Climate Change and Impact Assessment
CCUS	Carbon Capture Utilization and Storage
CDC	Corporate Determined Contributions
CDP	Carbon Disclosure Project
CEA	Cumulative Effects Assessment
CEQ	Council on Environmental Quality
COP	Conference of Parties
CTI	Carbon Tracker Initiative
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
ERA	Ecological Risk Assessment
ESR	Effort Sharing Regulation
EU	European Union
FFDE	Fossil Fuel Dependent Economy
FFSR	Fossil Fuel Subsidy Reform
GATT	General Agreement on Trade and Tariffs
GBA+	Gender Based Analysis Plus
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIA	Gender Impact Assessment
GNI	Gross National Income
GPPA	Greenhouse Gas Pollution Pricing Act
HDI	Human Development Index
HIA	Health Impact Assessment
HRDD	Human Rights Due Diligence
HRIA	Human Rights Impact Assessment
IA	Impact Assessment
IAA	Impact Assessment Act
IBA	Impacts and Benefits Agreement
ICCPR	International Covenant on Civil and Political Rights
ICESCR	International Covenant on Economic, Social and cultural Rights
ICJ	International Court of Justice
IEA	International Energy Agency
ILO	International Labour Organization
INOC	International National Oil Companies
IOC	International Oil Companies
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency

ISDS	Investor-State Dispute Settlement
ITUC	International Trade Union Confederation
IUCN	International Union for the Conservation of Nature
JTF	Just Transition Fund
JTIA	Just Transition Impact Assessment
L&D	Loss and Damage
LCA	Life Cycle Assessment
LCT	Low Carbon Transition
LNG	Liquid Natural Gas
MRV	Monitoring, Reporting, and Verification
NDC	Nationally Determined Contribution
NEPA	National Environmental Policy Act
NOC	National Oil Companies
OECD	Organization of Economic Cooperation and Development
OHCHR	Office of the United Nations High Commissioner for Human Rights
OPEC	Organization of Petroleum Exporting Countries
PCCA	Powering Past Coal Alliance
PCF	Pan-Canadian Framework on Clean Growth and Climate Change
PPP	Policies, Plans and Programs
PSIA	Psycho-social Impact Assessment
REA	Regional Environmental Assessment
SACC	Strategic Assessment of Climate Change
SBTi	Science Based Targets Initiative
SCC	Social Cost of Carbon
SCC	Supreme Court of Canada
SDG	Sustainable Development Goals
SEA	Strategic Environmental Assessment
SVA	Social Vulnerability Approach
TIA	Transboundary Impact Assessment
TJTP	Territorial Just Transition Plans
UNDP	United Nations Development Programme
UNDR	Universal Declaration of Human Rights
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNGP	United Nations Guiding Principles on Business and Human Rights
UOG	Unconventional Oil and Gas
VEC	Valued Ecosystem Components
WBA	World Benchmarking Alliance
WTO	World Trade Organization

ACKNOWLEDGMENTS

A PhD thesis is required to be original, independent, and significant. While the purport of these expectations is appreciated and indeed this thesis ticks each box as formally defined; in truth, every intellectual work is derivative, dependent, and diminutive. So, I acknowledge the fountain of all knowledge – God, and I am grateful for His grace which I depended on to 'start' and 'complete' this more than four-year project.

My wife, Faith Majekolagbe, is the quintessential expression of God's grace for this project. Her patience when I ranted about my frustrations, encouragement when I struggled to share thoughts and ideas, expression of belief in me throughout the many dry patches and self-doubt, and insistence on helping even when I was not appreciative, were my oasis. Thank you, Sunshine.

I cannot be grateful enough to Professor Meinhard Doelle. It is painful beyond words that he is not here to see the fruit of his selfless labour. Without Meinhard, I would not appreciate the linkage between impact assessment and climate change. He did not just introduce this area of research to me, he equipped me for it – the early morning new article alerts, the funded conferences, the opportunities to teach and speak, and the colleague-like relationship despite his status as a scholar of global renown. Till his death, he guided without stifling. He showed me what kind of teacher and researcher I should be. I will be eternally grateful to you, Meinhard.

Professor Sara Seck is Godsent. For more than four years, she has been unwavering in her support. Even before she was my supervisor, she showed a commitment to this project and my development as an academic in ways many PhD students could only hope for. As my supervisor, she prodded and propped. Needless to say, this thesis would have been severely lacking in depth but for Sara. And thank you for the many references, recommendations, and introduction to opportunities.

I am grateful to other members of my committee – Professors David VanderZwaag and Phillip Saunders. I am fortunate to have drawn from their depth of experience. I have benefited immensely from the support and guidance of Professor Olabisi Akinkugbe. His words of advice were crucial prompts to move faster and smarter. Thank you, Egbon.

For over five years, I have been a member of the Schulich Law community. It has been five years of immense growth, and I am thankful to the entire Law School, including the students I had the opportunity to teach and learn from. I will be remiss not to express gratitude to Shannon Langton for her consistent and kind support to me and other members of the Schulich Law graduate community over the years. Thanks to Warren Chornoby for serving as a second pair of eyes and for his very helpful editorial advice. I am also grateful to the Canadian Social Sciences and Humanities Research Council for the Vanier Scholarship through which the research was funded.

This work drew from the scholarship of many around the world to whom I owe a debt of gratitude. In the real sense, I have no claim to originality. And while any mistake in this thesis is mine, any useful recommendation is a product of the hard work of many. I can only hope that the ideas shared here contribute to a better world regardless how diminutive such contribution might be.

CHAPTER ONE
INTRODUCTION

1.1 Background

A grim picture of the state of the climate has been painted in a flurry of expert reports in recent years. In 2018 and 2019 alone, the Intergovernmental Panel on Climate Change (IPCC) released special reports on a 1.5ºC scenario; climate change and land use; and climate change, ocean, and the cryosphere.[1] Various reports on the global climate and emissions gap were also published between 2020 and 2022.[2] Although these reports focus on different aspects of climate change, their conclusions are similar, and the 2021 UNEP report sums up these conclusions quite incisively. State and non-state entities have been unable to halt the growth in global greenhouse gas (GHG) emissions; emissions were projected to grow by 4.8% in 2021; and the world is heading towards a 2.6ºC future even if all current conditional and unconditional climate pledges are fully implemented.[3] The IPCC 1.5ºC special report lays out the far-reaching impacts of a beyond 1.5ºC scenario including heavy precipitation events; droughts, food insecurity and water stress; flood hazards; rising sea level; biodiversity loss; and heat-related health risks, morbidity and mortality.[4]

While the above narrative seems gloomy, the possibility of reversing or halting the trend remains. The pathways for keeping global temperature below 1.5ºC above pre-industrial levels are well defined.[5] There is, however, no scenario which does not include deep reductions in the supply and use of fossil fuel. Fossil fuel production and consumption represent the largest source of global emissions, contributing about 86% of the emissions between 2009 and 2018.[6] Hence, UNEP's

[1] See generally Valerie Masson-Delmotte et al, eds, *Global Warming of 1.5ºC: Special Report* (Geneva: IPCC, 2019) (IPCC Special 1.5ºC report); Valerie Masson-Delmotte et al, eds, *Climate Change and Land: Special Report* (Geneva: IPCC, 2019); Hans-Otto Pörtner et al, eds, *Special Report on the Ocean and Cryosphere in a Changing Climate* (Geneva: IPCC, 2019).

[2] See Jim Skea et al, eds, *Climate Change 2022: Mitigation of Climate Change* (Geneva: IPCC, 2022); World Meteorological Organization (WMO), *State of the Global Climate 2021* (Geneva: WMO, 2021); United Nations Environment Program (UNEP), *Emissions Gap Report 2021: The Heat is on* (Nairobi: UNEP, 2021).

[3] UNEP, *ibid,* 36.

[4] Masson-Delmotte et al, *supra* note 1.

[5] According to the IPCC, limiting warming to 1.5ºC entails mitigation pathways "characterized by energy-demand reductions, decarbonization of electricity and other fuels, electrification of energy end use, deep reductions in agricultural emissions, some form of carbon dioxide removal (CDR) with carbon storage on land or sequestration in geological reservoirs. Low energy demand and low demand for land and GHG-intensive consumption goods facilitate limiting warming to as close as possible to 1.5ºC. See Joeri Rogelj et al, "Mitigation Pathways Compatible with 1.5ºC in the Context of Sustainable Development" in Masson-Delmotte et al, *supra* note 1 at 95.

[6] Pierre Friedlingstein et al, "Global Carbon Budget 2019" (2019) 11 Earth Syst Sci Data 1783 at 1806.

recommendations for the top seven emitting G20 members to enhance their mitigation ambition are fossil fuel related.[7] Despite being the major contributor to global emissions, fossil fuels were not referred to in the Paris Agreement. Piggot et al propose that the Paris Agreement's non-inclusion of fossil fuels could be understood as an intention to ensure that other emission sources are included and also "a reflection of the concerns of major fossil fuel producing nations about the impacts of mitigation measures on their economies".[8] Another reason is the dominant demand-side mitigation approach under the United Nations Framework Convention on Climate Change (Convention) regime.[9] While a comprehensive engagement with the distinctions between demand- and supply-side climate policies is not the focus of this research,[10] there is an ample case for, at least, the complementary role which could be played by supply-side climate policies.

Using Green and Denniss's analogy, supply-side climate policies are like the other arm of the scissors; an essential component of a climate policy toolkit (see table 1).[11] The road to a zero-

[7] Argentina, Brazil, China, European Union, India, Japan, and United States of America were jointly responsible for 56% of global GHG emissions in 2017. See UNEP, *Emissions Gap Report 2019* (Nairobi: UNEP, 2019) 36 – 37.

[8] Georgia Piggot et al, "Swimming Upstream: Addressing Fossil Fuel Supply Under the UNFCCC" (2018) 18:9 Climate Policy 1189 at 1190.

[9] Asheim et al, for example, describe the Paris Agreement as "a demand-side treaty". See Geir Asheim et al, "The Case for a Supply-side Climate Treaty" (2019) 365:6451 Policy Forum 325. Lazarus et al also point out that "territorial GHG emissions accounting, as established by the United Nations Framework Convention on Climate Change (UNFCCC) and followed by all countries and most other jurisdictional entities, effectively places the onus on those who consume fossil fuels, and not on those who supply it". They, further, state that demand-side policies have been focused on given their political attractiveness, standard GHG accounting rules that undervalue supply and common perceptions of the nature of fuel markets. See Michael Lazarus et al, "Supply-side Climate Policy: The Road Less Taken" (2015) 13 Stockholm Environment Institute (SEI) Working Paper 4, 5. See also Fergus Green and Richard Denniss, "Cutting with both Arms of the Scissors: The Economic and Political Case for Restrictive Supply-side Climate Policies" (2018) 150 Climate Change 73 – 87. Provisions of the 1992 UNFCCC and Paris Agreement are framed in languages that reflect their demand-side focus. Under article 4(13) of the Paris Agreement, for example, parties are required to account for "anthropogenic emissions and removals". See also Adoption of the Paris Agreement, Decision 1/CP.21 FCCC/CP/2015/10/Add.1, para. 31(a) (Paris Decision).

[10] For more on the relationship between demand- and supply-side approaches to climate change mitigation, see generally Hans-Werner Sinn, *The Green Paradox: A Supply-side Approach to Global Warming* (Cambridge: The MIT Press, 2012).

[11] Green and Denniss's use of the 'scissors' metaphor is drawn from Alfred Marshall's statement that "we might as reasonably dispute whether it is the upper or the under blade of a pair of scissors that cuts a piece of paper, as whether value is governed by utility [demand] or cost of production [supply]." Green and Denniss, *supra* note 9 at 74, 85. Verkuijl et al summarise the argument for complementing demand-side policies with supply-side policies thus – "Adding supply-side policies to the overall climate policy mix can help achieve emissions reductions more cost-effectively than through demand-side policies alone … Policies focused on production can also help compensate for the "green paradox" – the phenomenon whereby fossil fuel producers are incentivized to accelerate production in the near-term in the face of increasingly stringent demand-side policies. Lastly, such policies help limit lock-in to fossil-fueled development pathways that threaten to put the Paris climate goals out of reach". See Cleo Verkuijl et al, "Aligning Fossil Fuel Production with the Paris Agreement: Insights for the UNFCCC Talanoa Dialogue" *Stockholm Environment Institute (SEI)* (March 2018), online: <https://www.sei.org/wp-content/uploads/2018/03/verkuijl-fossil-fuels-paris-pb.pdf> 3. See also Green and Denniss, *supra* note 9 at 76 – 84.

emission world is shorter with policies directly targeting the stoppage of or reduction in the production of fossil fuel. This notion informs the unburnable carbon concept, which emphasises that potential emissions from existing fossil fuel reserves and remaining ultimately recoverable resources (RURR) exceed the remaining carbon budget that is consistent with the 1.5ºC or 2ºC targets and must therefore be left underground.[12] The underlying presumption of demand-side policies is that such policies will compel the reduction in fossil fuel production and supply. In practice, however, this presumption is unjustified. The 2021 Production Gap Report shows that by 2030, countries plan to produce 45% more than the fossil fuel consistent with the 2ºC pathway and 110% more than the fossil fuel consistent with the 1.5ºC pathway.[13] The bottom line is that it will take the combined application of supply and demand-side policies to keep the global temperature below 1.5ºC or 2ºC above pre-industrial levels at the minimum.

Table 1 – The Climate Policy Toolkit[14]

	Supply-side	**Demand-side**
Restrictive	*Restrictive supply-side climate policies* (e.g., Fossil fuel subsidy reform; supply tax; production quotas; supply ban/moratorium)	*Restrictive demand-side climate policies* (e.g., carbon tax; carbon cap and trade; mandatory CO_2 emissions standards)
Supportive (of substitutes)	*Supportive supply-side climate policies* (e.g., direct government provision of low carbon infrastructure; R&D subsidies; renewable energy feed-in-tariffs)	*Supportive demand-side climate policies* (e.g., government procurement policies; consumer subsidies for cost efficient or low emitting substitutes)

[12] See generally Carbon Tracker Initiative (CTI), "Unburnable Carbon – Are the World's Financial Markets Carrying a Carbon Bubble?" (2011), online: <https://carbontracker.org/wp-content/uploads/2014/09/Unburnable-Carbon-Full-rev2-1.pdf>; CTI, "Unburnable Carbon 2013: Wasted Capital and Stranded Assets" (2013), online: <http://carbontracker.live.kiln.digital/Unburnable-Carbon-2-Web-Version.pdf>.

[13] Stockholm Environment Institute et al, *The Production Gap Report 2021*, (2021), online: <http://productiongap.org/2021report> 13 - 19. It is unclear if such 'planned production' includes both State and non-State entities. Although State owned enterprises covers reserves 'held' by both State and non-State institutions, it is important that such distinction be expressly made, as they have implications for the management and/or transition of fossil fuel holdings. For example, Heede recognises Investor-Owned Companies (IOC), State-owned entities (SOE), and Government-operated Fossil Fuel Production as categories of entities involved in the production of fossil fuel. About 40% (29 of 72) of the oil and gas companies in the database analysed were SOEs. See Richard Heede, *Carbon Majors: Updating Activity Data, Adding Entities, and Calculating Emissions: A Training Manual* (Climate Accountability Institute, 2019) 9.

[14] Green and Denniss, *supra* note 9 at 75.

According to McGlade and Elkins, 88% of the global coal reserves, 52% of the global gas reserves, and 35% of the global oil reserves must be left under the ground between 2010 and 2050 to remain on a 2ºC consistent pathway.[15] This entails Africa leaving 90%, 34% and 26% of its coal, gas and oil reserves unburnt; the Middle East not using 99%, 61%, and 38% of its coal, gas and oil reserves; Canada not exploiting 82%, 24% and 75% of its coal, gas and oil reserves; and the United States keeping 95%, 6% and 9% of its coal, gas and oil reserves underground.[16] Apart from the fairness questions which attend the above distributions (e.g. comparing the United States unburnable reserves to Africa and the Middle East), these percentages are not sufficient in themselves to give an adequate picture of the complexity of the notion of unburnable fossil fuels. While it is broadly acknowledged that a transition from fossil fuel is compulsory and this must occur at pace, it is also understood that the transition process must be phased reasonably and responsibly. As attractive as the prospect of shutting oil and gas wells and coal mines down is, there is no automatic switch to make this happen. The socio-technical complexity of fossil fuels, the industry that manages them, and the community which benefits from them are essential factors in defining or giving effect to the unburnable fuels concept.

Fossil fuels are different in their composition, usage, emission potentials, source, and consequentially, their modes of exploration and production also differ. These factors are relevant in determining which fuel is unburnable, the order in which or quantity of fuels that are considered unburnable. 65% of the total carbon potential of the known global fossil fuel reserves (2795GtCO_2) is from coal, while oil and gas contribute 22% and 15% respectively.[17] Given its high carbon potential, the use of coal is wholly inconsistent with a 2ºC or 1.5ºC pathway. However, it would be incorrect to put every type of coal or indeed fossil fuels in the same basket. Lignite (coal), for example, has a lower carbon concentration than hard coal (anthracite and bituminous coal).[18] While oil and gas are commonly classified as conventional and unconventional, McGlade and

[15] Under a scenario where carbon capture and sequestration is deployed, the reduction would be 82% - coal, 49% - gas, oil – 33%. See Christophe McGlade & Paul Ekins, "The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2ºC" (8 January 2015) 517 Nature 187 at 189. Distinction should be drawn between the SEI's Production Gap Report which uses data from production plans, and the CTI and McGlade and Ekins which focus on data from reserves (and non-reserve) resources. Data used in the Carbon Majors report (Heede, *supra* note 13) are fossil fuel companies' emissions over a period.

[16] McGlade and Ekins, *ibid* at 189.

[17] CTI, *supra* note 12 at 2.

[18] According to McGlade and Ekins, while hard coal has an energy density greater than 16.5MJ kg^{-1}, quantities lower than this density is classified as lignite. See McGlade and Ekins, *supra* note 15 at 191.

Ekins further identify nine types of oil (conventional proved and probable (2P) reserves in production or scheduled for development, reserve growth, undiscovered oil, Arctic oil, light tight oil, natural gas liquids, natural bitumen, extra-heavy oil, and kerogen oil) and eight types of gas (conventional proved and probable (2P) reserves in production or scheduled for development, reserve growth, undiscovered gas, Arctic gas, associated gas, tight gas, coal-bed methane, and shale gas).[19] McGlade and Ekins consider these distinct types of fuels, their regional distributions and production costs in their allocation of unburnable fossil reserves. As acknowledged by them, however, such economic optimality approach fails to recognize equity (welfare) concerns.[20]

Generally, fossil fuel reserves are *in situ* within States.[21] The 2019 BP World Energy Review lists 34 countries with proven coal reserves, and 51 countries with oil and gas reserves.[22] About 51 countries are also listed as having substantial production capacities, while about 69 countries refine oil.[23] These countries, recognized in the Convention as "… economies vulnerable to the adverse effects of the implementation of measures to respond to climate change … economies that are highly dependent on income generated from the production, processing and export … of fossil fuels…", are described in this work as *Fossil Fuel Dependent Economies* (FFDEs).[24] The characterization of FFDEs in the Convention is not restricted to countries with oil, gas, and coal reserves and production capacity. It also includes countries with considerable reliance on fossil fuel processing (refining) and transit industries (e.g., states with pipelines).

From the BP energy review figures, there are at least 18 countries with refining capacity but no substantial oil reserves (and/or production capacity). While the sustainability transition discourse is also relevant to fossil fuel processing and transit countries, I focus here on countries with production and export capacities since they are at the top of the fossil fuel process chain (well-head countries). It is also important to note that Art. 4(10) of the Convention also recognizes States

[19] *Ibid.*
[20] *Ibid* at 188.
[21] This does not account for straddling fossil fuel resources (oil and gas) which are explored through joint arrangements like unitization, or disputed reserve claims that are operated via joint development zone (JDZ) arrangements. It also does not account for fossil fuel resources under the High Seas.
[22] British Petroleum, *BP Statistical Review of World Energy*, 68th ed (BP, 2019) 14, 30, 42.
[23] These figures pertain only to countries with 'major' reserves. The BP Review refers collectively to minor reserves on regional basis (e.g., other African countries with minor reserves collectively have 3.9 thousand million barrels of oil). *Ibid* at 14.
[24] *United Nations Framework Convention on Climate Change*, 9 May 1992, 1771 UNTS 30822 at art. 4(10) (entered into force 21 March 1994) (UNFCCC).

with economies which are dependent on the "consumption of fossil fuels … for which such parties have serious difficulties in switching to alternatives". Again, while the impact of the transition on these demand-side or tailpipe countries is no doubt an important discourse and has, indeed, been the subject of other scholarly works,[25] I do not focus on tailpipe countries in this research. But it is worth noting that there appears to be a correlation between reserve/production capacity of countries and their rate of consumption, as the highest fossil fuel consuming and carbon emitting countries in the world also have considerable fossil fuel production capacity.[26]

If the connection between the use of fossil fuel and climate change were as clear as suggested above, the straightforward solution should be to drastically reduce the exploration and consumption of fossil fuel. But the solution is not so straightforward for FFDEs. Take, for example, the position of the Organization of Petroleum Exporting Countries (OPEC) which is responsible for 71.8% of the global oil reserve and 41.5% of global production capacity as at 2018.[27] As far as OPEC is concerned, "oil will remain a fuel of choice for the foreseeable future" necessitating "new barrels" and investment "of around $10 trillion over the period (2015) to 2040".[28] In justifying OPEC's position, its Secretary General argued that "the implementation of the Paris Agreement should be guided by the principles and provisions that were provided for in the Convention. The unique situation of developing countries, in particular, should be given the priority it deserves, including those developing countries dependent on oil".[29] Saudi Arabia, the world's largest petroleum exporting country, apart from having led the opposition against international climate mitigation initiatives it considered adverse to the interest of the global oil industry,[30] made its NDC

---

[25] See generally Luis Munda et al, "Demand-side Approaches for Limiting Global Warming to 1.5ºC" (2019) 12 Energy Efficiency 343 – 362; P. Shulka et al, "Pathways to Deep Decarbonization in India" *SDSN-IDDRI* (2015), online: <https://backend.orbit.dtu.dk/ws/portalfiles/portal/120569341/DDPP_IND_Final.pdf>; Tom Green, "Zeroing in on Emissions: Canada's Clean Power Pathways – A Review" *David Suzuki Foundation* (2019), online: <https://davidsuzuki.org/wp-content/uploads/2019/05/zeroing-in-on-emissions-canadas-clean-power-pathways-review.pdf>.

[26] As at 2018, China, USA, India, and Russia are listed four of the top five top GHG emitters (with the fifth being the EU). While China and India are not major fossil fuel exporters, they are also listed in the BP statistical review of world energy as having oil, gas, and coal reserves and production capacity. See UNEP, *supra* note 7 at 6.

[27] BP, *supra* note 22 at 14, 16.

[28] Mohammad Sanusi Barkindo, "The Future Economy of Oil from the Middle East and across OPEC" (Speech delivered at the International Petroleum Week, 21 February 2017, London, England) online: <http://www.opec.org/opec_web/en/4114.htm>.

[29] *Ibid.*

[30] Chloe Farand, "UN Report on 1.5C Blocked from Climate Talks After Saudi Arabia Disputes Science" *Climate Change News* (27 June 2019), online: <https://www.climatechangenews.com/2019/06/27/un-report-1-5c-blocked-climate-talks-saudi-arabia-disputes-science/>; Suzanne Goldenberg, "Saudi Arabia Accused of Trying to Wreck Paris

contingent on a growing diversified economy with "robust contribution from oil export revenues" and insists that the international climate change policies should not "pose disproportionate or abnormal burden on the Kingdom's economy."[31] Russia, the world's leading gas exporter and second largest petroleum exporting country, did not ratify the 2015 Paris Agreement until late 2019.[32]

There is clearly a disconnect between the ambition needed for effective climate change mitigation and the commitments which FFDEs are ready to make. One of the most popular arguments of FFDEs is that sustainability transition will lead to major job losses in FFDEs. It is in this context that the concept of just transition has been most deployed. For example, Poland as host of the 24th Conference of Parties (COP) to the UNFCCC in 2018 proposed the Silesia Declaration which emphasizes the "just transition of the workforce and the creation of decent work and quality jobs … to enhance inclusive transition … and to enhance public support."[33] The Paris Agreement also reiterates the jobs-narrative of just transition.[34] While certainly an important component of the just transition discourse, looking at the data, it is not very clear why 'jobs' in the fossil fuel based energy sector (energy sector) is at the core of the just transition discourse. For example, the energy sector has the least number of employees when compared to other sectors critical to global climate stability (e.g., agriculture, forestry, manufacturing, building, and transport).[35] Canada's total workforce (industrial and service producing) in 2018 was 29,960,398 out of which 203,599 (less than 1%) worked in the mining, quarrying, and oil and gas extraction sector.[36] In Alberta, Canada's

Climate Deal" *The Guardian* (8 Dec 2015), online: <https://www.theguardian.com/environment/2015/dec/08/saudi-arabia-accused-of-trying-to-wreck-the-paris-climate-deal>.

[31] The Kingdom of Saudi Arabia, "The Intended Nationally Determined Contribution of the Kingdom of Saudi Arabia Under the UNFCCC" online: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Saudi%20Arabia%20First/KSA-INDCs%20English.pdf>.

[32] See United Nations Treaty Series, "Paris Agreement, <https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en#EndDec>.

[33] COP 24, *Solidarity and Just Transition Silesia Declaration* (2018), online: <https://cop24.gov.pl/fileadmin/user_upload/Solidarity_and_Just_Transition_Silesia_Declaration_2_.pdf>.

[34] *Paris Agreement*, 12 December 2015, 27 UNTS 54113 at preamble (entered into force 4 November 2016).

[35] Energy – 30M, Agriculture – 1000M, Forestry – 44M, Manufacturing – 200M, Buildings – 110M, Transport – 88M (M – Million). See UNFCCC, "Just Transition of the Workforce, and the Creation of Decent Work and Quality Jobs – Technical Paper" online: < https://unfccc.int/sites/default/files/resource/Just%20transition.pdf>.

[36] Statistics Canada, "Employment by Industry, Annual" (2018) online: <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410020201>.

largest oil, gas and coal producing and exporting province, only 6.1% of its workforce (140,300 out of 2,286,900) are in the mining and oil and gas extracting industry.[37]

There is more to just sustainability transition than jobs transition. Essentially, just transition recognizes that while FFDEs must transition from fossil fuel dependency, transition entails substantial socio-economic costs. While just transition is not explicitly mentioned in key UNFCCC instruments and protocols prior to the Paris Agreement, the need to pay attention to the impact of the implementation of response measures is noted in the Convention, Kyoto Protocol, and the Paris Agreement. The Convention requires Parties to give full consideration to actions necessary to meet the concerns of developing country Parties arising from the impact of the implementation of response measures, especially on, among others, countries "whose economies are highly dependent on income generated from the production, processing and export … of fossil fuels".[38] The Kyoto Protocol goes further to require Annex 1 countries to implement mitigation obligations to minimize social, environmental and economic impacts on developing country Parties and obligates the Conference of Parties to consider what actions are necessary to minimize response measures' impacts at its first session.[39] It was not until 2011 at COP 17 in Durban, South Africa that a work programme and forum on the impact of response measures were established.[40] In 2016, the work programme was further improved.[41] The work programmes emphasise, among other things, the need to understand the positive and negative impacts of response measures, assessment and analysis of impacts, exchanging experience on economic diversification, just transition of the workforce, and collective and individual learning towards a transition to a low GHG emitting society.[42]

Under the Convention and Kyoto Protocol, the impacts of response measures are solely considered as they relate to developing country Parties with a focus on FFDEs. The Paris Agreement, however, takes a broader approach by requiring parties to consider the concerns of "Parties with economies most affected by the impacts of response measures, particularly developing country Parties" in

[37] Alberta Government, "Industry Profiles 2018: Mining and Oil and Gas Extraction Industry" (2018) online: <https://work.alberta.ca/documents/industry-profile-mining-oil-and-gas-extraction.pdf>
[38] See UNFCCC, art. 4(8)(h).
[39] See Kyoto Protocol, art. 3(14).
[40] UNFCCC Conference of Parties (COP), "Forum and Work Programme on the Impact of the Implementation of Response Measures" Decision 8/CP.17, FCCC/CP/2011/9/Add.2, 9 -11. (Decision 8/CP.17)
[41] UNFCCC Subsidiary Bodies, "Improved Forum and Work Programme", FCCC/SB/2016/L.2/Rev.1.
[42] UNFCCC COP, *supra* note 40 at para. 1(a)-(h).

implementing the Agreement.[43] Thus, while developing Parties are still central to the consideration of response measures, there is recognition under the Agreement that countries other than 'developing countries' are prone to response measures' impacts. The Paris Agreement also makes a shift from the Convention's emphasis on FFDEs to recognizing that the transition also has implications for other economic sectors.[44] All through the evolution of 'response measures' under the UNFCCC regime, the key question has been how the impacts of mitigation actions and response measures can be understood. This in part explains why the work programmes emphasize "assessment and analysis of impacts" and the UNFCCC forum on response measures has focused on the assessment and modeling of socio-economic impacts of response measures.

As I argue in this work, although just transition is used in the workforce and jobs context in the work programmes, all the elements of the programmes touch directly or indirectly on the notion of just sustainability transition. Indeed, the summarized objective of the work programmes and just transition is to "minimize the negative and maximize positive impacts of implementation of mitigation policies and actions".[45] Rather than using the seemingly broader and UNFCCC endorsed 'response measures' nomenclature, 'just transition' is the preferred term in this work. Just transition brings to the fore the themes of equity and justice. Further, the evolution of the 'response measures' terminology is fraught with the developed vs. developing state tension and evokes needless political contestations.[46] Again, the focus of response measures on economic impacts (and, to some extent, effects on jobs) leaves out broader socio-ecological just transition consequences and concerns. Like the work programmes, however, impact assessment will be emphasised in this work as a key tool for achieving a just sustainability transition.

1.2 Objectives and Research Questions

Noting that the post second world war transition to an oil and electricity dominated system left out about one billion people without electricity access and many more with limited access, Pirani argues that the post war transition "was not directed at providing electricity access or improving

[43] Paris Agreement, art. 4(15).
[44] Chan notes that the scope of response measures was widened in part given the concerns of developing States about the effect of the transition on sectors like agriculture and tourism. See Nicholas Chan, "The 'New' Impacts of the Implementation of Climate Change Response Measures" (2016) 25:2 Review of European Community & Intl Envtl Law 228 at 232.
[45] UNFCCC, "Response Measures" online: <https://unfccc.int/topics/mitigation/workstreams/response-measures#eq-3>
[46] Chan, *supra* note 44 at 228.

lives … it was to do with capital accumulation and the concentration of wealth and power; the inequalities were produced and deepened by the dominant social relations".[47] He proceeded to warn that "[a] future transition that leaves these social relations intact, while switching technologies, will surely not tackle inequalities".[48] With the upsurge in renewable energy sourced electricity, electric transportation systems, and industrial processes leveraging cleaner technologies, the world is inching closer to a post-fossil fuel era. As will be shown in chapters two and three, the divestment from fossil and re-investment in 'clean energy' by traditional fossil fuel companies is one of the key trends of the ongoing transition. But how 'just' is the transition? As fossil fuel companies move on to what one oil and gas worker refers to as 'the next shiny thing', have communities and workers been left to 'hold the bag'?[49] Would sustainability transition herald the next era of global inequality and injustice? These are the broader questions which inform this research. While a transition might not set out to be unjust and entrench inequality, as shown by Pirani, this ends up being the consequence, particularly, when the 'market' is left in the driver's seat. It takes the deliberate steering of transition policies and activities towards the satisfaction of justice and equality imperatives for there to be a chance that such activities will be just. The overall aim of this thesis is to demonstrate how impact assessment is a tool for the deliberate steering of sustainability transition policies and activities towards justice. This necessarily requires clarification on what is meant by 'justice' and how impact assessment could be a vehicle. These two imperatives are the focus of the subsequent chapters in this thesis.

Just transition seeks to infuse equity into sustainability transition policies and actions. Failure to pay attention to it, risks the entrenchment and perpetration of socio-ecological inequities. Why then is it important to consider just transition within an impact assessment framework? Understanding the impacts of sustainability transition is essential to the design and implementation of equitable and effective climate policies.[50] The impact assessment process, in the integrated sense, provides a rare opportunity for a holistic appraisal of the consequences of a project, plan, policy or programme, and allows for the attainment of what Gibson refers to as "mutually

[47] Simon Pirani, *Burning Up: A Global History of Fossil Fuel Consumption* (London: Pluto Press, 2018) 182 – 183.
[48] *Ibid,* 183.
[49] Mychaylo Prystupa, "At COP21, Oil Sands Worker Urges Smooth Transition off Fossil Fuels", *Canada's National Observer* (8 December 2015), online: <https://www.nationalobserver.com/2015/12/08/news/cop21-oil-sands-worker-urges-smooth-transition-fossil-fuels> (Quote from Ken Smith, President of Unifor local 7074A and mechanic with Canadian oil and gas company, Suncor).
[50] See UNFCCC, *supra* note 35 at 57.

reinforcing gains".[51] Otherwise, the clamour for just transition stands a real chance of undermining other sustainability objectives, and *vice versa*. In this research, I situate just transition within the impact assessment 'framework'. I draw a distinction between the practice of impact assessment and the quantitative and qualitative tools through which impact assessment is conducted. As will be shown in the literature review section, studies on how impact assessment applies to response measures and just transition have focused on tools. Impact assessment transcends the technical tools through which certain aspects of the assessment could be conducted. The analysis of impact assessment tools is outside the remit of this work. Rather, impact assessment, as used, here refers to the process through which the consequences of sustainability transition policies and initiatives are identified and assessed, and how such assessment assists in infusing 'just transition' considerations into decision making both at the strategic and project levels. This is a missing piece in the scholarships on just transition and impact assessment, which so far are two siloed areas of study.

With the above objectives in view, this thesis sets out to answer three key research questions:

i. Is just transition, as conventionally defined and applied, sufficient to address the multi-dimensional impacts of climate change response measures?
ii. To what extent does impact assessment, as a planning and decision-making process, provide spaces for addressing just transition concerns?
iii. How can the essentials of just transition be mainstreamed in transition planning and decision-making through impact assessment?

Several assumptions are implicit in the above questions. The first is the inference that impact assessment is an important tool in mainstreaming just transition. Impact assessment is a well-established and globally endorsed practice. The UNEP finds that almost all countries have legislated forms of impact assessment systems.[52] Preliminarily, IA also appears to provide opportunities through which just transition concerns can be catered to. For example, the socio-economic factors required to be considered in IA processes could potentially be interpreted as relevant to just transition depending on how such factors are scoped, interpreted and/or applied. How climate change can be effectively incorporated into impact assessment has received increased

[51] Robert Gibson et al, *Sustainability Assessment: Criteria, Processes and Applicatio*n (London: Earthscan, 2005) 131.
[52] UNEP, *Assessing Environmental Impacts – A Global Review of Legislation* (Nairobi: UNEP, 2018) 18.

attention in IA scholarship, laws, and voluntary guidelines.[53] However, considering that most IA laws have not been designed to address issues connected to the transition, it is important to carefully examine the potentials of the implicit spaces within conventional IA, identify potentials and limitations, and propose ways to facilitate the maximization of existing regimes for just transition ends.

Just transition must, however, not be taken as an uncontested notion. Its meanings are diverse and contested. It is, therefore, important to query what just transition means, and whether it has gone far enough in attending to the complexity which characterizes climate change and the impacts of transition initiatives. The first research question, upon which the subsequent research questions ride, is crafted as an inquiry into the contested meanings of just transition and their adequacy in the light of the unique circumstances of the climate change phenomenon. The question allows a robust engagement with the historical and contemporary understandings of just transition, their operationalization of just transition in law, policies, and practice, and the strengths and flaws of the dominant narratives. Importantly, the question infers that just transition must necessarily be consistent with the realities of climate change and the responses the phenomenon requires.

The few attempts to assess just transition impacts have been primarily quantitative and jobs centric. There is, however, no known study which has comprehensively engaged with the application of IA processes to just transition. This is significant in many ways. One, impact assessment is broadly accepted across the world as a planning and decision-making tool of choice. Two, impact assessment is increasingly being employed in the design of response measures to climate change. Three, impact assessment in most countries is enshrined in legislation; it is therefore an authoritative planning and decision-making tool. Four, public participation is, at least in theory, an essential component of impact assessment processes. Similarly, the importance of social dialogue is generally accepted as central to just transition in the contested field of just transition scholarship. Hence, while not perfect, impact assessment provides an authoritative and established public engagement framework for just transition. Five, it is established in just transition scholarship that an unplanned transition would very likely be an unjust transition. Successful transitions have been shown to leverage thorough early planning, and IA is a well-established planning and decision-making tool.

[53] *Ibid,* 81 – 82.

1.3 Literature Review

The scope of the questions asked in this research is limited to the relationship between just transition and impact assessment in the context of the sustainability transition of supply-side FFDEs. The need for societies to transition sustainably is a clarion call which has gotten louder since the publication of the Brundtland Report in 1987.[54] Over three decades after the Brundtland Report, however, the quest to define sustainability transition and agree on sustainability pathways continues. As pointed out by Weinstein et al., "opinions about how to transition to a sustainable world are about as diverse as their proponents".[55] But sustainability transition (ST) has also grown into a defined field of study in the past years. Markard et al describe sustainability transitions as "long-term, multi-dimensional, and fundamental transformation processes through which established socio-technical systems shift to more sustainable modes of production and consumption".[56] A few features are deducible from Markard et al's description: sustainability transition entails socio-technical systems, it is long term and multi-dimensional, and its objective is to achieve sustainable modes of production and consumption. Further, Kohler et al in their recent review of sustainability transition literature identify multi-actor process, stability and change, open-endedness and uncertainty, values and disagreement, and normative directionality as other sustainability transition characteristics.[57]

While sustainability literature might have different emphases, the overarching idea is that socio-technical systems must be transformed to attain 'sustainability'. In other words, the sustainability of socio-technical systems is the objective of sustainability transition. A critical engagement with the concepts of 'sustainability' and 'socio-technical systems' is perhaps the most crucial task for sustainability transition scholarship. Savaget et al reviewed how these concepts are applied in 182 scientific articles.[58] They conclude that it is widely accepted in the literature that "sustainability is a balanced integration of economic performance, social inclusiveness and environmental

[54] The World Commission on Environment and Development (Brundtland Commission), *Our Common Future* (Oxford: Oxford University Press, 1987).
[55] Michael Weinstein, et al, "The Global Sustainability Transition: It Is More Than Changing Light Bulbs" (2013) 9:1 Sustainability: Science, Practice & Policy 4 at 5.
[56] Jochen Markard et al, "Sustainability Transitions: An Emerging Field of Research and Its prospects" (2012) 41 Research Policy 955 at 956.
[57] Jonathan Kohler et al, "An Agenda for Sustainability Transitions Research: State of the Art and Future Directions" (2019) 31 Environmental Innovation and Societal Transitions 1 at 1 – 2.
[58] Paulo Savaget, "The Theoretical Foundations of Sociotechnical Systems Change for Sustainability: A Systematic Literature Review" (2019) 206 Journal of Cleaner Production 878 – 892.

resilience", while a socio-technical system entails interconnected, complex, co-evolving structures characterized by feedback loops, self-organization, and hierarchies.[59] Although Savaget et al have correctly depicted the common understanding of 'sustainability' in ST literature, only a few of such scholarly works engage critically with what the 'sustainability' in 'sustainability transition' means. The definition appears to be taken as given, with researchers toeing the line of Brundtland report's three-fold conception of sustainable development (environment, economy, and society).[60] Gibson et al make a case for why the mainstream (Brundtland) conception of sustainability is less than ideal.[61] The conventional conception not only fails to capture the reality of social engagements (as people rarely construe the three pillars separately), but it also suggests that the three pillars are in tension and must be traded off against each other.[62] In this tension, the economy often 'wins', while ecological and other social concerns are either sidelined or undermined.[63]

Sustainability should be distinguished from sustainable development.[64] The former, not the latter, should be the focus of sustainability transition. In their seminal study, the U.S. National Research Council differentiated between 'what to sustain' and 'what to develop'.[65] While nature, life support systems, and community are to be sustained, people, the economy and society can be developed.[66] I argue that within the sustainability discourse, 'development' is relevant to the extent that it supports and/or is not inimical to the sustenance of nature, life support systems, and community. This framing is important for clarifying not only which socio-technical systems should be transformed but also how they should be transformed (transition pathways). Most ST literature conceptualizes energy supply, agri-food and transportation as socio-technical systems requiring

[59] *Ibid,* 882, 884.
[60] Weinstein et al for example argue that "sustainability transition must, therefore, consider the dynamics of evolution and the complex interplay of social, economic, and natural systems". Weinstein et al, *supra* note 54 at 6.
[61] Gibson et al, *supra* note 51 at 94 – 95.
[62] According to Gibson, "Bottom-up sustainability assessments, driven by the expressed public concerns surrounding particular cases or initiatives, often abandon the pillar categories and focus instead on problems and aspirations that cross the social/economic/ecological boundaries. Public-issue identification and priority-setting processes typically identify secure livelihoods, safety, health, vibrant and attractive communities, new opportunities and choice, and influence in decisions as key objectives. None of these is a purely social, economic or ecological matter". See Robert Gibson, "Sustainability Assessment: Basic Components of a Practical Approach" (2006) 24:3 Impact Assessment and Project Appraisal 170 at 173. See also Robert Gibson, "Avoiding Sustainability Trade-offs in Environmental Assessment" (2013) 31:1 Impact Assessment and Project Appraisal 2 at 4.
[63] Jenny Pope et al, "Conceptualising Sustainability Assessment" (2004) 24 Env Impact Assessment Rev 595 at 603.
[64] See Subhabrata Bobby Banerjee, "Who Sustains Whose Development? Sustainable Development and the Reinvention of Nature" (2003) 24:1 Organization Studies 143 – 180.
[65] National Research Council, *Our Common Journey: A Transition Toward Sustainability* (Washington: National Academies Press, 1999) 23 - 25.
[66] *Ibid.*

transformation.[67] These systems are represented as the primary domains of unsustainability. While it is important to recognise the essentiality of these systems (energy, food, and transportation), their current forms and modes of operation are not sacrosanct or immutable. The question ST must answer is how these systems can be made sustainability compliant. Turnheim et al identify five reasons why this question is difficult to answer. They include the multiple scales of the required transformation; different geographies and temporalities of transformation processes; complexity and uncertainty; innovation and inertia of existing systems; normative goals of transitions; and perspectives governing transitions.[68] These challenges are even more evident in the climate context, and it is important that any proposed solution attends to them.

There are multiple approaches to sustainability transition, including transition management, strategic niche management, multilevel perspective on socio-technical transitions, and technological innovation systems.[69] Table 1 shows the key features of these approaches.

Table 2 – Sustainability Transition Approaches[70]

Approaches	**Features**
Transition Management	Deliberative process to influence governance activities for accelerated change towards sustainability ambitions. It entails four sequential steps - ***strategic*** (activities at the level of societal system considering long time horizon), ***tactical*** (activities at the subsystem levels (institutions, regulations etc.)), ***operational*** (activities relating to short-term and everyday decisions and actions), ***reflexive*** (evaluation of existing situation).
Strategic Niche Management (SNM)	Focus on the emergence of radical innovations from 'protected spaces' where they are protected from mainstream market selection.

[67] Frank Geels, "The Multi-level Perspective on Sustainability Transitions: Responses to Seven Criticisms" (2011) 1 Env Innovation and Societal Transitions 24; Markard et al, *supra* note 56 at 956; Savaget et al, *supra* note 58 at 885.
[68] Bruno Turnheim et al, "Evaluating Sustainability Transitions Pathways: Bridging Analytical Approaches to Address Governance Challenges" (2015) 35 Global Environmental Change 239 at 240 – 241.
[69] Markard et al, *supra* note 56 at 955.
[70] See generally Derk Loorbach & Jan Rotmans, "The Practice of Transition Management: Examples and Lessons from Four Distinct Cases" (2010) 42 Futures 237 – 246; Kohler et al, *supra* note 56; Johan Schot & Frank Geels, "Strategic Niche Management and Sustainable Innovation Journeys: Theory, Findings, Research Agenda, and Policy" (2008) 20:5 Technology Analysis & Strategic Management 537 – 554; Markard et al, *supra* note 55; Anna Bergek,et al "Technological Innovation Systems in Context: Conceptualizing Contextual Structures and Interaction Dynamics" (2015) 16 Env Innovation and Societal Transitions 51 – 64.

	Niche innovations are produced through the interactions between learning processes, social networks, vision, and expectations. SNM leverages the dynamic forces of market competition aimed at overcoming lock-in and promoting socio-technical diversity.
Multilevel Perspective (MLP)	Transitions are viewed as non-linear processes resulting from the interplay of developments at the niche level (locus for radical innovations), socio-technical regimes (locus of established structures, practices, and rules), and an exogenous socio-technical landscape (e.g., climate change). Niche innovations stand a higher chance of uptake if landscape developments put pressure on the regime leading to cracks and windows of opportunity. The tension between stability and change is at the core of MLP.
Technological Innovation Systems (TIS)	Deals with the emergence of novel technologies and the institutional and organizational changes needed for the development of the technology. Focuses on the barriers and drivers to innovation.

Rather than considering ST approaches as stand-alone frameworks, they are best construed as different components of a single process. Taken together, they provide a more comprehensive albeit inadequate pathway towards sustainability. There is something to pick from each approach - the emphasis on deliberative governance and interconnection of stages of governance by transition management, the bottom-up focus of strategic-niche management, MLP's recognition of the effect of landscape changes and niche innovation on established regimes, and the focus of TIS on institutional drivers of innovation. But this is not a complete story, more so, if sustainability - sustenance of life support system, nature, and community - as described in this thesis is to be achieved. Described this way, sequestering sustainability within the artificial borders of States becomes unhelpful, and power and equity become important elements of the discourse. These are some of the key criticisms of mainstream sustainability transition approaches. They generally fail to appreciate the boundaryless nature of sustainability challenges and therefore focus on states.[71] The subjects of equity and power are also underdiscussed in ST scholarship.[72] There also appears to be an uncritical supposition that technological innovations have positive effects on sustainability

[71] Markard et al, *supra* note 56 at 961.
[72] See Kirsten Jenkins et al, "Humanizing Sociotechnical Transitions Through Energy Justice: An Ethical Framework for Global Transformative Change" (2018) 117 Energy Policy 66; Kohler et al, *supra* note 57 at 6 – 8.

transition in most ST literature. But as noted by Craik and Seck, innovations are normatively neutral; they are neither inherently good nor bad.[73] Environmentally sound technologies can be environmentally unsound.[74] Further, the long-term emphasis of most ST literature makes its relevance questionable in the climate change context, considering the urgency of the climate crisis. As Kohler et al point out, one of the challenges faced by ST scholarship is addressing questions of urgent sustainability challenges in need of accelerated transitions and how to address the lack of progress towards transition.[75]

Despite the flaws of sustainability transition scholarship, its analytical frameworks and approaches for studying past transitions are useful for this research. The transition of states and communities from coal dependency is one of the dominant subjects studied by ST scholars.[76] Given that the transition from coal is already considerably underway, it potentially offers lessons for the transition needed in oil and gas dependent communities. Of course, there can be no wholesale transplant of lessons from the coal industry, given the many distinctions that exist between it and the oil and gas industry. For example, coal industries have, generally, existed longer in many communities than the oil and gas industry. As noted by Carley et al, this informs the entrenchment of the coal industry as both a culture and an identity.[77] It also means that many coal mines are approaching their end of life with a quantifiable percentage of the workforce close to retiring. In their study of Germany's transition from coal, Brauers et al note that the majority of coal miners in Rhineland, Lusatia, and Central Germany will retire in the next two decades; around 30% will exceed the age of 60 in 2020, and 2 out of 3 workers will reach the age of 60 years by 2030.[78] While such demographic

[73] Neil Craik & Sara Seck, "The Value of an Innovation Framework for International Law" in Neil Craik et al, eds., *Global Environmental Change and Innovation in International Law* (Cambridge: Cambridge University Press, 2018) 319.
[74] See generally Dustin Mulvaney, *Solar Power: Innovation, Sustainability, and Environmental Justice* (California: University of California Press, 2019).
[75] Kohler et al, *supra* note 57 at 21.
[76] See generally Bruno Turnheim & Frank Geels, "Regime Destablisation as the Flipside of Energy Transitions: Lessons from the History of the British Coal Industry (1913 - 1997)" (2012) 50 Energy Policy 35 – 49; Bruno Turnheim & Frank Geels, "The Destablisation of Existing Regimes: Confronting a Multi-dimensional Framework with a Case Study of the British Coal Industry (1913 - 1967)" (2013) 42 Research Policy 1749 – 1767; O. Sartor, "Implementing Coal Transitions: Insight from Case Studies of Major Coal-consuming Economies" (2018) IDDRI & Climate Strategies; Ben Caldecott et al, "Lessons from Previous 'Coal Transitions': High Level Summary for Decision-Makers" (2017) IDDRI & Climate Strategies; Hanna Brauers et al, "Coal Transition in Germany: Learning from Past Transitions to Build Phase-out Pathways" (2018) IDDRI & Climate Strategies; Sanya Carley et al, "Adaptation, Culture, and the Energy Transition in American Coal Country" (2018) 37 Energy Research & Social Sciences 133 – 139.
[77] Carley et al, *ibid* at 136.
[78] Brauers et al, *supra* note 76 at 8 – 9.

dynamic might not be at play in the oil and gas industry, Brauers et al's finding makes apparent the role of 'age' in assessing the impact of just sustainability transition. For one, it shows that in designing transition policies, the retirement period of the workforce can be a useful factor, while a moratorium can be put on further employment. But the narrative is not as simple. The problem of intergenerational unemployment in areas previously dependent on coal is real, as previous opportunities will now be unavailable.[79]

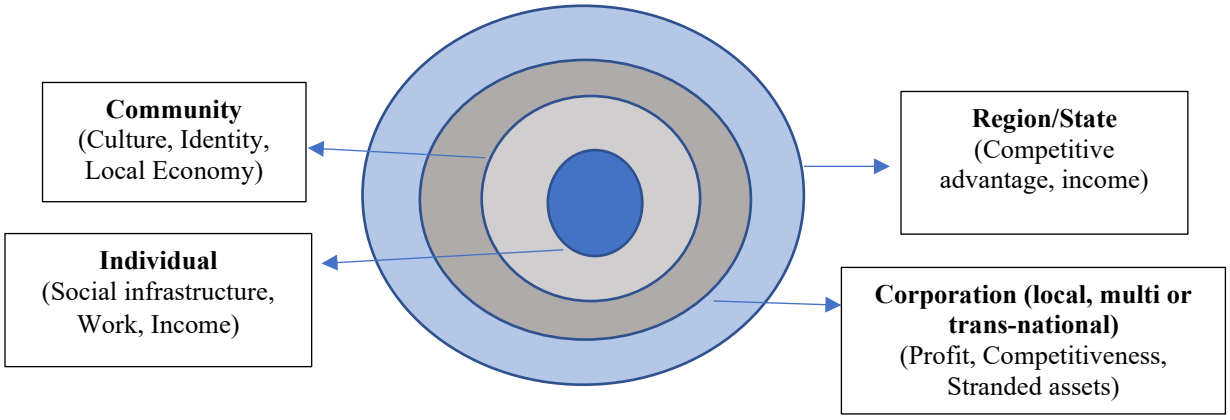
The complexity of transitioning even within a country is well illustrated through the example of Germany. While the transition in the Ruhr area is generally considered positive, Lusatia's transition story is sobering.[80] Factors responsible for these contrasting accounts include the socio-political histories and structures of both areas (Lusatia was previously in East Germany), location (Ruhr is urban and highly populated), existing infrastructure (Lusatia is less developed), diversified economies, type of coal mined (Germany has already transitioned out of hard coal mined in Ruhr as against the continued use of lignite mined in Lusatia) and duration of transition (Ruhr's transition began in 1957).[81] Sartor, in his study of six major coal dependent economies (China, India, South Africa, Poland, Germany, and Australia), also notes the complexity of transitions particularly in the light of economic geography, geographical proximity of the local community to other centers of economic activity, size of the coal sector and regional economy, financial links between coal sector and provision of local services, and the degree of psychological attachment of workers and citizens to the industry.[82] Similar findings were made by Caldecott et al in their study of Czech Republic, Netherlands, Poland, Spain, United Kingdom, and the United States.[83] Interestingly, in virtually all the case studies referenced above, the transition from coal dependency was driven more by market realities than climate change/sustainability related reasons.[84] Consistent with these findings, Geels and Turnheim hypothesize that system destabilization (which foreshadows transition) entails interactions between the accumulation of

[79] Sartor, *supra* note 76 at 30.
[80] Brauers et al, *supra* note 76 at 25 – 28.
[81] *Ibid* at 24.
[82] Sartor, *supra* note 76 at 30 – 32.
[83] Caldecott et al, *supra* note 76.
[84] See Sartor, *supra* note 76 at 10 - 11; Caldecott et al, *supra* note 76 at 6. In their study of the destabilization of the British coal industry, Turnheim and Geels observe that "economic pressures tend to be more important than environmental issues" for the destabilization of existing industries. They also note that "social concerns about climate change are unlikely to destabilise …" See Turnheim and Geels, (2012) *supra* note 76 at 48.

external (economic and socio-political) pressures, strategic responses to the pressures, and (gradual) weakening of commitment to established regime elements.[85]

Although climate change is neither the sole nor main driver of the sustainability transition of most coal dependent economies, some studies use the Nationally Determined Contributions to the 2°C target under the Paris Agreement as the reference point for prescribed transitional pathways.[86] While using either the 2°C or 1.5°C target as the indicator of the sustainability objective is admittedly reductionist, it provides a precise endpoint that can be aimed for by FFDEs. This, however, does not obviate sustainability's framing as the sustenance of life support system, nature, and community, as earlier adopted here. Attaining this sustenance is the essence of the 2°C and 1.5°C targets. Another similar finding in the above referenced studies is the multidimensional effects of the transition on diverse classes of stakeholders, hence, necessitating a participatory, multi-level, polycentric governance approach.[87] I have represented key stakeholders in FFDEs and areas where transitional effects are experienced the most in *figure 1*. All the studies reviewed also emphasised the importance of just transition in the transition of coal dependent economies. While the effects of the transition on coal jurisdictions are stressed in the studies reviewed above, they were silent on how to assess the effects of the transition and how such assessment can aid sound transition policy making and planning. This is one of the key gaps that this research fills.

Figure 1 – Sustainability Transition of FFDEs – Stakeholders and Likely Effects



Although sustainability transition scholarship generally fails to address equity and justice issues, it has become clear that sustainability transition is as much a justice question as it is an ecological

[85] See Turnheim and Geels, (2013) *supra* note 76 at 1766.
[86] See generally Brauers et al, *supra* note 76; Sartor, *supra* note 76.
[87] Brauers et al, *ibid* at 25; Sartor, *ibid* at 32 – 33.

issue. Put more pointedly, to ignore justice concerns is to either perpetuate anti-sustainability practices, entrench inequities, or empower opposition to transitional initiatives.[88] Just transition attempts to infuse justice and equity into the sustainability transition discourse.[89] As stated elsewhere, "at its heart, just transition requires us to leave no one behind".[90] While the concept has the potential to capture the necessary responses to the consequences of sustainability transition to various stakeholders as those described in *figure 1*, it typically focuses on the effects of the transition on jobs and workers. Such focus is, in part, justified given the history of the just transition movement. The concept is rooted in the advocacy for the creation of a superfund for workers affected by environmental policies in the 1990s. It is more specifically traced to Les Leopold and Brian Kohler, who in 1995 argued that "the real choice is not jobs or environment. It is both or neither".[91] Smith, however, makes the point that just transition now transcends the provision of a soft landing for workers, but also entails a "deliberate effort to plan for and invest in a transition to environmentally and socially sustainable jobs, sectors and economies".[92] While this broader conceptualization of just transition is preferable to the narrative focusing on providing a soft landing for workers losing their jobs, it is still economy-centric. Such framing, for example, fails to capture socio-cultural implications of the transition. One only needs to read Smith's report more closely before realizing that, like most just transition publications, it is also heavily 'job' focused. She, for example, notes that while workers, employers and government are collaborative partners in developing transitional plans, other actors like community organizations and civil society 'may' participate.[93] Hence, just transition could either be a bipartite process between unions and employers or a tripartite process (involving unions, employers, and the government).[94] I argue that this narrow approach does not only undersell just transition, but erroneously portrays 'job loss' as the most important inequity of sustainability transition.

[88] Tim Forsyth, "Climate Justice is not Just Ice" (2014) 54 Geoforum 230 at 231; Elizabeth Marino & Jesse Ribot, "Special Issue Introduction: Adding Insult to Injury: Climate Change and the Inequities of Climate Intervention" (2012) 22 Global Envtl Change 323 – 328.
[89] Edouard Morena et al, *Mapping Just Transition(s) to a Low-Carbon World* (United Nations Research Institute for Social Development, 2018) 4.
[90] Samantha Smith, "Just Transition: A Report for the OECD" (May 2017) Just Transition Centre, 2.
[91] Morena et al, *supra* note 89 at 7.
[92] Smith, *supra* note 90 at 3.
[93] *Ibid,* 4.
[94] *Ibid.*

A more expansive description of just transition is that it is "an economy-wide process that produces the plans, policies, and investments that lead to a future where all jobs are green and decent, emissions are at net zero, poverty is eradicated, and communities are thriving and resilient".[95] This definition represents just transition as a 'process'. An emphasis which raises the question of whether a 'just process' necessarily means a 'just end'. More importantly, what exactly does the 'just' in just transition mean? This will be explored further in chapter 2. For now, it is worth noting that just transition is not only about dealing with the negative effects of the transition, it also entails maximizing the positive effects for impacted communities, specifically the most vulnerable.[96] The International Trade Union Confederation (ITUC) argues that just transition must include investment in jobs, treating fossil fuel workers respectfully, retraining and redeploying them, social protection and human rights, investment in community renewal, etc.[97] As I will argue in chapter two, just transition fundamentally entails ecological and human wellbeing. While workers are one of the major constituents of the 'community', it is minimalistic to make them the centerpiece of the just transition discourse.

Figure 2 – The Dual Elements of the Just Transition

Ecological wellbeing + Human wellbeing = Just Transition

The jobs centric approach to just transition has also been dominant under the UNFCCC. While the areas of focus of the UNFCCC work programme on response measures are all essential elements of just transition, the term (just transition) itself was restricted to the 'workforce'. Also, the version of just transition which made it into the Paris Agreement is the "just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities".[98] In its technical paper on just transition, the UNFCCC notes the importance of carefully assessing the extent and direction of the impacts of climate mitigation and adaptation measures on the workforce.[99] Further to IPCC classification, the technical paper

[95] International Trade Union Confederation, "Just Transition – Where Are We Now and What's Next? – A Guide to National Policies and International Climate Governance" (2017) ITUC Climate Justice Frontline Briefing, 6. Elsewhere, it is described as "transition towards a low-carbon and climate-resilient economy, highlighting public policy needs and aiming to maximize benefits and minimise risks for workers and local communities in this transformation". Rebekka Popp et al, "How to Ensure a Just and Fast Transition to a Competitive Low-carbon Economy for the EU" (21 November 2018) THINK 2030 Science-Policy Solutions for a More Sustainable Europe, 7.
[96] ITUC, *ibid,* 6.
[97] *Ibid.*
[98] Paris Agreement, preamble.
[99] UNFCCC, *supra* note 35 at 12.

identifies mitigation options in five sectors – energy, transport, buildings, industry, human settlement, and agriculture, forestry and other land use (AFOLU), arguing that governments should consider the impacts of options on their national workforce.[100]

The UNFCCC identifies four quantitative impacts of climate policies on employment – job creation, job substitution, job elimination, and job transformation and redefinition, while qualitative impacts include adequate incomes, social protection, safe working conditions, respect for rights at work, and effective social dialogues.[101] The qualitative impacts mirror what the International Labour Organization describes as the pillars of the Decent Work Agenda.[102] It is widely agreed that more net new jobs will be created than lost if the energy sector were to be 'greened'.[103] The net gain regardless, it is important to pay attention to what has been described as the geographical (unavailability of new or replacement jobs in places where jobs are lost) and temporal (unavailability of new or replacement jobs when jobs are lost) disconnects.[104] Just transition cannot be simplified as a job creation, job substitution, job transformation or even a job elimination issue. The effects are wide and far-reaching. Recognizing the complexity of just transition, the UNFCCC proposes a six-element just transition framework entailing understanding the impacts of a climate change mitigation policy; early assessment of impacts of mitigation policy on the workforce; consultation and social dialogue; training and skills development; social protection and security; and post-assessment of just transition measures and their sustainability.[105] Relevant factors to consider under the early assessment theme include the structure of the economy (importance of sectors involved in the economy, scale of activities involved in emission reduction action), climate change mitigation priorities, the impact of regulations and policies, and the quality of information systems and availability of data required to undertake the assessment.

---

[100] *Ibid,* 12 – 14.
[101] *Ibid*, 15, 18.
[102] The four pillars of the Decent Work Agenda – social dialogue, social protection, rights at work, and employment. See ILO, *Guidelines for a Just Transition Towards Environmentally Sustainable Economies and Societies for All* (Geneva: ILO, 2016) 4.
[103] About 18 million net new jobs are projected to be created by 2030. This, however, varies by regions. While Africa and the Middle East will lose about 0.1% and 0.5% of their jobs respectively, the Americas (+3 million), Asia and the Pacific (+ 14 million), and Europe (+2 million) will gain jobs. Moustapha Gueye, "Environmental Change and Decent Work: Using Labour Policies for a Just Transition" (27 September 2018) Presentation at the African Region Awareness Creation Workshop to Maximize the Positive and Minimize the Negative Impacts of the Implementation of Climate Change Response Measures online: <https://unfccc.int/sites/default/files/resource/day%202_session%209_ILO.pdf>.
[104] UNFCCC, *supra* note 35 at 18.
[105] *Ibid*, 32.

Just Transition initiatives are often put in the domain of governments and public policy. Take for example, the ILO Guidelines for Just Transition which are silent on the role that should be played by industry and community in achieving a just transition.[106] Recent studies have, however, attempted to plug this gap. Focusing on the involvement of investors, Robins et al note that investors should play an active role in just transition because of their commitment to integrate environmental, social and governance factors into decision making, their soft-law obligations to implement human rights and international labour standards, alignment of portfolios to zero-carbon transition, etc.[107] They argue that incorporating just transition into investment practice requires the integration of environmental and social issues when designing and making climate-related investment decisions.[108] To facilitate this integration, they recommend, among other things, an assessment of the social performance of climate-exposed assets (including the assessment of employee engagement, skills development, occupational health and safety, social protection, labour standards, social dialogue, supply chain management, and community relations).[109]

Although many studies on just transition, in different contexts, reference the importance of assessing the social effects of sustainability transition,[110] only a few studies have been conducted on how such assessment should be conducted. One of the most comprehensive studies on the subject is the ILO training guidebook on measuring and modeling the social and employment outcomes of climate and sustainable development policies.[111] This study is, however, heavily quantitative in its methodology (emphasizing the use of statistics, modelling and macroeconomic

[106] The ILO identifies nine policy areas to address "environmental, economic and social sustainability simultaneously": macroeconomic and growth policies, industrial and sectoral policies, enterprise policies, skills development, occupational safety and health, social protection, active labour market policies, rights, and social dialogues and tripartism. See ILO, *supra* note 102 at 7.

[107] Nick Robins et al, "Investing in a Just Transition: Why Investors Need to Integrate a Social Dimension into their Climate Strategies and How They Could Take Action" (June 2018) Centre for Climate Change Economics and Policy, 23 – 27.

[108] *Ibid,* 27.

[109] *Ibid,* 31. See also David Wei, "Climate and the Just Transition: The Business Case for Action" (2018) BSR Report, 16.

[110] Poschen argues that "one of the key ingredients for successful policy-making has been ex-ante assessment of the expected impact of specific greening policy measures". See Peter Poshen, *Decent Work, Green Jobs and the Sustainable Economy: Solutions for Climate change and Sustainable Development* (Sheffield: Greenleaf Publishing, 2015) 121.

[111] Green Jobs Assessment Institutions Network, *How to Measure and Model Social and Employment Outcomes of Climate and Sustainable Development Policies* (Geneva: ILO, 2017).

analyses), labour centric and focuses only on transition policies (strategic assessment).[112] These features inform the kind of questions the training guidebook seeks to answer. For instance, it states that the assessment relevant to policy design should focus on three types of change – the volume and composition of jobs across economic sectors, the quality of jobs, and the level and distribution of income.[113] While these are important factors to consider, they in no way provide a full picture of the social impacts of the transition.

Like the ILO training guidebook, the UNFCCC Guidance on assessing the impact of the implementation of response measures focused on quantitative assessment and modelling tools, with sparse reference to qualitative tools.[114] The Guidance reflects some of the emphases of the UNFCCC's approach to response measures (and just transition). The Guidance focuses on the assessment of demand-side mitigation initiatives, emphasises the assessment of the impacts of demand-side response measures within a country (an implementing country) on such country or another country (reporting country), and deals primarily with the assessment of policies at the macro level. The Guidance, however, neither caters to supply-side mitigation initiatives nor distinguishes between sectors. Consequentially, fossil-fuel sector specific issues like the carbon budget and global fossil fuel distribution and supply do not feature in response measures discourse or impact assessment models.

More importantly, while both the ILO Guidebook and the UNFCCC Guidance have dealt extensively with the quantitative and (to some extent) qualitative tools of just transition and response measures impact assessment, there is no known work which has considered just transition within the more encompassing practice of impact assessment and its various modes and lenses. This trend is not dissimilar to the incorporation of climate change in impact assessment, which also began with the use of impact assessment tools.[115] Over time, the need to embed climate change more within the practice of impact assessment has become more evident, and indeed, there is no shortage of new scholarship on the subject. Scholarship on the incorporation of climate change

[112] The recognized assessment methods under the ILO guidebook include inventories, statistical surveys, input-output models, social accounting matrices, macroeconomic models (optimization models, econometric models, and system models). *Ibid*, 34. See also Poshen*, supra* note 110 at 122.
[113] *Ibid*, 29.
[114] UNFCCC, "Guidance to Assist Developing Country Parties to Assess the Impact of the Implementation of Response Measures, Including Guidance on Modelling Tools: Technical Paper by the Secretariat" FCCC/TP/2016/4.
[115] See for example T.R. Carter et al, *IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptations* (University College London and National Institute for Environmental Studies, 1994).

into impact assessment is, however, largely silent on equity and justice issues. Byer et al correctly note that climate change is, among other things, an equity issue and proceeded to note that the "different socio-cultural and socio-economic vulnerabilities and adaptive capacities within societal groups is an important component of IA".[116] The reference to vulnerabilities and adaptive capacities is, however, in the context of climate resilience. According to Gibson et al:

> Guidance for project and program assessments based on Canada's commitment made under the Paris Agreement needs to be developed in a broader context of climate justice, which implies respect for human rights, including the rights of Indigenous peoples, and be guided by the precautionary principle".[117]

While Gibson et al neither exposited on what climate change impact assessment in the broader context of climate justice will entail nor extensively address the issue of just transition, their position is nevertheless valid and consistent with the objectives of this research. In chapters two and three, I reflect on how just transition is a tributary of climate justice and how human rights are vital to a just transition analysis. Elsewhere, Burdge argues that the social impacts of climate change on people must be the central focus of a truly integrated impact assessment of the effects of climate change.[118] He notes that such assessment "will need to address concern over risk in a manner that acknowledges the legitimacy of public attitudes towards risk".[119] While Burdge did not make this argument in the just transition context, they apply to just transition concerns with equal force.

The research questions posed here are designed to address the existing gaps identified above, including the absence of just transition consideration in climate change impact assessment scholarship, the lack of attention to fossil-fuel specific supply-side just transition considerations in works on the impact of response measures, and the non-consideration of the effects of global supply-side concerns on the just transition of FFDEs. This research also addresses the deficit in legal scholarship on just transition and impact assessment. Although there are very few legal

---

[116] Byer P., et al, "Climate Change in Impact Assessment: International Best Practice Principles" (2012) 8 IAIA Special Publication Series, 3.
[117] Robert Gibson et al, "The Key Components and Provisions That Need to be Incorporated into Assessment Legislation to Ensure that Assessed Undertakings Help Meet Canadian Climate Change Commitments and Duties" (2018) The Paris to Project Research Initiative Discussion Paper, 10.
[118] Rabel Burdge, "The Focus of Impact Assessment (and IAIA) Must Now Shift to Global Climate Change" (2008) 28 Env Impact Assessment Rev 618 at 619.
[119] *Ibid,* 620.

scholarships on just transition,[120] there is no known work exploring the effects of the principles of international climate change law and IA legal instruments on just transition.

1.4 Research Methodology

Research methodology, as used here, entails theory, approach, and method. While theory helps make apparent a researcher's worldview, underlying presumptions, definitional boundaries, and preferred justifications,[121] approach provides a research frame through which the research is conducted, and method provides the tools for implementing research design.[122] I have focused on my research theory and approach below. On method, this work is a wholly qualitative and desk-based research. I draw extensively from scholarly works, grey studies, laws, policies, and judicial decisions on impact assessment, climate change, and just transition. While I have focused on the theories of transformation and rational discourse below as providing the language and theoretical justifications for the worldview that inform the arguments made in this work, the substantive contributions of this thesis are premised on the theories of justice, particularly Amartya Sen's capability approach to justice. I have engaged these theories of justice in detail in chapter two. As shown below, this thesis primarily employs a socio-legal approach. It engages 'law' as a nested concept; a reflection of socio-ecological realities. The analysis of laws and case laws as an end in themselves is not the focus of this work. Rather, I have taken a more instrumental approach to statutory and case law, 'using' law and the realities it compels as a factual setting for the development and appraisal of concepts and frameworks. This is addressed further below.

A. Theories of Transformation and Rational Discourse

Transformation is one of the most recurrent themes in this work. The term has been equated to words like 'change', 'transition' and 'turbulence'. Concepts described as the 'descriptors of dynamism … (which) can be … differentiated from those that depict the statics of continuity'.[123] While there is no single theory of transformation, attempts have been made to develop theories of change depending on the context. Common contexts include how organizations and communities

[120] See generally David Doorey, "Just Transitions Law: Putting Labour Law to Work on Climate Change" (2017) 30:2 Journal of Envl L & Practice 201 – 239; Ann Eisenberg, "Just Transitions" (2019) 92 Southern California L Rev 273 – 330.

[121] Richard Devlin, "The Charter and Anglophone Legal Theory" (1997 - 1998) 4:1 Rev of Const Stud 19 at 22.

[122] See generally, R. Kothari, *Research Methodology: Methods and Techniques, 2nd edn* (New Delhi: New Age, 2004)

[123] James Rosenau, *Turbulence in World Politics: A Theory of Change and Continuity* (Princeton: Princeton University Press, 1990) 68 – 69. Transformation, change, transition, and turbulence, except where particularly differentiated are used interchangeably here.

manage change,[124] paths and responses to technological innovation,[125] international development,[126] and transition of post-communist societies.[127] Most theories of change and transformation recognize the necessity of disruptions. As pointed out by Farazmand, systems, chaos, and transformation theories can be traced to the works on dialectical discourse theory of early philosophers like Plato, Aristotle and Abu-Ali Sina.[128] He notes that the features of the dialectical discourse theory include "the interrelationship between … dialectically conflicting parts that inherently contradict each other, and that systems tend to protect their equilibrium at any cost and crush forces of system challenge".[129] While chaos and disorder are recognized as features of change and transformation,[130] the need to manage chaos and deliberately seek to eliminate its destructive effects have equally been emphasised. Farazmand regards the management of transformation in such a way that its positives are maximized, and its negatives minimized or eliminated as a fundamental question for transformation theorists to answer.[131]

---

[124] See generally Organizational Research Services, "Theory of Change: A Practical Tool for Action, Results and Learning" (2004) online: < https://www.aecf.org/m/resourcedoc/aecf-theoryofchange-2004.pdf>; Andrea Anderson, "The Community Builder's Approach to Theory of Change: A Practical Guide to Theory Development" online: <https://assets.aspeninstitute.org/content/uploads/files/content/docs/rcc/rcccommbuildersapproach.pdf>; Patricia Rogers, *Methodological Briefs: Impact Evaluation No. 2, Theory of Change* (Florence: UNICEF Office of Research, 2014).

[125] Frank Geels & Johan Schot, "The Dynamics of Transitions: A Socio-Technical Perspective" in John Grin et al eds., *Transitions to Sustainable Development*, (New York: Routledge, 2010) 9 - 102; Frank Geels & Rene Kemp, "The Multi-Level Perspective as a New Perspective for Studying Socio-Technical Transitions" in Frank Geels et al, eds, *Automobility in Transition? A socio-Technical Analysis of Sustainable Transport* (New York: Routledge, 2012) 49 – 82; Ibo Van de Poel, "The Transformation of Technological Regimes" (2003) 32 Research Policy 49 – 68; Hugo Van Driel & Johan Schot, "Radical Innovation as a Multilevel Process: Introducing Floating Grain Elevators in the Port of Rotterdam" (2005) 46:1 Technology and Culture 51 – 76.

[126] Isabel Vogel, "Review of the Use of the 'Theory of Change' in International Development" (2012) UK Department of International Development Review Report; Danielle Stein, "Understanding Theory of Change in International Development" (2012) JSRP Paper 1; Craig Valters, "Theories of Change in International Development: Communication, Learning, or Accountability" (2014) JSRP Paper 17.

[127] Colin Sparks, "Theories of Transition", (2010) 5:3 *Journalism Si Comunicare* 5 - 18; Terry Lynn Karl & Philippe Schmitter, "From an Iron Curtain to a Paper Curtain: Grounding Transitologists or Students of Postcommunism" (1995) 54:4 Slavic Review 965 – 978; Valerie Brunce, "Paper Curtains and Paper Tigers" (1995) 54:4 Slavic Review 979 – 987.

[128] Ali Farazmand, "Chaos and Transformation Theories: A Theoretical Analysis with Implications for Organization Theory and Public Management" (2003) 3 Public Organization Review 339 at 343. Farazmand, however distinguished systems theory from chaos and transformation theories, noting that while the former is concerned with "stability and equilibrium", the latter "are characterized by chaotic changes that lead to order and vice versa". *Ibid* at 351.

[129] *Ibid*.

[130] Loye and Eisler describes transformation as being "a process out of order, through which order gives way to chaos and chaos leads to order David Loye & Riane Eisler, "Chaos and Transformation: Implications of Nonequilibrium Theory for Social Science and Society" (1987) 32:1 Behavioural Science 53 at 58.

[131] Farazmand, *supra* note 128 at 348.

James Rosenau, in his work, attempts to answer Farazmand's question. Rosenau's central thesis is that "the impact of modern technologies and the other many sources that are rendering the world ever more interdependent, the bifurcated structures and the more skillful citizens … (have) fostered such a profound transformation in world politics that the lessons of history may no longer be very helpful".[132] This highlights the emphasis on 'technology' as a critical piece of the transformation puzzle in scholarly works on change and transformation. For example, referencing Charles Perrow, Frazmand notes that "(global) crisis is associated with increased technology and modern society's drive to change nature and to build more things "that crash, burn and explode"".[133] Indeed, attempting to explain the drivers and implications of the industrial revolution, Polanyi argues that the nature of the market economy institution which characterized the industrial revolution cannot be fully grasped unless the impact of the machine on a commercial society is realized. In his words, "once elaborate machines and plant were used for production in a commercial society, the idea of a self-regulating market was bound to take shape".[134]

While acknowledging, like Sina, that "change has always been at work" in global affairs, Rosenau attempted to distinguish between "commonplace changes" and 'profound transformations'.[135] He identified this difference as 'parametric change'.[136] According to him, "only when the basic parameters of world politics, those boundary constraints that shape and confine the fluctuations of its variables, are engulfed by high complexity and high dynamism is turbulence considered to have set in".[137] Rosenau identified three genres of change theories. At one extreme are narratives which stress "the openness of social systems to redirection and transformation" (change), on the other end is perception "of history as a seamless web in which there are no breaking points" (continuity).[138] Rather than aligning with either side of the aisle, Rosenau argued for a third conception which moves beyond "nostalgia over the past and myopia with respect to the

[132] Rosenau further noted that "Global life may have entered a period of turbulence the likes of which it has not known for three hundred years and the outcomes of which are still far from clear". *Supra* note 123 at 5.
[133] Charles Perrow, *Complex Organizations: A Critical Essay,* 2nd Edn (Glenview, Illinois: 1986) 9 cited in Farazmand, *supra* note 128 at 341.
[134] Karl Polanyi, *The Great Transformation* (Beacon Hill, Boston: Beacon Press, 1965) 40.
[135] *Ibid*, 9 – 10.
[136] *Ibid*, 10.
[137] *Ibid.* This is similar to the point made in footnote 15 on the difference between micro-cosmic and macro-cosmic disruptions. Rosenau's parametric change refers to macro-cosmic disruptions. Disruption at the sub-structural level.
[138] He argued that "what is missing from the two polar perspectives on change is any differentiation as to its nature. Both present too broad a conception of where, when and how change occurs. Neither specifies a time horizon or a systemic perspective from which analysis can proceed". Rosenau, *supra* note 123 at 72.

present".[139] This third conception is informed by assumptions including that: the interpretation of continuity and change depends on the systemic and time perspectives from which they are assessed; the longer the time span and the more encompassing the system, the greater the probability that the statics of continuity will prevail over the dynamics of change; and for a system to experience enduring change, all its primary parameters must be affected.[140] Drawing from these assumptions, Rosenau defined global turbulence as "a worldwide state of affairs in which the interconnections that sustain the primary parameters of world politics are marked by extensive complexity and variability".[141] Rosenau's theory helps in unearthing important nuances of change. For example, his position that systems and perspectives inform the interpretation of continuity and change does away with the assumption that the variation of *status quo*, even in the context of sustainability, is automatically desirable.

Rosenau identifies orientational, structural and relational parameters as the primary parameters which must undergo simultaneous and interactive change for transformation to occur.[142] According to him, profound transformations will not "overtake and redirect a system" unless the dynamics driving change "engulf and realign all its parameters in such a way that thereafter they settle into altered patterns".[143] The primary parameters are further grouped into 'micro' (orientational parameter) and 'macro' (structural and relational parameters) clusters.[144] I have represented the features of the three parameters and clusters in table 3. Rosenau's parameters and clusters are important ideas in transformation theory, particularly, his theorization on the relationship between the micro and macro clusters. He posits that if change is not accepted or hostilely received at the micro-level, significant, far-reaching, and sustained transformations will not occur.[145] If there are no corresponding alterations at both the macro and micro levels, systems will not be disturbed, and parameters, will in time, settle back into their previous patterns. [146]

[139] *Ibid*, 76.
[140] *Ibid*, 76 – 78.
[141] *Ibid*, 78.
[142] *Ibid* at 11. Rosenau defines parameters as "those enduring human circumstances of the system's form … that are systemwide in scope and set the context for interaction among its diverse collectivities and individuals". *Ibid,* 78 – 79.
[143] *Ibid*, 82.
[144] *Ibid*, 89.
[145] *Ibid,* 86.
[146] *Ibid*, 86 – 87.

Table 3 – Parameters of Transformation

PARAMETERS	CLUSTER	DESCRIPTIONS
Orientational or Skill	Micro	Analytic skills, compliance habits, legitimacy sentiments, cathectic capacities, predispositions, norms, attitudes.
Structural	Macro	Rules of governance, informal regimes, formal alliances, legal conventions, other arrangements through which the issues contested on the global stage are processed and managed by states, sub-national groups or supra-national organizations (macro collectivities)
Relational	Macro	Hierarchical authority relations which sustain macro collectivities (e.g., pluralistic and class structures in national systems and balance of power and dependency patterns in international systems).

Rosenau's postulations affirm some of the central assumptions underpinning this research. The same way a house is unlikely to stand without a strong foundation, meaningful change can neither occur nor be sustained without catering to the concerns and fears of actors at the micro-level. And as a bigger and complex physical structure demands that even more attention be paid to the building's foundation, an ultra-complex challenge like climate change induced transition demands that even more attention be paid to the micro-level. Just transition re-centers the micro-level. The argument here is not for a departure from macro-level interventions, but that the micro-level is equally important. As Rosenau argues, transformation becomes a pipedream, when either is neglected.

But Rosenau's parameters do not address the essentials of transformation completely. Temporality is also an important element. Polanyi theorized that "the time-rate of change compared with the time-rate of adjustment will decide what is to be regarded as the net-effect of the change".[147] Polanyi advanced this theory in response to economic theory's long-term reward argument. This captures one of the key arguments of proponents of quick deep decarbonization. The idea is that

[147] Polanyi, *supra* note 134 at 38.

while such decarbonization will be expensive, the long-term benefits are more.[148] Contrary to the 'long-run argument', Polanyi argues that "if the immediate effect of a change is deleterious, then, until proved to the contrary, the final effect is deleterious".[149] As an example, he references the establishment of the cotton industry in England, which was a vehicle for the industrial revolution, the change from arable land to pasture, and its attendant enclosure movement (communal lands were enclosed and deeded by land users). Polanyi argued that:

> Yet, but for the consistently maintained policy of the Tudor and early Stuart statemen, the rate of that progress might have been ruinous and have turned the process itself into a degenerative instead of a constructive event. For upon this rate, mainly, depended whether the dispossessed could adjust themselves to changed conditions without fatally damaging their substance, human and economic, physical and moral; whether they would find new employment in the fields of opportunity indirectly connected with the change; and whether the effects of increased imports induced by increased exports would enable those who lost their employment through the change to find new sources of sustenance.[150]

Polanyi's argument is that transformation could be deemed positive to the extent to which it permits adjustment. Put differently, 'change' and 'adjustment' must go side-by-side. This should not be interpreted as meaning that change must necessarily be elongated to allow for adjustment. Rather, there should be interventions for adjustment to match change; drastic change requires drastic adjustment-interventions which must necessarily transcend job substitution and fund transfers. The collapse of the cod stock in Canada's east coast due to the government's 'overnight' moratorium, the belatedness of ameliorative interventions, and the resultant socio-ecological impacts provides a case in point.[151]

---

[148] This appears to be the underpinning argument of discount factor methodology in economics. Stern defined discount rate as "the proportionate rate of fall of the value of the numeraire used in the policy evaluation". Social Discount Factor, with which the future benefit of a project is compared to its immediate cost, is also a derivative of this argument. See generally Nicholas Stern, "The Economics of Climate Change" (2008) 98:2 American Economic Review: Papers and Proceedings 1- 37.

[149] *Ibid* at 37 – 38.

[150] *Ibid* at 37. This was compared to the Poor Law Reform of 1834 which abolished the 'right to live' and withdrew outdoor relief. Polanyi noted that "never … in all modern history has a more ruthless act of social reform been perpetrated … the bulk of the complaints were really due to the abruptness with which the institution of old standing was uprooted, and a radical transformation rushed into effect". *Ibid* at 82.

[151] Following the severe depletion of cod stock in Canada's east coast, the Canadian government announced a cod fishery moratorium in 1992. The Canadian province of Newfoundland and Labrador was the most affected province in the country with the moratorium halting about 500 years of fishing and resulting in 30,000 people losing their jobs. To support the transition, the Northern Cod Adjustment and Recovery Program (NCARP) was announced the same year. The NCARP funded initiatives including income replacement, licence retirement, early retirement and vessel support. In years thereafter, other restructuring and transition programs have been rolled out including the Atlantic Groundfish Adjustment Program (1993), the Atlantic Groundfish Strategy (1994), Canadian Fisheries Adjustment and

Erik Wright provides another vital layer to the theories of transformation. He identifies the attainment of social empowerment within economic structures in capitalist societies considering that such movement will threaten the "interests of powerful actors who benefit most from capitalist structures" to be the fundamental problem for a theory of transformation.[152] To get around this 'problem', he proposes social reproduction, gaps and contradictions of reproduction, trajectories of unintended social change, and transformative strategies as the four interlinked components which constitute a fully developed theory of social transformation.[153] Wright argues that while oppressive structures are actively and passively socially reproduced, there are gaps and contradictions which can be exploited through change generating processes and collective strategies of transformation to forestall such social reproduction. Like Rosenau, Wright points out that historical large-scale social change is often the product of the cumulative unintended by-products of the actions of people and the cumulative intended effects of conscious projects of social change.[154]

Wright envisions three possible pathways of transformation - ruptural, interstitial, and symbiotic.[155] Ruptural transformation envisions a sharp break from the status quo, and seeks to reform existing structures and institutions through direct confrontation and struggles which create

---

Restructuring Program (1998), and the Pacific Fisheries Adjustment and Restructuring (1998). They entailed initiatives including short-term job creation, community development, counselling, training, income support, lump sum cash payout, support for tourism and provision of recreational fisheries loans. These programs have, however, had minimal success. Gor Ruseski of Fisheries and Oceans, Canada in his report on the cod fisheries adjustment experience identified various flaws that bedevilled the cod restructuring including that the moratorium decision was taken in the last minute, political and social realities were not considered in designing retraining programs, the cash transfer and income support program failed to address the longer-term challenge of preparing individuals and communities for alterative employment, failed to break the dependence on fishery and was in fact, a disincentive to labour market participation. Further, there was considerable migration from fishing communities, with some Newfoundland communities losing up to 20% of their populations, made up primarily of persons in the 18 – 35 age group. See Gor Ruseski, *Restructuring and Adjustment Policy in Canada's Fisheries Labour Market Programming and Other measures: The Learning Experience (1992 - 2003)*, Expert Meeting on the Human Side of Fisheries Adjustment, Directorate for Food, Agriculture, Fisheries, Fisheries Committee, Organization for Economic Cooperation and Development, AGR/FI/HAS (2006)8, 4 - 9. Worse still, almost three decades after the moratorium, there has been no progress in the recovery of the cod stock. See Trevor Taylor, "Twenty-seven Years After the Cod collapse, We Still Haven't Learned our Lesson", *Oceans North* (4 June 2019) online: <https://oceansnorth.org/en/blog/2019/07/twenty-seven-years-after-the-cod-collapse-we-still-havent-learned-our-lesson/>. See also Heritage Newfoundland and Labrador, "Economic Impacts of the Cod Moratorium", online: <https://www.heritage.nf.ca/articles/economy/moratorium-impacts.php>.

[152] Erik Olin Wright, *Envisioning Real Utopias* (London: Verson, 2010) 273.

[153] *Ibid*.

[154] *Ibid*, 298.

[155] *Ibid*, 303.

'radical disjuncture' in existing institutional structure.[156] Interstitial transformation targets the margins of 'capitalist societies' and builds deeply embedded counter-hegemonic institutions where they are least expected (e.g. initiatives of community mobilizers).[157] Symbiotic transformation is a more collaborative approach where transformative initiatives are at the same time socially emancipatory and status-quo strengthening.[158] It is 'ruptural' change that Polanyi seems to be against. Rather than choosing one over the other, effective transformation entails a blend of these pathways. The challenge might, however, be figuring out the right formula of combination. Or even when to use one without the other. As pointed out by Wright, the 'Achilles heel' of many forms of emancipation movements is that "activists become deeply committed to one or another of these strategic visions, seeing them as being universally valid. As a result, considerable energy is expended fighting against the rejected strategic models".[159] Sally Engle Merry, in the context of resistance and the law, explored a similar concept as Wright's pathways. She referred to three expressions of resistance: resistance against the law (ruptural), resistance by means of law (symbiotic), and resistance which redefines the meaning of law (interstitial).[160] As noted above, Engle Merry also concluded that "all … contribute to the reconstitution of the sociocultural world in some emancipatory ways".[161]

The theories of rational discourse, communicative action, deliberative system, and transformative learning deal more frontally with the issue of participation. Meaningful public participation is equally a central theme in just transition discourse. Habermas, perhaps more than other theorists, has highlighted the relevance of participation in transformation discourse. He makes a case for a

[156] *Ibid.* Wright's ruptural change is similar to Farazmand's "shaking and cracking state", which he described thus: "(The state) can happen in two ways: one is by design in order to produce chaos and create induced change, and strain out what is not needed or desired … Another … is when 'shake-and-crack' occurs naturally and as a result of natural evolution in nature". See *supra* note 128 at 352 – 353.
[157] *Ibid*, 305.
[158] *Ibid.*
[159] Wright, *supra* note 152 at 307.
[160] Sally Engle Merry, "Resistance and the Cultural Power of Law" (1995) 29:1 Law & Society Review 11 at 16. Engle Merry's example of symbiotic transformation (resistance) is instructive. She told the story of the ('unofficial') People's International Tribunal, Hawai'i in 1993 where the United States was put on trial for contravening both native laws and international treaties. She pointed out that, ironically, "the challenge to the legal takeover of Hawai'i was couched in terms of the same law that was used to seize land and water resources 140 years earlier". Hence, "… the tribunal reinforced legal hegemony at the same time as it resisted particular relations of power through the law. The tribunal appropriated legal forms and symbols in an effort to harness the power and legitimacy of law in a movement if resistance". *Ibid*, 21.
[161] *Ibid.*

democratic system "which breaks with a holistic model of society centred in the state".[162] This decentered society entails "a proceduralized popular sovereignty and a political system tied into the peripheral networks of the political public sphere (sphere of informally developed public opinions)".[163] Emphasising the utility of discourse in such society, Habermas argues for the need to reach understanding through "democratic procedures or in the communicative network of the public spheres".[164] The public sphere operates through inclusive and public argumentative deliberations (debate) which are free of external and internal coercions subject to the "presuppositions of communication and rules of argumentation", which generally aim at "rationally motivated agreement".[165] As noted by Mansbridge, the idea of 'reason' (ratio) and not 'will' (voluntas) being the ideal modus of public discourse, is central to Habermas's theory on the structural transformation of the public sphere (STPS).[166] In Habermas's words, "public debate was supposed to transform *voluntas* into a *ratio* that in the public competition of private arguments came into being as the consensus about what was practically necessary in the interest of all".[167]

Habermas, however, appears to have undertheorized the management of situations where generalizable interests are absent or where individuals cannot come to a common understanding of what is 'good'.[168] Mansbridge's later works on recursive representation and deliberative systems are relevant here. Mansbridge, in the main, argues that given the growing need for state coercion in an increasingly interdependent world characterized by several collective action/free rider problems, to be effective, state coercion must be perceived to be legitimate, and such legitimacy

---

[162] Jurgen Habermas (translated by William Rehg), *Between Facts and Norms: Contributions to a Discourse Theory of Law and Democracy* (Cambridge: The MIT Press, 1996) 288.
[163] *Ibid*, 298.
[164] *Ibid*, 299.
[165] Joshua Cohen, "Deliberation and Democratic Legitimacy" in A. Hamlin and B. Pettit, eds, *The Good Polity* (Oxford, 1989) 22.
[166] Jane Mansbridge, "Conflict and Commonality in Habermas's Structural Transformation of the Public Sphere" (2012) 40:6 Political Theory 789 at 790 – 791.
[167] Jurgen Habermas (translated by Thomas Burger), *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society* (Cambridge: The MIT Press, 1991) 83. Referencing Robert Dahl, Habermas in 'Facts and Norms', identified features of a procedure for reaching decisions on the 'interest of all': inclusive of all affected, equally distributed and effective opportunities to participate, equal right to vote on decisions, equal right to choose topics and control agenda, and a situation that allows all the participant to develop an articulate understanding of the contested interests. See R.A. Dahl, *Democracy and its Critics* (New Havel, 1989) 307.
[168] Mansbridge, however, points out that Habermas's thoughts on STPS evolved over the years, subsequently allowing for the possibility of 'strategic action' in certain cases where there is no "generalizable interest or clear priority of someone value". Here, he advocated for negotiation guided by prior agreement on discourse principle which grounds "procedures that regulate bargaining from the standpoint of fairness". See Mansbridge, *supra* note 166 at 794 – 795.

can be achieved through recursive communication between represented and representative.[169] Recursive communication includes back and forth communication between elected representatives and their constituents; administrators and to whom they are applying the law; societal representatives, elected representatives, administrators and citizens; legislatures, administrators, and the societal realm.[170] This system will enable citizens to participate in the democratic process, outside of the electoral system, and engage in a two-way learning and facilitation process side-by-side with their representatives.[171] Exemplifying such system, Mansbridge referenced an experiment where social media discussion groups peopled by randomly-selected constituents deliberated recursively on issues with their representative.[172]

Even when individuals share common objectives, there could be disagreement about how to achieve the common goals. Recognizing and catering to such differences is vital to effective communication. This is the thrust of Mansbridge et al's deliberative systemic approach. A deliberative system is a dynamic and complex system of interdependent parts where parts of decision making (judgment) are divided to reflect the factual contingencies, competing normative requirements, conflicting interests, and concerted and opposing wills among large numbers of citizens (people).[173] Such system "takes into account not only a particular forum or innovation but also the role of that forum or innovation in the larger deliberative system, allowing us to gauge its democratic weaknesses and strengths within the larger dynamic of groups and levels".[174] Mansbridge et al recognize that the functions of a deliberative system (epistemic, ethical and democratic functions) need not be fully realized in the parts; however, the complementarity and

[169] *Ibid* at 2 – 4.
[170] *Ibid* at 6.
[171] *Ibid*, 20.
[172] *Ibid,* 13. She noted that "…95% of those who participated in a deliberative session like this said they considered such sessions "very valuable to our democracy" and wanted to repeat the experience with other issues. Most participants in sessions like these also talk about the session later with family members or friends, including those who disagreed with them on the issue, this spreading the communication. By using the internet this way, a representative even in a nation as large as the US could be in recursive communicative touch with a third of his or her voting-eligible constituents every six years". *Ibid,* 13 – 14. See also Elinor Ostrom, "A Behavioural Approach to the Rational Choice Theory of Collective Action" (1998) 92:1 The American Political Science Review 1 at 6 – 7.
[173] *Ibid*, 4 – 5.
[174] *Ibid*, 6. Such systems have four main arenas: the binding decisions of the state; activities directly related to preparing for those binding decisions; informal talk related to those binding decisions; and arenas of formal or informal talk that are not intended for binding decisions by the state. There are also nodes of the deliberative system including multinational corporations, international institutions, epistemic communities, etc. *Ibid*, 9, 10.

balance of the various parts contribute to the overall quality of the whole.[175] The smooth working of the system is, however, dependent on "high quality deliberation".[176] An interesting feature of this approach is its potential to "draw from the virtues of … individually deliberatively deficient devices but guard in various ways against their vices".[177]

To achieve 'high quality deliberation', Mansbridge et al emphasise fact-based engagement, mutual respect, and inclusivity based on equality.[178] These principles are foundational to transformative learning, a theoretical orientation which emphasises open-mindedness, empathetic listening, bracketed premature judgment, and search for common ground.[179] Importantly, transformative learning provides tools to address deep-seated biases against transformation. Mezirow describes it as learning that transforms problematic frames of reference (meaning schemes and perspectives) to make them more inclusive, discriminating, open, reflective, and emotionally able to change".[180] Critical reflection and rational discourse are two key tools used for transformative learning.[181] Critical reflection begins with problem posing and ends with action taking.[182] Rational discourse is like scaled-up critical reflection. It entails dialogue (communicative action) through which beliefs, feelings and values are assessed by reasoning, evidence weighing (validity testing) and argumentation.[183] Here, content, premise, and process of discourse matter. Beyond what another says, is "what it means to the speaker and why he or she talks about it".[184] The focus of transformative learning on helping adults to reconsider assimilated beliefs and values is very

[175] For example, while experts are a critical part of the decision-making process and are of considerable epistemic value, they are (not inclusive) less democratic and might be disrespectful (disdainful) of non-experts. They might also foster citizen ignorance. Systemically, however, a systemic approach helps to bring to the fore the "knowledge of disadvantaged and subordinate groups, at participatory innovations designed to make citizens into experts" and provide "agents with the capacity to translate expert conclusions into recommendations that citizens can understand". *Ibid*, 15.
[176] *Ibid*, 13. Rendered differently, "one virtue of deliberative system is that failures in one institution can be compensated for in another part". *Ibid*, 22.
[177] As examples, Mansbridge et al referred to the partisan heckling at the British House of Commons, low deliberative quality reportage of politically partisan media and close-minded activism of social movements. Although with apparent flaws, each makes important contributions to the decision-making process. The first helps expose flawed government reasoning, the second brings out information that might not be covered by supposed 'non-partisan' platforms, and the third helps generate counter-hegemonic ideas. *Ibid*, 6 – 7.
[178] *Ibid*, 11 – 13.
[179] Jack Mezirow, "Transformative Learning as Discourse" (2003) 1:1 Journal of Transformative Education 58 at 60
[180] *Ibid*, 58.
[181] According to Mezirow, "reflection is the critical dynamic in intentional learning, problem solving, and validity testing through rational discourse". Jack Mezirow, *Transformative Dimensions of Adult Learning* (San Francisco: Jossey Bass, 1991) 99.
[182] *Ibid*, 108.
[183] See Mezirow, *supra* note 179 at 59.
[184] *Ibid*, 60.

instructive for the transition of FFDEs, more so given the antagonism which welcomes pro-climate initiatives in such jurisdictions.

The theories of transformation and rational discourse, while diverse, provide a single narrative. While Rosenau, Polanyi and Wright help describe the fundamentals of what transformation should be, Habermas, Mansbridge, and Mezirow articulate a participation-centric framework for getting there. Taken together, a theory of transformation emerges - effective, equitable, legitimate, and long-lasting transformation is contingent on the extent to which the micro-level participates in the design and implementation of transformation policies and micro level concerns are catered to at the macro level. While this attempt to synthesize the various theories could be impugned at different levels, a key criticism is the lack of clarity surrounding the delineation of what constitutes the micro level. One answer to this criticism is to employ 'vulnerability' as a tool for determining not just the constituents of the 'micro level', but also constituents that should be prioritized. In the just transition context, while the various stakeholders in *figure 1* might be affected by the sustainability transition, individuals and communities who will be affected the most become the most important at the micro level. In all, the above theories provide critical lenses for this research and recourse will be made to their arguments and assumptions throughout this work.

B. Research Approaches

i. Socio-legal Approach

Menkel-Meadow describes socio-legal research as the multidisciplinary study of law and legal institutions.[185] She argues that "the best of socio-legal interdisciplinary work provides theories, concepts, testable hypotheses and robust empirical findings to understand the interaction of laws, legal actors … and legal institutions with the people and other institutions that are affected by law".[186] Similarly, Graham et al note that "the tradition of socio-legal research … describes, analyses, and even seeks to intervene in and 'shape' the material dimensions of existence".[187] In this thesis, I design and propose frameworks and concepts for a better understanding of socio-ecological phenomena; with potential implications for the reform of established legal orders or the creation of new ones. Where relevant, I consider the implications of relevant legal instruments and

[185] Carrie Menkel-Meadow, "Uses and Abuses of Socio-Legal Studies" in Naomi Creutzfeldt et al eds, *Routledge Handbook of Socio-legal Theory and Methods* (London: Routledge, 2019) 35, 39.
[186] *Ibid.*
[187] Nicole Graham et al, "Broadening Law's Context: Materiality in Socio-Legal Research" (2017) 26:4 Griffith Law Review 480 at 485.

judicial decisions on climate change governance, just transition and impact assessment. I agree with Webley that the 'socio' in 'socio-legal research' refers to the societal context, while 'legal' is more broadly defined by the text of the law.[188] While the societal context of this work ranges from the global to communities and individuals, I construe 'legal' as entailing both conventional and non-conventional normative and prescriptive orders, including international frameworks, legislative instruments, cultural norms, and organizational policies. I consider both as mutually influential – the law shapes society (or social phenomenon) even as society (social phenomenon) shapes the law.[189]

I do not take the legal system as what Westerman describes as "the main supplier of concepts, categories and criteria".[190] Rather, I consider socio-ecological systems as "registers of law" rather than spaces merely acted upon by law.[191] I venture into other relevant socio-technical settings to gain perspectives for analysis and to develop concepts and frameworks in this work. Indeed, by its very nature, it is near impossible in climate research for the legal system to be taken as its main supplier of concepts given that the legal system itself is still evolving to respond to the realities and uncertainties of the changing climate as a bio-physical and social phenomenon. Climate change law researchers are therefore mandated to be active norm inventors and compelled to either adapt law to realities hitherto not experienced or completely create new regimes consistent with the changing times and climes. Venturing into other socio-technical settings (e.g., science of climate change, economics of climate change, resource governance, sociology of change and transformation, etc.), however, entails the risks of an inadequate or limited understanding or engagement with all the relevant nuances of these various areas. This is similar to what Douglas Vick describes as the inevitability of pitfalls related to the difficulty of adequately understanding disciplines other than one's own or presumptuously thinking one understands such disciplines.[192] There will indeed be difficulties in understanding and properly synthesising the various non-law components needed to be cobbled together for this research and I do not presume that I have the

[188] Lisa Webley, "The Why and How to of Conducting a Socio-Legal Empirical *Research* Project", Creutzfeldt et al eds, *supra* note 185.
[189] Menkel-Meadow, *supra* note 185 at 39.
[190] Pauline Westerman, "Open or Autonomous? The Debate on Legal Methodology as a Reflection of the Debate on Law" in Mark Van Hoecke ed., *Methodologies of Legal Research: What Kind of Method for What Kind of Discipline?* (Oxford; Portland: Hart Publishing, 2011) 94.
[191] Graham et al, supra note 187 at 488.
[192] Douglas Vick, "Interdisciplinarity and the Discipline of Law" (2004) 31:2 Journal of Law and Society 163 at 185.

ability to understand them all. What I will do, however, is to scope issues as narrowly as possible while striving not to leave out essentials. For example, while I consider the global carbon budget in chapter three, I have only done so to the extent that such understanding is necessary for proposing global just transition principles.

In any case, given the immediate setting of this research (conducted within a faculty of law), there are expectations to be met in respect of what traditionally qualifies as 'legal research'. Martha Minow categorised legal research into doctrinal restatement; recasting project; policy analysis; proposition testing; assessment of legal institutions, systems, and actors; critical projects; comparative and historical inquiries; jurisprudence and legal philosophy; and combinations.[193] As noted by the Council of Australian Law Deans (CALD), however, it is the doctrinal aspect of legal research that confers distinctiveness on it,[194] irrespective of the type of legal research. Framed differently, doctrinal research, as "the conceptual analysis of law", is the basis of legal research.[195] In this research, I have conceptually analysed law (as broadly described above), albeit instrumentally. Within Minow's classification, this work falls under the policy analysis genre. Minow describes policy analysis as including the presentation of a problem, canvassing alternatives, proposing evaluative schemes and methods, and recommending preferred solution. Consistent with these contours, in this research, I will theorize on the problem of an unjust transition, propose alternative framing to how it is defined and applied, design a framework for the assessment of just transition impacts, and show how this could help to reframe impact assessment laws, policies and practices in the climate change context.

ii. Comparative Case Study Approach

Kaabo and Beasley describe comparative case study (CCS) as "the systematic comparison of two or more data points obtained through use of the case study method".[196] The controlling theme in

[193] See Martha Minow, "Archetypal Legal Scholarship: A Field Guide" (2013) 63:1 Journal of Legal Education 65 – 69.
[194] CALD, "Statement on the Nature of Legal Research" (2005) online: <https://cald.asn.au/wp-content/uploads/2017/11/cald-statement-on-the-nature-of-legal-research-20051.pdf>.
[195] Terry Hutchinson and Nigel Duncan, "Defining and Describing What We Do: Doctrinal Legal Research" (2012) 17:1 Deakin Law Review 84 at 105.
[196] See Juliet Kaarbo & Ryan Beasley, "A Practical Guide to the Comparative Case Study Method in Political Psychology" (1999) 20:2 Political Psychology 369 at 372. This should be distinguished from case study which is described as "… an in-depth examination, often undertaken over time, of a single case". In contrast, CCS covers two or more cases "in a way that produces more generalizable knowledge about causal questions". See Delwyn Goodrick, "Comparative Case Studies" (2014) 9 UNICEF Methodological Briefs Impact Evaluation 1.

CCS is the word 'case'. Case has been described as a bounded system which constitutes an object of study.[197] Bartlett and Vavrus have, however, argued against this bounded notion of 'case', describing it as neo-positivist.[198] Boundaries, according to them, are not found but made by social actors who often do so arbitrarily, neglecting other places, times, and influences.[199] They, therefore, recommend that a comparative case study approach should not begin with a bounded case but a 'phenomenon of interest', the central issue or idea of concern to the researcher.[200] In other words, the issue being researched drives the research, not particular people or places. They argue that this helps to include multiple sites and cases, gives ample attention to contextual information such as historical circumstances, recognizes power dynamics, and incorporates the perspectives of social actors.[201] While I agree with Bartlett and Vavrus that the 'phenomenon' should drive CCS research and not the case, their non-place interpretation of context is contestable.[202] Place remains a key element of CCS. Although such 'place' should be informed by the phenomenon being studied and situated in the context of history and ongoing interactions beyond the immediate bounds of the 'place' itself. Bartlett and Vavrus's recommendation that comparison in case study research should be horizontal (contrasts cases, social actors, laws, documents, and other influences across the cases), vertical (compares influences at different levels from the international to the national, regional, and local), and transversal (comparison over time) buttresses my approach to 'place'.[203]

The selection of case studies in this work is primarily informed by the 'phenomena of interest' (climate change, just transition, and impact assessment). In other words, rather than constricting the study of the phenomena within pre-selected cases (jurisdictions), the availability of apt examples in the light of the conceptualized frameworks is the dominant guiding principle for the selection and engagement with such examples. As Bartlett and Vavrus have noted, this approach permits an extensive consideration of multiple sites and cases. This approach is also informed by

[197] See generally S.B. Merriam, *Qualitative Research and Case Study Applications in Education* (San Francisco: Jossey-Bass, 1998) 27.
[198] Lesley Bartlett & Frances Vavrus, "Comparative Case Study: An Innovative Approach" (2017) 1:1 Nordic Journal of Comparative and Intl Education 5 at 10.
[199] *Ibid.*
[200] *Ibid.*
[201] *Ibid.*
[202] They argue that contexts are made up of social activities and interactions, and that rather than being a container for activity, context itself is the activity. *Ibid*, 12 – 13.
[203] *Ibid*, 14.

the relatively novel nature of the subjects of inquiry. Various components of this work are either recent fields of practice (e.g., just transition and climate change and impact assessment) or new conceptions in this work (e.g., capability approach-based vision of just transition and the just transition impact assessment framework). There are, therefore, limited or non-existing legal frameworks for a concerted study. However, as shown in the thesis, various jurisdictions provide useful examples for different aspects of the subjects of study and the proposed frameworks. For example, case studies from Germany, Australia, and Canada on coal-related transition provide useful context for the development of the characteristics of just transition. Also, climate change and impact assessment policies in the United States, Canada, and South Africa, and strategic assessments on transition initiatives in Scotland and the European Union have been drawn upon.

1.5 Conclusion

In this chapter, I have shown that:

i. The pace and scale of climate change compel a quick and far-reaching transition to a post-fossil global socio-technical system.
ii. Such transition necessarily means a transition from the exploration, production, and consumption of fossil fuels.
iii. Both demand side and supply side policies are necessary to achieve the transition from fossil fuels.
iv. There is the potential for the transition, by reason of its pace and scale, to have unjust consequences particularly for the vulnerable if there are no deliberate measures to make the transition just.
v. Impact assessment represents a viable tool for appraising, preventing, or mitigating the unjust consequences of transitional initiatives and policies.

The redefinition of just transition, centering the 'global' in just transition analysis, focused appraisal of supply side policies, and advancement of impact assessment as a tool of a just transition distinguish this work from other scholarly works on just sustainability transition. The thesis has been structured to directly engage with the research questions above – the adequacy of just transition orientations, the usefulness of traditional impact assessment in the just transition context, and how to explicitly mainstream the essentials of just transition into transition planning through IA. Chapters two and three address research question 1; chapters four and five engage with research question 2; and in chapter six, I propose a JTIA framework for the mainstreaming of just transition (research question 3). I provide a more detailed summary of each chapter below.

Before one can assess a project or policy for just sustainability transition impacts, it is vital to understand what just transition entails. As shown in the literature review above, the concept of sustainability transition has been considerably theorized on. This is less so for what the qualifier 'just' means in just transition. Whereas the scholarship of just transition is becoming more extensive and definitions have become more expansive, only a handful of these works examine the assumptions of just transition and provide theoretical justifications for the case for just transition. In chapter two, I engage critically with the origin and evolution of just transition, its original and contemporary understandings, and the flaws of the dominant notions. Instead of the distributive justice centric understanding of just transition, I argue that the capability approach, with its focus on the end of justice being the capability and wellbeing of the people and ecosystems, represents a more useful theoretical lens in conceptualising just transition. This, however, does not mean other theories of justice (distributive, procedural, and recognition) are not relevant. They are indeed instrumental to an end goal which the capability approach provides a framework for envisioning. Drawing from the capability approach, I propose the 'just' characteristics of the just transition and consider existing just transition policies and practices in coal, oil, and gas communities vis-à-vis these characteristics, which will be useful in the design of the JTIA Framework. Importantly, I engage with the question of whether the starting point of just transition analysis, particularly one with the dominant emphasis on fossil fuel workers and communities, could be considered just. I also consider whether there could be a case for a right to just transition.

In chapter three, I turn to the subject of the global implications of the just transition discourse. As already noted, the just transition discourse has largely been within the domestic context. However, climate change induced transition is distinct from other forms of transition given the global nature of both the cause and consequences of climate change. No one country can singularly respond to the challenges posed by climate change, and response mechanisms adopted at the domestic level are often with far-reaching global consequences. Thus, justifying the need for extensive engagement with the global just transition impacts of transitional policies, particularly, supply side policies. Chapter three provides an overview of trends in the global fossil fuel industry, issues relevant to the sustainability transition of the industry, mitigation policies employed by both state and non-state parties, and the justice implications of such policies (moratorium, divestment, diversification, subsidy reform, and technological solutions like carbon capture). Thereafter, I join the debate on the global carbon budget and the equitable principles for its management. In

continuation of the theme on capability focused notion of justice in chapter two, I argue that the principles of differentiation and equity under the international climate regime, particularly the United Nations Framework Convention on Climate Change and the Paris Agreement, are useful in framing a global just transition approach. I will return to the global just transition approach in chapter three and the 'just' characteristics proposed in chapter two in developing the JTIA Framework later in this work.

The relationship between just transition and impact assessment is my focus in chapter four. Impact assessment is not monolithic. Although it was systematized as a bio-physical focused undertaking in the United States in the late 1960s, modes of impact assessment have since proliferated both in terms of subjects (e.g., environment, social, gender, Indigenous, human right impacts) and dimension (e.g., regional, cumulative, transboundary effects). I introduce impact assessment as a planning and decision-making tool, focusing on its basic features, its limitations in practice, and its general implications for just transition. Further, I classify the numerous modes of impact assessment in ecological IAs, interest and rights-based IAs, and dimensional IAs, with sustainability assessment as a cross-cutting IA mode. I consider the various opportunities in each IA classification for the consideration of just transition impacts. This is important, as the availability of spaces within existing IA orientations, provides interstitial opportunities (as Erik Wright noted) for meeting just transition ends through IA, even in the absence of more ruptural interventions.

Climate change and impact assessment (CC&IA) most directly addresses the issue of climate change and transition activities. I focus on this growing IA field in chapter five. Like chapter four, I analyze scholarly and policy developments in CC&IA from a just transition perspective. I consider whether CC&IA provides opportunities to address just transition concerns. I argue that for CC&IA to be fit for purpose, it must be adapted to the phenomenon it seeks to address – climate change. Four characteristics of climate change – its global and multisectoral nature, the need for ambition and urgency, the inevitability of adaptation and loss and damage, and the problem of causation, are highlighted as important to a fit for purpose CC&IA. Further, the CC&IA policies of Canada, the United States, and South Africa are analyzed to identify the extent to which they align with the identified characteristics. The chapter also considers 'impact assessment' of response measures under international climate law with focus on the UNFCCC regime. It

concludes with a consideration of how human rights and social impacts are addressed in the strategic assessment of transition initiatives in the European Union and Scotland.

While existing IA modes present opportunities to address just transition concerns, these spaces are ad-hoc, ridden with limitations, and not entirely fit for purpose. Hence, the need for a framework through which just transition impacts can be directly considered in IA processes. In chapter six, a JTIA framework is developed. The framework entails a set of minimum principles which can be applied throughout an impact assessment process, practical implications of the principles when applied at both the strategic and project phases of transition decision making, and the management of trade-off situations. The JTIA framework is not designed as another IA mode. Rather, it is essentially made up of normative principles to put just transition considerations at the center of transition decision making. The applicability of the principles has been considered using examples from Canada and the United States.

Underpinning this research is the conviction that no transition qualifies as green if it is not just. The attempt to transition to a post-fossil world is already raising various justice questions. Developed fossil fuel economies are increasingly competing for fossil fuel supply market shares while posturing to be pro-climate; pro-climate supply side policies are already having discriminatory effects; and fossil fuel industries are applauded for foraging into the 'green' industry while still profiting massively from the fossil fuel industry. At the same time, vulnerable communities have been left to bear both ecological and social costs of the transition, and the increasingly commercialized domain of green technology is inventing new inequities. The simple lesson from these examples is that a climate induced transition will not be just by default or happenstance. If humanity wants a justice consistent transition, it must deliberately put wholesome processes in place to ensure justice.

CHAPTER TWO
BEYOND DISTRIBUTION: A CAPABILITY APPROACH TO JUST TRANSITION

2.1 Introduction

As shown in chapter 1, while some definitions of just transition are narrowly restricted to the transition of the workforce, others scope the concept more broadly to entail the transition of societies impacted by climate change response measures. What is rare is a theorization of the meaning of the 'just' in 'just transition'. Heffron and McCauley note that it is often unclear what justice is needed and how the concept of justice is to be applied when used in climate, energy, and environmental justice literature.[1] The situation becomes even more complicated when it is realized that the varying notions of what is 'just' traverse diverse disciplinary constructs. Various stakeholders – labour and trade unions, Environmental Non-governmental Organizations (ENGOs), multilateral environmental organizations, Indigenous and host communities, developed and developing States, multinational corporations and small and medium scale enterprises - have their own ideas of what is 'just', even when not explicitly stated.[2] As Fraser points out, the who and what (and how) of justice are now "up for grabs" and arguments about justice now assume the double guise of queries about the substance and subjects of justice.[3]

In this chapter, I identify the key characteristics of what is 'just' in the context of climate change focused sustainability transition. To be clear, I do not attempt the impossible task of proffering a one-size-fits-all definition. The characteristics identified here are primarily meant to serve as some of the vital building blocks of this work and the JTIA framework designed here. While I will be drawing from various theories of justice, I avoid in-depth abstract theoretical discourse – an endless intellectual maze that could detract from the focus of this thesis. I only go as deep as it is required for the purposes of this work. The latter parts of this chapter will consider the history, trends, laws, and policies on just transition in the coal and oil and gas industries. Just transition in

[1] Raphael Heffron & Darren McCauley, "What is the 'Just Transition'?" (2018) 88 Geoforum 74 at 76.
[2] According to Stevis et al, the "growing references to just transition undoubtedly signal a desire to further root social and equity concerns into the climate debate. While this is to be welcomed, it also complicates the task of identifying what just transition stands for, who is behind it, what are the underlying politics, and who it is for. Instead of leading to an alignment of views, the concept's growing popularity has actually turned it into a contested concept …" Dimitris Stevis et al, "Introduction: The Genealogy and Contemporary Politics of Just Transitions" in Edouard Morena et al, eds, *Just Transitions: Social Justice in the Shift towards a Low-carbon World* (London: Pluto Press, 2020) 5.
[3] Nancy Fraser, "Reframing Justice in a Globalizing World" (2005) 36 New Left Review 69 at 72.

these industries is considered under different sub-sections in appreciation of their differences, some of which are already identified in chapter 1. I conclude with reflections on the rights dimensions of the just transition discourse.

2.2 Defining the 'Just' in 'Just Transition'

A. The 'Original' Understanding of the 'Just' in 'Just Transition'

It is difficult to disagree with Agyeman's assessment that "justice is not a simple concept".[4] An examination of the distinct visions of just transition provides an exemplification of this complexity. To avoid what Stevis et al refers to as the 'de-historicization' of just transition by scholars and other stakeholders,[5] the attempt to understand what justice in the just transition frame means should necessarily begin with what the concept meant at inception. As would be shown, the concept has since evolved into a multi-pronged idea. In their recent work, Stevis et al classify this evolution into three phases: the emergence of the concept (1980s - 2001), the globalisation of the concept (2001 - 2013), and the concept's diffusion beyond unions (2013 – the present).[6] While it is arguable that previous transitions have been attended by clamours for justice,[7] the contemporary development of the just transition concept is traced to Tony Mazocchi's *Superfund for Workers (superfund)*.[8] Mazocchi was a trade unionist who focused on occupation safety and health at the Oil, Chemical and Atomic Workers' Union (OCAW). Making jobs safe for workers, with the understanding that some jobs are too detrimental to be made safer (e.g., production of nuclear weapons), was, therefore, at the core of Mazocchi's advocacy leading to what is referred to as the "first environmental strike" at Shell refineries in the United States in 1973.[9]

---

[4] Julian Agyeman, *Introducing Just Sustainabilities: Policy, Planning, and Practice* (London: Zed Books, 2013) 38.
[5] Stevis et al, *supra* note 2 at 5 – 6.
[6] *Ibid* at 9 – 21.
[7] Swilling gives a summary of long-wave transitional epochs (lasting between 40 to 60 years) as captured in the literature, although he makes the important point that epochs are not singular events or events that occur similarly in multiple places. These epochs have been categorized differently by various scholars. Perez identifies five epochs: the first industrial revolution (from 1771), age of steam and railways (from 1829), age of steel, electricity and heavy engineering (from 1875), age of oil, the automobile and mass production (from 1908), age of information and telecommunications (from 1971). See Mark Swilling, *The Age of Sustainability: Just Transitions in a Complex World* (Oxon, Routledge: 2020) 111 – 112. In the Great Transformation, Polanyi details some of the social justice issues that attended of the first industrial revolution in England. See Karl Polanyi, *The Great Transformation* (Beacon Hill, Boston: Beacon Press, 1965) 35 – 44.
[8] For a comprehensive account of the contributions of Tony Mazocchi to the emergence of the just transition concept, see Les Leopold, *The Man Who Hated Work and Loved Labour: The Life and Times of Tony Mazzocchi* (Vermont: Chelsea Green Publishing, 2007).
[9] Stevis et al, *supra* note 2 at 9.

Reframing the job vs. environment discourse as an environment and jobs conversation was also on the agenda of other groups like the United Automobile Workers and Environmentalists for Full Employment.[10] The job blackmail that followed, entailing the offshoring (or threat to offshore) of toxic operations by corporations,[11] seems to account, in part, for the case subsequently made for a *superfund for workers* by Mazzocchi and allies. Les Leopold in his 1995 address at the biennial meeting of the International Joint Commission (IJC) on Great Lakes Water Quality also emphasized the trend of giant corporations fleeing to low wage and low regulatory countries. According to Leopold, "by just threatening to leave, these giants gain enormous leverage over North American public policies, pit dislocated workers against environmental advocates, and serve as "a magnet for worker job fears"".[12] As far as it is known, it was in this speech that the term 'just transition' was first used.[13] To appreciate what Leopold considers as 'just', one should appreciate what he considers 'unjust'. This includes job insecurity, transboundary job dislocation, loss of identity and decent means of family support, health risks connected to unemployment and dislocation, and unfettered multinational corporate behavior that allows unhinged capital mobility and job blackmail.[14] The proposed components of just transition were, therefore, tailored to address these 'unjust' conditions. Leopold's vision of just transition includes the following.[15]

i. No worker who loses his or her job during a sunsetting transition should suffer net loss of income.
ii. Costs should be fairly distributed across society by the establishment of a special fund - *superfund for workers.*
iii. The fund would provide for full wages and benefits until a worker retires or finds a comparable job; up to four years of tuition stipends to attend vocational institutions plus full income while in school; post-educational stipends or subsidies if no jobs at comparable wages are available; and relocation assistance.

While other essentials of justice (e.g., participation and recognition) could be deduced from the initial understanding of just transition, more emphasis was placed on the distribution of risks. This is clear in Leopold's vision summarized above, but it is made even clearer in Brian Kohler's presentation at the same 1995 IJC meeting. Kohler argues that there must be a sense of fairness

[10] *Ibid* at 10.
[11] *Ibid*.
[12] International Joint Commission, "Our Lakes, Our Health, Our Future: Proceedings of the International Joint Commission's 1995 Biennial Meeting on Great Lakes Water Quality" (September 22 – 25, 1995, Duluth, Minnesota) 82.
[13] In his speech, Leopold made "a call for a just transition to end the jobs and environment clash." *Ibid* at 81.
[14] *Ibid* at 82.
[15] *Ibid* at 83

about who will bear the costs of transitional decisions as "there is a very real danger that even if we are successful in saving the planet we will live in poverty and despair upon it".[16] The key question that must be answered, according to Kohler, is "who will pay for those changes"?[17] Kohler advocates for a conscious engagement with the question of the 'cost-bearer(s)' and proposed a "shared industrial responsibility" approach to 'payment'.[18] While there is no known example of this approach, governments have generally taken the idea of just transition 'payment' literally, with monetary allocations being at the center of just transition initiatives.[19]

Importantly, Stevis et al observe that contrary to recent presumptions of the rootedness of just transition in the climate change and energy transition discourse, the concept developed within another context – the production of toxics and the impacts on workers and the local environment.[20] Just transition's origin raises valid questions about its applicability or the extent of its applicability in a clearly more distinct climate change context. For example, how do the unique features of climate change (e.g., its global nature, non-traceability of causation, varying justice claims, extensiveness of impacts, and scope of required response measures) mandate a rethinking of just transition as it was at inception? Questions such as this are rarely asked in the existing literature. But they are important, more so given the claim that just transition has been unmoored from its original berth.[21] At inception, workers were the focus of the just transition movement, the just transition cause was reduced to a job-issue, and labour-based solutions were sought. Reference to the larger 'community' was perfunctory and ill-defined, the distribution of risks was emphasised rather than the distribution of gains (and when distribution of gain is referenced, gain is narrowly

[16] *supra* note 12 at 78.
[17] *Ibid* at 79.
[18] The shared industrial responsibility approach requires that industries that have profited by supplying and utilizing products be held accountable. See, Kohler, *supra* note 16 at 80. Similarly, Leopold proposed the establishment of a multination fund (which should start as a Canadian – U.S Binational Fund). The fund should be financed through surcharge on the production of substances that are to be eliminated. See Leopold, *supra* note 12 at 83.
[19] The European Union Just Transition Mechanism, for example, entails a €30 – 50 billion just transition fund, a €45 billion dedicated just transition scheme under InvestEU, and the intended mobilization of €25 – 30 billion public sector loan facility with the European Investment Bank. See European Commission (EC), "The European Green Deal Investment Plan and Just Transition Mechanism Explained" (14 January 2020) online: <https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_24>.
[20] Stevis et al, *supra* note 2 at 22. However, this should not be taken as meaning that climate change (or global warming) was completely missing from the just transition discourse at inception. For example, Mazzocchi is said to have organized the first labour conference on global warming and its impact on workers in 1988. See Vernon Mognensen, "Book Review: The Man Who Hated Work and Loved Labour: The Life and Times of Tony Mazzocchi (Les Leopold)" (2009) 12:4 Working USA: The Journal of Labour and Society 644 at 646.
[21] Stevis et al, supra note 2 at 6

defined as 'green jobs'), and there was an emphasis on the role of industry as 'payers' compared to the more recent focus on States.[22]

The questions of who are owed a just transition, what does the 'payment' entail, and how should it be paid are as important as the rifer question of 'who pays'.[23] It is assumed under the original conception of just transition that 'workers' are the people owed and payment is adequate if such 'workers' are returned to the financial state they would have been if their jobs had subsisted.[24] The initial understanding also appears to conflate the interest of workers with that of society and seems to assume that the replenishment of jobs and addressing the needs of workers will amount to a resuscitation of host communities.[25] Research, however, shows that the resource industry (particularly oil and gas) is considerably made up of long distance commute (LDC) workers,[26] from whom host communities derive limited financial benefits.[27] While I will come back to this, it is clear that although a case can be made for the narrow understanding of 'just' in the original framing of just transition, such denotation is not sacrosanct. There are temporal, spatial, sectoral, and identity-based factors which necessarily shape what justice means. While I agree that it is

[22] For example, while recognizing the roles of social partners, the ILO Guidelines is overwhelmingly directed at governments. The Guidelines is largely silent on industry's roles. See generally ILO, *Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for all* (Geneva: ILO, 2015) (ILO Guidelines).

[23] As noted by Newell and Mulvaney, the just transition praxis will have to "centrally address the key political economy questions of 'who wins, who loses, how and why" … and who will bear the social costs of decarbonising energy sources and economies". See Peter Newell and Dustin Mulvaney, "The Political Economy of the 'Just Transition'" (2013) 179:2 The Geographical Journal 132 at 133.

[24] Leopold, *supra* note 12 at 83. The Canadian Labour Congress (CLC), for example, note that "the prime aim of just transition is the continuation of employment without loss of pay, benefits of seniority. Job equity is at least as deserving of preservation as the equity of corporations … Where continuation of employment is not possible, joust compensation is the next alternative". CLC, "Just Transition for Workers During Environmental Change" (April 2000) <https://perma.cc/BL78-SQEZ>.

[25] See for example, Leopold, supra note 14. One explanation for these assumptions is the relative sedentary nature of chemical production industries, the primary context in which just transition emerged. Comparably, long distance commute (either fly-in, fly-out or drive-in, drive-out) is more common in industry resource towns. See generally Kelly Vodden & Heather Hall, "Long Distance Commuting in the Mining and Oil and Gas Sectors: Implications for Rural Regions" (2016) 3 The Extractive Industries and Society 577 at 577 – 578. Hence, since workers and their families lived in the communities hosting these industries, the workers and their families belong to the community and the fate of the former affects the latter.

[26] For example, only about 5% of operations-related rotational workers in the oil sand industry in the Regional Municipality of Wood Buffalo (RMWB), Alberta, Canada lives in the region. See Oil Sands Community Alliance, "Oil Sands Operations-Related Rotational Workforce Study" (January 2018) online: <http://www.oscaalberta.ca/wp-content/uploads/2015/08/Oil-Sands-Operations-Related-Rotational-Workforce-Study.pdf>.

[27] In a 2007 study, it was found that mobile workers in Oil Sands industry spent only 5.6% of their annual income in the Wood Buffalo region in Alberta. See Athabasca Region Issues Working Groups, "Report on Mobile Workers in the Wood Buffalo Region of Alberta" (December 2007), cited in Vodden & Hall, *supra* note 25 at 578.

important to capture the historical roots of just transition, I argue that its real transformative and emancipatory potential lies in its adaptation and contextualization.

B. The 'Contemporary' Understandings of the 'Just' in 'Just Transition'

Current understandings of just transition have been grouped under various categories. Authors of these classifications attempt to capture the positions of just transition movements (e.g. Goddard and Farrelly classify just transition into passive, minimalist, and transformative),[28] approaches to just transition (e.g. Morena et al identify status quo, managerial reform, structural reform, and transformative approaches),[29] forms of just transition policies (e.g. Mertins-Kirkwood differentiate between proactive and reactive just transition policies),[30] and just transition tendencies in the labour movement (e.g. Stevis and Felli distinguish between shared solution, differentiated responsibility, and social ecological approaches).[31] While these classifications do not engage directly with the meaning of justice in the context of just transition, they are underpinned by implicit perceptions of justice. *Table 4* summarizes some of these perceptions. As shown in *table 4*, these categories are not mutually exclusive. Rather, although named and grouped separately by their authors, they share common features and emphases. For example, Goddard and Farrelly's minimalist position is substantially the same as Morena et al's status quo approach (see *table 4*). They are, however, worthy of separate recognition as they contain variations which contribute to a more comprehensive appreciation of what is considered 'just' in the just transition context.

Table 4 – Just Transition and the Perceptions of Justice

Categories		**Perceptions of Justice**
Positions	*Passive*	The expansion of production and protection of jobs; acceptance of transition is dependent on the preservation of jobs in current industries.

[28] George Goddard & Megan Farrelly, "Just Transition Management: Balancing Just Outcomes with Just Processes in Australian Renewable Energy Transitions" (2018) 225 Applied Energy 110 – 123.
[29] Edouard Morena et al, *Mapping Just Transition(s) to a Low-Carbon World* (United Nations Research Institute for Social Development, 2018) 11 – 15.
[30] Hadrian Mertins-Kirkwood, *Making Decarbonization Work for Workers: Policies for a Just Transition to a Zero-carbon Economy in Canada* (Canadian Centre for Policy Alternatives, 2018) 8 – 11.
[31] Dimitris Stevis & Romain Felli, "Global Labour Unions and Just Transition to a Green Economy" (2015) 15 Intl Environmental Agreements 29 at 36 – 39.

	Minimalist	Green capitalism (creation of decent green jobs); retraining and financial support for workers; union representation of workers.
	Transformative	A systemic shift from production for profit to the subordination of production to the needs of humans and the ecosystem.
Approaches	*Status Quo*	Compensate or provide new job opportunities to affected workers; replace 'old' with 'new' jobs; Ignores questions of job distribution, access or negative externalities of 'new' jobs.
	Managerial Reform	Worker and work-place centric; Retention of existing economic system; selective reforms on access (e.g., employment, energy); Occupational health and safety (in both old and new jobs); Social dialogue and tripartite negotiation between government, unions, and employers.
	Structural Reform	Inclusive and equitable decision-making process; Collective ownership of new decarbonized system by different stakeholders; Distribution of benefits through the agency of vulnerable groups; Identifies and corrects the inequalities and injustices of the fossil fuel energy system; Emphasises social power over social dialogue.
	Transformative	An overhaul of economic and political system; Consideration of alternative development pathways different from one based on continuous growth; Dismantling of interlinked systems of oppression (racism, classism etc.).
Policies	*Reactive*	Focused on adversely affected workers and communities; Direct financial support to individuals and communities; Minimization of the costs of transition.
	Proactive	Maximization of the long-term benefits of transition; training of new workers for emerging industries (not just displaced workers); Address existing inequities in the workforce; geographically targeted public spending.
Tendences	*Shared Solution*	Dialogue and mutual understanding; Just transition as mutually beneficial process; Reinforce and extend social security measures.
	Differentiated Responsibility	Protection of the vulnerable; workers' rights, union's power, industry's minimal responsibility, and State's

		central duties to intervene and shape the political economy.
	Social Ecological	Democratic planning and public ownership of remaining fossil fuel supplies; Change in the balance of power.

Rather than revealing exclusive alternatives, the understandings of just transition in *table 4* are better construed as a spectrum of just transition trajectories. This tiered conception of just transition also presupposes that while more emancipatory modes of just transition (e.g., transformative approaches) are more visionary than basic frames like passive positions and status quo approaches, the former still meets the objectives of the latter albeit within the context of broader objectives.[32] For example, while transformative approach challenges a socio-economic system premised on an unending growth model, the interest of and opportunities for workers (which a status quo approach caters to) remain a relevant and valid vision within the more robust transformative vision. Like the initial understanding of just transition, current just transition advocacy by labour organizations and just transition initiatives by governments and industries are mostly aligned with the lower tiers of just transition framings. Morena et al situate initiatives by the International Labour Organization (ILO) and the International Trade Union Confederation (ITUC), the two leading international institutions on just transition, under the managerial reform approaches, while the just transition initiatives in the German region of Ruhr are put under the *status quo* category.[33] This categorization is, however, flawed as it attempts to force existing initiatives into singular classifications. For example, rather than being solely aligned with managerial reform particularly in its emphasis on social dialogue and tripartite consultation, the ILO's vision of just transition also fits within the *status quo* category.[34] Again, the ILO Guidelines highlight the need to consider specific gender

[32] The Labour Network for Sustainability and Grassroots Policy Project, for example, argue that the transformative and limited labour-oriented views of just transition are not mutually exclusive needs and goals. They, therefore, asks labour to see beyond the worksite and the community and environmental activists to "help bring justice to coal miners losing their pensions, and workers … who through no fault of their own are being thrown on the scrap of history, in a world where scrap metal commands a price, but human beings are discarded". See Labour Network for Sustainability & Strategic Practice, ""Just Transition" – Just What Is It?: An Analysis of Language, Strategies, and Projects" (2018) online: <https://www.labor4sustainability.org/uncategorized/just-transition-just-what-is-it/>

[33] Morena et al, *supra* note 29 at 13. Stevis and Felli classify just transition initiatives by international organizations including the ILO and ITUC under the shared solution approach. See Stevis and Felli, *supra* note 31 at 36. Mertins-Kirkwood also argues that labour organizations, generally, advocate for reactive just transition policies. See Mertins-Kirkwood, *supra* note 30 at 11.

[34] The ILO's vision of just transition is premised on the four pillars of the Decent Work Agenda – social dialogue, social protection, rights of work and employment. While social dialogue and social protection are key features of the

policies for the promotion of equitable outcomes;[35] an issue Morena et al consider to be a feature of a structural reform approach. The point here is that it is impractical and unhelpful to situate the understandings of justice within specific stand-alone categories.

Cahill and Allen situate the mainstream definitions of just transition within a 'scope' and 'social inclusion' framework.[36] While the scope focuses on distributional impacts and intentions, social inclusion deals with recognition and procedural justice.[37] Although the framework's tiered quadrants are similar to the framings in *table 4*,[38] its explicit use of well theorized justice principles – distributive justice, recognition, and procedural justice – allows for a more robust and coherent engagement with the diverse dimensions of just transition.[39] Construed this way, just transition is not restricted to its initial distributional understanding or the currently more popular process-based understanding. It is more. Going even further, McCauley and Heffron in their deconstruction of just transition, refer to the distributional component of the concept as entailing capabilities and well-being, risk and responsibility, vulnerability and recognition, while also making a case for the inclusion of restorative justice as a third component (with the second component being procedural justice).[40] While I will come back to the implications of this more theoretically grounded notion of just transition, it is important to recognize the arguments supporting a narrower understanding of just transition.

In her case for a narrow understanding of just transition, Eisenberg argues that the diverse understanding of just transition breeds confusion as scholars use "the same emergent term with different meanings".[41] Further, she points out that the labour-related usage of just transition predates the broad usage and has gained traction, the specificity of the labour-related usage stands it out and gives it potency, and a broad understanding of just transition adds nothing to existing

---

managerial reform approach, rights of work and employment are features of the status quo approach. See ILO, *supra* note 22 at 4.

[35] *Ibid* at 6.

[36] Ben Cahill & Mary Margaret Allen, *Just Transition Concepts and Relevance for Climate Action: A Preliminary Framework* (Center for Strategic and International Studies & Climate Investment Fund, 2020) 7.

[37] *Ibid*.

[38] Cahill and Allen grouped the definitions of just transition into four quadrants. Quadrant 1 is the most expansive in terms of scope and social inclusion, entailing a broad range of impacts and subjects, seeks to transform existing systems, and includes a broad range of stakeholders while elevating and empowering vulnerable groups. The three other quadrants have varying scopes of impacts, subjects, intention, and social inclusion. See *Ibid* at 8, 10 – 11.

[39] *Ibid* at 9.

[40] Darren McCauley & Raphael Heffron, "Just Transition: Integrating Climate, Energy and Environmental Justice" (2018) 119 Energy Policy 1 at 3 - 5

[41] Ann Eisenberg, "Just Transitions" (2019) 92:2 Southern California Law Review 273 at 286 – 289.

models like environmental justice, climate justice and energy justice.[42] Conversely, Heffron argues that climate justice, environmental justice, and energy justice scholars should integrate their various ideas and approaches into the bigger picture of just transition.[43] In other words, just transition entails a fusion of climate, environmental, energy justice, and more. Again, I will return to this. While Eisenberg is correct that just transition was first deployed by the labour movement, there is no evidence that leaving it anchored to its labour root makes it more potent. In fact, although just transition is presently more popular than it used to be, the perception that it is an invitation to a 'fancy funeral' is very rife amongst workers.[44]

At a more existential level, Eisenberg's argument that just transition be limited to the labour context reduces humans to 'workers' and, thereby, discounts other identities borne by individuals by virtue of their interactions in the broader contexts of society and nature. This results not only in the fetishism of deconstructed and isolated identity and caters only to an aspect of a person's life with the other, but it also leaves out other entities within the broader contexts of society and nature which do not qualify under the jobs framing. Indeed, this appears to be the prevalent approach to just transition in practice. Whereas 'frontline communities' are often referenced, they are either an afterthought or portrayed as tributaries of labour.[45] Again, this narrow understanding is similar to the prevalent singular subject framings in other sustainability justice models where environmental justice theorists focus on sites of local harms, climate justice emphasises intragenerational equity,[46] and energy justice focuses on the energy poor.[47] As against these narrow framings, Seck argues that climate justice and its search for answers to questions of "who owes what to whom and why in the Anthropocene is dependent on relational insights".[48] She notes more

[42] *Ibid.*
[43] Raphael Heffron, "The Just Transition to a Low Carbon Economy" (2018) 8:4 RELP 39 at 40.
[44] Labour Network for Sustainability & Strategic Practice, *supra* note 32.
[45] The ITUC, for example, states that a just transition will "invest in jobs – decent work opportunities in sectors which reduce emissions and help communities adapt to climate change …" See ITUC, "Just Transition – Where Are We Now and What's Next? – A Guide to National Policies and International Climate Governance" (2017) ITUC Climate Justice Frontline Briefing 6.
[46] Kirsten Jenkins, "Setting Energy Justice apart from the Crowd: Lessons from Environmental and Climate Justice" (2018) 39 Energy Research & Social Science 117 – 121; Sara L. Seck, "Relational Law and the Reimagining of Tools for Environmental and Climate Justice" (2019) 31 Canadian Journal of Women and the Law 151 at 152.
[47] See generally Benjamin Sovacool et al, "New Frontiers and Conceptual Frameworks for Energy Justice" (2017) 105 Energy Policy 677 – 691.
[48] Sara L. Seck, "A Relational Analysis of Enterprise Obligations and Carbon Majors for Climate Justice" (2020) 11:1 Oñati Socio-Legal Series 254 at 276.

pointedly that our vision of a worker must transcend the bounded autonomous individual model to effectively bridge the artificial gulf between labour and environment.[49] In her words:

> … workers are embedded in relationships at work and in family and community, and realize autonomy as a result of relationships that nurture and support the possibility of autonomy. This suggests that a view of the worker as an individual with rights that are detached from family and community and even ecological contexts is misguided; a better view, then, might be of a relational worker constituted by porous boundaries.[50]

A relational approach to construing just transition would necessarily compel a rethinking of the common just transition policy priorities. For one, the replacement of jobs in unsustainable industries (unsustainable jobs) with equally or better paying 'green' jobs would cease to be the lynchpin of just transition policies. As noted in chapter 1, one primary argument of sustainability and just transition advocates is that unsustainable jobs can be adequately replaced with 'green' jobs. The International Renewable Energy Agency (IRENA), for example, notes that the renewable energy sector employed 11 million people worldwide in 2018, with employment concentrated in China, Brazil, the United States, India, and the European Union.[51] What is unclear is the extent to which these jobs were targeted to replace the unsustainable jobs. In fact, these industries are primarily situated in countries which, with perhaps the exception of the United States, would generally not qualify as fossil fuel dependent economies (FFDEs).[52] This is bound to be the case in a global green economy with capitalism as its organizing principle. Unlike the geographical siting of fossil fuel, renewable energy technologies can be produced in any country. This fosters the problem of an unsustainable 'green' economy where States take the 'profitable green sector' bait, invest heavily in it, compete for markets, overproduce 'green' technologies, and create a 'different' variant of sustainability crisis.[53] But back to the point being made. When 'workers' are recognized in a relational rendering of just transition, they are recognized as constituted and

[49] Sara L. Seck, "Transnational Labour Law and the Environment: Beyond the Bounded Autonomous Worker" (2018) 33: 2 Canadian Journal of Law and Society 137 at 138. See also Sara L. Seck, "Relational Law and the Reimagining of Tools for Environmental and Climate Justice" (2019) 31: 1 Canadian Journal of Women and the Law 151 at 158
[50] Seck, "Transnational Labour Law and the Environment: Beyond the Bounded Autonomous Worker", *Ibid* at 152.
[51] IRENA, *Renewable Energy and Jobs: Annual Review 2019* (Masdar City: IRENA, 2019) 5.
[52] Ibid.
[53] See generally Dustin Mulvaney, *Solar Power: Innovation, Sustainability, and Environmental Justice* (California: University of California Press, 2019).

embedded beings. According to Nedelsky, it is only in this relational context that the capacities of individuals can be fostered, their rights defended, and their well-being protected.[54]

2.3 The 'Just' Characteristics of 'Just Transition'

Fundamentally, the just characteristics of just transition must cater to the four essential questions of justice - the 'why', 'what', 'who' and 'how' of justice. To highlight these characteristics, I attempt an integrated reading of theories of justice hitherto considered as separate, and at times, conflicting. This is similar to Schlosberg's integrated use of different conceptions of justice (distributive, recognition, participation and capabilities) in conceptualizing environmental justice.[55] Importantly, in proposing these characteristics, I pay attention to the specific contexts of climate change and the fossil economy.

A. The 'Why' of Just Transition

The most common justification given for just transition both in the initial and contemporary iterations of the concept is that it would be unjust for communities and workers to bear the 'burden' of the transition alone, given that benefits from the fossil industry accrued to 'all'.[56] This 'distribution' centric notion of just transition fails to question whether the *status quo* being transited from is just. In Canada, Mertins-Kirkwood points out that in 2016, fossil fuel workers were paid an average of $68 per hour compared to the Canadian average of $35 per hour.[57] Taking Fort McMurray as a more specific example, while the 62% women and 40% immigrants which make up the food and accommodation services industry were paid an average of $30,300 per year, the oil and gas sector which had about 18% immigrants and 20% women, received an average of $141,000.[58] Again, residents of host communities who are more likely to be involved in low paying supporting sectors are also more at risk of local environmental and health effects of oil and gas

---

[54] Jennifer Nedelsky, *Law's Relations: A Relational Theory of Self, Autonomy, and Law* (Oxford University Press, 2011) 121.

[55] Schlosberg argues that "justice, in political practice, is articulated and understood as a balance of numerous interlinked elements of distribution, recognition, participation, and capability". See David Schlosberg, *Defining Environmental Justice: Theories, Movements, and Nature* (Oxford; New York: Oxford University Press, 2009) 13.

[56] The Scottish Just Transition Commission (JTC), for example, notes that "the imperative of a just transition is that governments design policies in a way that ensures that the benefits of climate change action are shared widely, while the costs do not unfairly burden those least able to pay, or whose livelihoods are directly or indirectly at risk as the economy shifts and changes". See Lucidity Solutions, "Just Transition Commission: Engagement Event" (2020) online: <https://www.gov.scot/publications/just-transition-commission-community-engagement/>. The Task Force on Just Transition for Canadian Coal Power Workers and Communities, *A Just and Fair Transition for Canadian Coal Power Workers and Communities* (Ottawa: Government of Canada, 2018) 1.

[57] Mertins-Kirkwood, *supra* note 30 at 19 – 20.

[58] *Ibid*.

operations.[59] To return fossil fuel workers to 'status quo' in the Canadian context, will therefore entail further perpetuation of a previously unjust conditions for non-fossil fuel workers.

Rather than engaging the question 'why just transition' solely from the distributive justice perspective, I choose the capability approach as a starting point. I argue that just transition is necessary to guarantee and protect the capabilities for human flourishing and wellbeing. The important just transition question, therefore, is - *are fossil fuel dependent communities capable of flourishing in a post-fossil world?* The capability approach shifts the conversation from a resource-centric notion of justice to just outcomes. As Sen argues, "it does make a difference whether we look merely at the means of living rather than directly at the lives that people manage to have".[60] The capability approach claims that the focus of justice should be to ensure that people have the necessary capabilities to achieve human functioning.[61] Adopting an outcome oriented capability approach, Nussbaum argues that "whether the society is just is determined by looking at the outcomes it produces, importantly including whether it secures the central capabilities to all citizens".[62] Capability (also depicted as 'entitlement'), Nussbaum further argues, is the main political goal and not functioning itself.[63] In other words, the important thing is that people are able to enjoy what she describes as "requirements of a life with dignity", although they may choose not to.[64] Nussbaum provides a list of ten 'central human capabilities': life; bodily health; bodily

[59] A 2010 independent study of the Alberta oil sand industry finds that the health status in the host region is worse than the provincial average for reasons including "substance-related disorders, heavy drinking and smoking, sexually transmitted infections, obesity, prevalence of diabetes, and mortality rates due to homicide as well as mortality rates due to motor vehicle collisions." It further notes that the region has the lowest availability of doctors (in the province). Indicators, which the study refers to as "typical of a boom town". See Pierre Gosselin et al, *The Royal Society of Canada Expert Panel Report: Environmental and Health Impacts of Canada's Oil Sands Industry* (Ottawa, Ontario: Royal Society of Canada, 2010) 216. (2010 Expert Report)

[60] Amartya Sen, *The Idea of Justice* (Cambridge, Massachusetts: Harvard University Press, 2009) 227. According to Sen, "the capability approach focuses on human life, and not just on some detached objects of convenience, such as incomes or commodities that a person may possess, which are often taken, especially in economic analysis, to be the main criteria of human success. Indeed, it proposes a serious departure from concentrating on the means of living to the actual opportunities of living". *Ibid* at 253.

[61] Ingrid Robeyns, "The Capability Approach" in Edward Zalta ed., Stanford Encyclopedia of Philosophy, (2016) online: <https://plato.stanford.edu/entries/capability-approach/#:~:text=The%20capability%20approach%20is%20a,their%20real%20opportunities%20to%20do>.

[62] Martha Nussbaum, "Capabilities, Entitlements, Rights: Supplementation and Critique" (2011) 12: 1 Journal of Human Development and Capabilities 23 at 34.

[63] Martha Nussbaum, "Capabilities and Social Justice" (2002) 4: 2 International Studies Review 123 at 132; Nussbaum, *Ibid*, 29.

[64] Martha Nussbaum, "Capabilities as Fundamental Entitlements: Sen and Social Justice" (2003) 9:2/3 Feminist Economics 33 at 40.

integrity; senses, imagination and thought; emotions; practical reason; affiliation; other species; play; and control over one's environment.[65]

Sen, who pioneered the capability approach, describes capability as the opportunity and freedom "to achieve valuable combinations of human functionings – what a person is able to do or be".[66] Unlike Nussbaum, he argued against a predetermined, cemented, absolutely complete, and totally fixed canonical list of capabilities.[67] At the core of Sen's argument is that a means of wellbeing (e.g. income, employment etc.) does not in itself guarantee good living as an end, and for 'means' to translate to 'end', attention must be paid to substantive and real opportunities (capabilities) that individuals can exercise the liberty to choose or refuse.[68] Capabilities, in this sense, are similar to conversion factors which have been described as "the degree to which a person can transform a resource into a functioning".[69] Robeyns suggest three types of conversion factors – personal conversion factors (e.g. physical condition and skills), social conversion factors (e.g. public policies and power relations), and environmental conversion factors (e.g. physical and built environments).[70] Sen refers to these conversion factors as 'sources of variation' and in addition to Robeyns' three conversion factors, he included "differences in relational perspectives".[71] Although Sen argues against a standardized list of capabilities and functionings, he agrees that "there is often good sense in narrowing the coverage of capabilities for a specific purpose".[72] I agree with Sen that the different use of capabilities, differences in social conditions and priorities, and the necessity of public discussion in identifying appropriate capabilities and functionings make a standardized list approach unhelpful. Yet, there is wisdom in Nussbaum's argument for a minimal,

---

[65] *Ibid* at 41 – 42.
[66] Amartya Sen, "Human Rights and Capabilities" (2005) 6: 2 Journal of Human Development 151 at 153.
[67] *Ibid* at 158.
[68] Sen, *supra* note 60 at 234.
[69] Robeyns, *supra* note 61. The difference between capabilities, functionings and conversion factors is not straight forward. Robeyns, for example, refers to the same social context (social institutions, social and legal norms, environmental factors etc) as constituting both capabilities and individual conversion factors. See Ingrid Robeyns, "The Capability Approach: A Theoretical Survey" (2005) 6: 1 Journal of Human Development 93 at 98 (figure 1). In another sense, functionings are construed as chosen and actualized capabilities. For example, while good nutrition is a capability (opportunity), until it is chosen and actualized, it does not become a functioning. In this work, I consider capabilities as both a conversion factor (converting means to functionings) and opportunities (which when chosen, functioning is attained).
[70] Robeyns, *ibid* at 99.
[71] Sen explains this as inter-societal variations which inform relative advantages of persons in different societal settings. For example, the resources needed to participate in the life of the community and fulfil elementary requirements of self-respect differ depending on established patterns of behavior in various societies. See Sen, *supra* note 60 at 255 – 256.
[72] Sen, *supra* note 66 at 159.

abstract, open ended and generally specified list as it is necessary to know the content of a society's conception of basic justice and to avoid the endorsement of a "hopelessly vague" capability goal.[73]

I adopt a broader categorization of capabilities using Robeyns' conversion factors and Sen's sources of variation as identifiers while referencing Nussbaum's 'central human capabilities' as examples of the various identifiers. Like Nussbaum rightly notes, Sen has at various times referred to several of her basic capabilities,[74] a point Sen seems to confirm.[75] To be clear, this is not an endorsement of all of Nussbaum's central capabilities and sub-capabilities.[76] Following Sen's admonition, I do not propose these categories of capabilities to be a "grand mausoleum to one fixed and final list of capabilities".[77] These capability categories are directed at identifying what should be the focus of just transition, particularly, for FFDEs. Again, with due regard for the importance of freedom to choose not to convert a capability into functioning, I do not emphasize the distinction between capability and functioning here. I use capabilities both in the potential and actualized sense (functioning).[78] Table 5 lays out these categories. Consistent with the capability approach, these categories must be considered conjunctively, mutually supportive, and trade-offs should generally be disallowed.[79]

---

[73] Nussbaum, *supra* note 64 at 42 - 46.

[74] "One cannot read his (Sen's) discussions of health, education, political and civil liberties, and the free choice of occupation without feeling that he agrees totally with my view that these human capabilities should enjoy a strong priority and should be made central by states the world over". See Nussbaum, *ibid*, 43.

[75] "I have, of course, discussed various lists of capabilities that would seem to demand attention in theories of justice and more generally in social assessment, such as the freedom to be well nourished, to live disease-free lives, to be able to move around, to be educated, to participate in public life, and so on". See Sen, *supra* note 66 at 158.

[76] Arguing that Nussbaum's list of central capabilities is not politically liberal and longer than the list of ten, Robeyns note that sub-capabilities like "having opportunities for choice in matters of reproduction" listed by Nussbaum under the capability of 'bodily integrity', is neither an object of overlapping consensus as a "matter of public justice" nor "respectful of a diverse range of comprehensive views of the good". See Ingrid Robeyns, "Capabilitarianism" (2016) 17: 3 Journal of Human Development and Capabilities 397 at 410 - 411.

[77] Sen, *supra* note 66 at 160.

[78] Robeyns' argues that there are good reasons to focus on capabilities and functionings (and not just functionings) including the lack of agency of certain individuals (e.g., infants and the cognitively disabled), the nature of humans to make mistakes in the process of making choices, and institutional welfare programmes. See Robeyns, *supra* note 76 at 401 – 402. See also Ingrid Robeyns, *Wellbeing, Freedom and Social Justice: The Capability Approach Re-examined* (Cambridge: Open Book Publishers, 2017) 107 – 112.

[79] Sen argues that the capability concerned with is the ability to achieve "various combinations of functionings" as against individual capabilities/functionings. See Sen, *supra* note 60 at 233.

Table 5 – Categories of Capabilities

Categories of Capabilities	Examples
Personal	Life; Bodily health; Adequate nourishment; Adequate shelter; Bodily integrity; Freedom of movement; Think and reason; Education; Freedom of Expression, conscience and religion; Property rights; Right to seek employment and the ability to work
Social	Meaningful political participation; Freedom of Association; Adequate public healthcare; Adequate educational arrangements; Safety
Environmental	Living with concern and in relation with other species; Healthy climate; Appropriate built environment
Relational	Family and friendship; Respect for culture; Community relationships; Tolerance and empathy; Self-respect; non-discrimination; non-humiliation

Table 5 is a blend of measurable tangible and intangible (e.g., bodily health and empathy), and internal and external (e.g., bodily integrity and educational arrangement) capabilities. Commenting on her list of capabilities which combines tangibles and intangibles, Nussbaum points out that anything worth measuring in human quality of life is difficult to measure and expresses the expectation that those who suffer from deprivation would help find ways to describe and quantify their predicament.[80] While it is important that measurable capabilities should be measured, one must be careful not to force the immeasurable into quantitative frames. For example, whereas relational capabilities (e.g., friendship, empathy) can be described, we cannot put a number on them. This is even more true when viewing capabilities from an Indigenous viewpoint; a viewpoint which places a premium on non-physical and non-quantifiable realities.[81] Also, although the capability approach has traditionally paid more attention to personal capabilities, the importance

[80] Nussbaum, *supra* note 64 at 135.

[81] For example, Lavallée notes that "the relational nature of Indigenous epistemology acknowledges the interconnectedness of the physical, mental, emotional, and spiritual aspects of individuals with all living things and with the earth, the star world, and the universe. Indigenous epistemology is fluid, nonlinear, and relational. Many Indigenous ways of knowing accept both the physical and the nonphysical realms as reality. In accepting the nonphysical, one must accept that reality cannot always be quantified". See Lynn Lavallée, "Practical Application of an Indigenous Research Framework and Two Qualitative Indigenous Research Methods: Sharing Circles and Anishaabe Symbol-Based Reflection" (2009) 8:1 Intl Journal of Qualitative Methods 21 at 23.

of external capabilities (social and relational) has been emphasized.[82] The connection between these capabilities must again be emphasized. Sen gives the example of greater female education and employment reducing fertility rates which in the long run can reduce the pressure on the climate.[83] Another point worth making on *table 5* is the connection between the categories of capabilities and human rights. This linkage is well explored in the literature.[84] Vizard et al point out that the capability approach and human rights directly focus on the concepts of dignity and freedom,[85] Sen notes that the idea of capability can help understand the "opportunity aspect of freedom and human rights",[86] and Nussbaum argues that her capabilities list stresses many rights emphasized in the human rights movement.[87] Indeed, the provisions of the International Bill of Human Rights touch on various capability examples in *table 5*.[88]

I now return to the point earlier made that the capability approach provides a starting point to answering the 'why just transition question' more persuasively and comprehensively. While just transition is commonly framed as a 'job loss', 'job gain', 'income loss', and 'income gain' issue, a closer look at the arguments made by fossil fuel communities and workers shows that their concerns are more capability based. I have reproduced some quotes from stakeholders to highlight this point.

---

[82] Sen points out that "in valuing a person's ability to take part in the life of the society, there is an implicit valuation of the life of the society itself, and that is an important enough aspect of the capability perspective". See Sen, *supra* note 60 at 246. See also James Foster & Christopher Handy, "External Capabilities" (2008) 8 OPHI Working Papers 1- 19; Claudio D'Amato, "Collectivist Capabilitarianism" (2020) 21: 2 Journal of Human Development and Capabilities 105 – 120.

[83] Sen, *supra* note 60 at 249.

[84] See generally Sen, *supra* note 66; Nussbaum, *supra* note 64; Polly Vizard et al, "Introduction: The Capability Approach and Human Rights" (2011) 12: 1 Journal of Human Development and Capabilities 1 – 22; Cesar Gonzalez-Canton et al, "Exploring the Link Between Human Rights, the Capability Approach and Corporate Responsibility" (2019) 160 Journal of Business Ethics 865 – 879.

[85] Vizard et al, *ibid* at 1 – 2.

[86] Sen, *supra* note 66 at 153. Sen, however, points out that the capability approach is limited as it does not adequately deal with the process dimensions of human rights. *Ibid* at 155 – 156. Criticizing this view, Nussbaum argues that the bifurcation between opportunities and process is difficult to understand as many of the things people need to live a life worthy of human dignity is process based. See Nussbaum, *supra* note 61 at 28. On another note, Barclay argues that the language of capability fails to adequately incorporate the importance of equality and the notion that every government treats all people as having equal status. See Linda Barclay, "The Importance of Equal Respect: What Capabilities Approach Can and Should Learn from Human Rights Law" (2016) 64: 2 Political Studies 385 – 400.

[87] Nussbaum, *ibid* at 23.

[88] The 1948 Universal Declaration on Human Rights (UNDHR), 1966 International Covenant on Civil and Political Rights (ICCPR), and the 1966 International Covenant on Economic, Social and Cultural Rights (ICESCR) which make up the International Bill (alongside their optional protocols) have an array of provisions including the right to equality, dignity, life and security (UNDHR, arts 1 -3); property rights, means of subsistence, employment, physical and mental health, education, and taking part in cultural life (ICESR, arts 1, 6, 7, 12, 13 and 15); liberty of movement, privacy, freedom of thought, conscience, religion, opinion and association (ICCPR, arts 12, 17, 18, 19, 22).

> We hope we're seeing the end of fossil fuels for the good of everybody. But how are we going to provide for our families? … We're going to need some kind of transition. We've moved out there, we've invested in that industry – and when it ends, we're going to be left holding the bag … Our employers will move on to the next shiny thing they see and make another billion dollars – but where are our workers going to go?[89]
>
> I come from a small community outside Estevan and if the mining industry is removed, I would have to travel to Regina or Saskatoon to get basic services.[90]
>
> Our population keeps getting old and we can't afford to lose any more families. Young families don't want to stay in our community anymore because there are fewer jobs.[91]

Family, community, family support, and basic services are the central themes of the above concerns. While reference was made to jobs, it was made in the context of what jobs could help do, i.e., support for the welfare of families and the preservation of community. A capability-based framing changes both the questions and answers posited in just transition discourse. The provision of replacement jobs ceases to be an end. The question becomes whether jobs are necessary to meet capability demands and the extent to which jobs meet such demands. Here, it is not satisfactory that jobs (when deemed necessary) only carry the appellation 'green'; they must be, in the overall, capability enriching. That a replacement-job could lead to a reduction in emissions (e.g., solar farm or hydroelectricity dam) is not satisfactory; equally important is its effect on community integration and ecological integrity. Again, capability framing takes us back to pre-transition periods and compels us to ask questions including why host communities of fossil fuel extraction projects are often bereft of personal, social, environmental, and relational capabilities as reflected in the 2010 Expert Report despite the availability of jobs.[92] Beyond the jobs, it is even more important to guide against the repeat of these deprivations post-transition. The metric for adjudging that a transition is just should not be the extent to which the *status quo* is not disrupted (e.g., jobs are retained or replaced, or remuneration levels are maintained), but how the wellbeing of a community is guaranteed. While I will explore this further in subsequent chapters, it suffices to

---

[89] Mychaylo Prystupa, "At COP21, Oil Sands Worker Urges Smooth Transition off Fossil Fuels", *Canada's National Observer* (8 December 2015) online: <https://www.nationalobserver.com/2015/12/08/news/cop21-oil-sands-worker-urges-smooth-transition-fossil-fuels> (Quote from Ken Smith, President of Unifor local 7074A and mechanic with Canadian oil and gas company, Suncor).

[90] The Task Force on Just Transition for Canadian Coal Power Workers and Communities, *What We Heard from Canadian Coal Power Workers and Communities* (Ottawa: Government of Canada, 2019) 18. (Quote from a resident of the Estevan area, Saskatoon, Canada).

[91] *Ibid*. (Quote from a resident of Trenton, Nova Scotia, Canada).

[92] Gosselin, *supra* note 59.

highlight the first just characteristic of just transition at this point. The realization of combined capabilities and enrichment of wellbeing should be the central objective of just transition.

B. The 'What' of Just Transition

The capability approach, the categories, and examples in *table 5* also provide a different perspective to the 'what' of just transition. As already shown, the contemporary demands of the labour-led just transition movement are essentially similar to Leopold's vision of just transition: fair distribution of cost, workers should not suffer net loss of income, access to comparable jobs, re-education, and financial support to provide for full wages and benefits.[93] Through the lenses of the capability approach, however, these demands are means and not ends, and the satisfaction of these demands does not in itself qualify as justice. For example, Indigenous communities (e.g., the Chipewyan Prairie First Nation, Fort McKay Indian Settlement, Fort McMurray #468 First Nation, and Mikisew Cree First Nation) in the Regional Municipality of Wood Buffalo (where the Canadian oil sands are substantially located) have been found to enjoy higher incomes and lower unemployment rates relative to other Indigenous and non-Indigenous communities in Canada.[94] There is, however, a dissonance between this prosperity of means and the impoverishment of Indigenous land, distortion of Indigenous peoples' relationship with land, interference with spiritual practices, loss of knowledge of place, community fragmentation, language loss, encroachment of treaty and Constitutional rights (e.g. rights to hunt, fish and gather), disruption of biodiversity balance, water contamination, air pollution, and the prevalence of respiratory illnesses and "high rates of rare cancer".[95] The adverse effects of oil sands operations on Indigenous communities inform Huseman and Short's seemingly hyperbolic description of the operations as "industrial genocide".[96]

While the argument could be made that touted green projects would have less adverse environmental effects, when compared to, for example, the Alberta oil patch, the point remains that income does not in itself translate to wellbeing. This reinforces the point above that just transition should focus on 'ends' and not only means. This does not mean that a resource

[93] Leopold, *supra* note 16.
[94] See Mark Milke & Lennie Kaplan, *Canada's Oil Sands and Local First Nations: A Snapshot* (Canadian Energy Centre, 2020) 2 – 3.
[95] See Clinton Westman & Tara Joly, "Oil Sands Extraction in Alberta, Canada: A Review of Impacts and Processes Concerning Indigenous Peoples" (2019) 47 Human Ecology 233 – 243.
[96] Jennifer Huseman and Damien Short, "'A Slow Industrial Genocide': Tar Sands and the Indigenous Peoples of Northern Alberta" (2012) 16:1 The International Journal of Human Rights 216 – 237.

conversation is not relevant. It is true that while higher income both for the state and individuals does not translate to wellbeing, FFDEs rely overwhelmingly on income from fossil fuel to fund basic welfare projects although the adequacy and appropriateness of the welfare initiatives could be debated.[97] Indeed, an apt justification for just transition is the potential loss of resources which can be converted into functionings. A capability framing, however, shifts the focus from the availability of resources as an end in itself and corrects the notion that just transition programs and frameworks that focus on the provision of resources have met the objective of justice. The integrated and comprehensive focus of the capability approach allows for a more expansive approach on what the substance of justice in the just transition context should be. It is not just about the availability of resources or meeting work related demands, but it is also about attending to existing injustices to the environment, people, and culture, and ensuring that sustainability initiatives do not re-invent such injustices. I propose this as another characteristic of just transition.

C. The 'Who' of Just Transition

Figure 1 (chapter 1) lists individuals, communities, corporations, and States as key stakeholders in FFDEs. While it is less contestable that these are indeed relevant just transition stakeholders and/or right-holders, the weighting of stakeholders (who should be prioritized) and how to cater to the individual constituents of broadly categorized stakeholders (e.g., how do we unbundle and cater to specific justice demands of the relevant demographics of communities or workforce) are more complex and essential justice questions. Robins et al, writing on just transition in the United Kingdom, are of the view that just transition impacts an interlocking array of citizens (workers, communities, consumers, and citizens) "in terms of the distributional and participative aspects of

[97] FFDEs often base their budgets on projected income from the energy sector. For example, while the Government of Alberta proposed a $56.8 billion budget in 2019, about $50 billion projected revenue is based in part on an anticipated 38% increase in energy royalties. In any case, the drop in the price of oil has been cited as one of the reasons for cuts in spending in areas including post-secondary education and transfers to Alberta cities. See Janet French, "Alberta Budget 2019: Cities, Universities, Civil Servants Feel the Fiscal Pain", *Edmonton Journal* (25 October 2019) online: <https://edmontonjournal.com/news/local-news/2019-alberta-budget-will-have-2-8-per-cent-spending-cut-programs-eliminated>; Sammy Hudes, "Alberta Budget Banks on Critical Revenue Boosts Despite Market 'Volatility', Rising Debt", *Calgary Herald* (28 February 2020) online: <https://calgaryherald.com/news/politics/alberta-budget-banks-on-critical-revenue-boosts-despite-market-volatility-rising-debt>. Nigeria is another example. The country based its budget on an anticipated oil price of $57 per barrel but had to revise to $30, affecting the capacity of government to spend on critical public needs and its salary and pension commitment. See Ruth Olurounbi, "Nigeria Dangerously Exposed to Oil Crash", *Petroleum Economist* (24 March 2020) online: <https://www.petroleum-economist.com/articles/politics-economics/africa/2020/nigeria-dangerously-exposed-to-oil-crash#:~:text=Finance%20minister%20Zainab%20Ahmed%20says,25pc%20cut%20in%20annual%20expenditure.&text=In%20the%20long%20term%2C%20present,unsustainable%20with%20current%20oil%20prices>.

the transition".[98] While it is correct that the implications of just transition are far reaching, Robins et al's position takes 'workers' (and work) as the beginning of their analysis, with 'other' categories of stakeholders only at the receiving end of "spill-over effects".[99] The importance of the 'global' and an appreciation that by reason of the international nature of energy intensive industries (particularly the fossil fuel sector) vis-à-vis the global dimension of climate change are also not evident in Robin et al's framing. As I will show briefly in this chapter and more extensively in chapter 3, there can be no adequate answer to the question of who just transition should focus on without paying attention to just transition's global dimension.

Applied ideally, a capability approach requires equal attention to the capability and functioning needs of everyone.[100] This is because every individual is deemed to have an inherent entitlement to these capabilities and unlike a utilitarian framework, utility to the many cannot justify the deprivation of one. But like Quintavalla and Heine argue in the human rights context, scarcity of resources forces the prioritization of rights (and right-holders) despite the acclaimed universality and indivisibility of human rights.[101] Further drawing a parallel between capabilities/functionings and human rights, the non-absoluteness of some human rights on the basis of derogations like public health and safety, public morality, and national security is an acknowledgment of the difficulty of guaranteeing every right for everyone at every time.[102] Addressing this problem, Nussbaum argues that where trade-offs must be made, "we ought to say that this is a tragic situation in which minimal justice cannot be done, and we should get to work to produce a future in which all citizens can enjoy all the capabilities".[103] In making this point, Nussbaum ignores instances where capabilities are antithetical. During the Covid19 pandemic, bodily health and the freedoms to move freely, assemble and associate were not mutually compatible capabilities, and to protect public health (particularly the aged and other vulnerable people), these freedoms had to be curtailed and, in some cases, temporarily suspended. The point is that in an imperfect world, there

[98] Nick Robins et al, *Investing in a Just Transition in the UK: How Investors can Integrate Social Impact and Place-based Financing into Climate Strategies* (London: Grantham Research Institute on Climate Change and the Environment & the London School of Economics and Political Science, 2019) 9.
[99] *Ibid*.
[100] Sen points out that this is not a claim for equality of capability. See Sen, *supra* note 60 at 265, 295 – 298.
[101] Alberto Quintavalla & Klaus Heine, "Priorities and Human Rights" (2019) 23: 4 The Intl Journal of Huma Rights 679 at 681 – 683.
[102] See generally Brian Bird, "Are All Charter Rights and Freedoms Really Non-Absolute? (2017) 40:1 Dalhousie Law Journal 107 – 121.
[103] Nussbaum, *supra* note 62 at 27.

are times that rights and interests need to be weighed and prioritized. The more important question is, in those instances, what should determine priority. In the just transition context, should 'workers' be automatically prioritised given the actual or potential loss of jobs? Does the interest of communities with cultures and social structures built around the industries rank lower? What would be the position of individuals in host communities who have historically gotten the shorter end of the stick during the boom season of the fossil industry?

Fraser argues that unlike in the previous (Westphalian) era, assumptions cannot be made on who counts as a subject of justice.[104] Accordingly, "we must ask: given the clash of rival views of the bounds of justice, how should we decide whose interests ought to count?"[105] In attempting to answer this question, Fraser rejects various approaches including the *political membership view* which emphasizes belonging (e.g. shared nationality or culture) as the determinant of the 'who', *the humanist principle* which recognizes all of humankind as the focus of justice, and the *all-affected-principle* which focuses on the extent to which people stand in causal relationships to themselves.[106] She goes on to propose an *all-subjected-principle* which posits that "all those who are jointly subject to a given governance structure have moral standing as subjects of justice in relation to it".[107] While I agree with the flaws identified by Fraser – the political membership view's fixation on the Westphalian state, the one-size-fits-all approach of the humanist principle, and the all-affected-principle's failure to attend to "the constitutive force of social mediations",[108] I argue that Fraser's all-subjected-principle has flaws which limit its application here. The principle has an ill-defined scope. It assumes that governance structures can be easily defined. For example, issues like climate finance and technologies involve multiple multilateral bodies including the UNFCCC, World Bank, World Trade Organization, and many other non-state bodies. Again, it is difficult to locate the locus of responsibility for an issue like climate change which, at once, qualifies as a local, national, regional, and global issue. Further, although Fraser

[104] Nancy Fraser, "Who Counts? Dilemmas of Justice in a Postwestphalian World" (2009) 41: 1 Antipode 281 at 283.
[105] *Ibid*.
[106] *Ibid* at 287 – 292.
[107] *Ibid* at 292 – 293.
[108] In respect of her criticism of the all-affected principle, Fraser argues that the principle is "disturbingly objectivistic" and that "by reducing the question of the "who" to the question of who is affected by whom, affectedness treats it as a simple matter of empirical fact, which could be settled by social science". *Ibid* at 292.

rejects a Westphalian construct, her principle seems to focus on formal governance structures, while failing to recognize informal structures.[109]

A repurposed Rawlsian theory of justice could assist in answering the question of the 'who' of just transition.[110] Rawls popularized the idea that the fundamental idea of justice is fairness.[111] This idea revolves around two principles: the equal right of everybody to the most extensive scheme of equal basic liberties and the arrangement of social and economic inequalities such that they are to everyone's advantage and attached to positions opened to all.[112] The second principle is of relevance here. Under his difference principle,[113] Rawls differentiated between a *perfectly just scheme* where the expectations of the least advantaged are maximized, a *just throughout* where the expectations of people better-off contribute to the welfare of the more unfortunate, and an *unjust scheme* which depends on excessive higher expectations and violations of other principles of justice (e.g., equality of opportunity).[114] Consistent with the *perfectly just scheme*, he argued that "social and economic inequalities are to be arranged so that they are … to the greatest expected benefit of the least advantaged".[115] Rawls' lexical difference principle, which he suggests might be irrelevant in actual cases, is nevertheless also important. The principles states that in a basic structure, "first, maximize the welfare of the worst representative man; second … maximize the welfare of the second worst-off representative man, and so on until the last case …"[116]

While it cannot be inferred from Rawls' theory that the most disadvantaged is the subject of justice, a reasonable deduction could be made that the 'most disadvantaged' should be the starting point of a justice analysis. Inherent in the principle and the chain connection thesis is that we are connected, and benefits for the disadvantaged need not be a zero-sum game. In a manner of

---

[109] For more on informal governance, see Sarah Ayres, "Assessing the Impacts of Informal Governance on Political Innovation" (2017) 19:1 Public Management Review 90 – 107.
[110] Rawls' theory of justice is considered transcendental, institution-centric, designed to operate as a political theory at the level of the society's 'basic structure', and is considered inapplicable at the international level since there is no 'global' government. See John Rawls, *Justice as Fairness: A Restatement* (Cambridge: Harvard University Press, 2001) 10 - 14. Sen notes that the Rawlsian theory focuses almost on just institutions, instead of "relying on "just societies" that may try to rely on both effective institutions and on actual behavioural features". See Sen, *supra* note 59 at 67. While these are features that seemingly make Rawlsian theory incompatible with other justice approaches (e.g., capability), an unbundling and selective usage of some of its principles is relevant here.
[111] See generally John Rawls, "Justice as Fairness" (1958) 67:2 The Philosophical Review 164 – 194.
[112] John Rawls, *A Theory of Justice*, Revised Edition (Cambridge: Harvard University Press, 1999) 53.
[113] Rawls frames the difference principle as an egalitarian conception "in the sense that unless there is a distribution that makes both persons better, an equal distribution is to be preferred". *Ibid* at 65 – 66.
[114] *Ibid* at 68.
[115] *Ibid* at 72.
[116] *Ibid*.

speaking, a rising tide can raise all boats, but the starting point must be the most imperiled and not the most advantaged. As Rawls put it, "it seems plausible that if the least advantaged benefit so do others in between".[117] Again, this framing has implications for the refocusing of just transition. Do we focus on facilitating industries or does the analysis begin with meeting the needs of the most vulnerable in the society? It is more likely for policies that are designed to meet these needs to impact other strata of the society (including businesses) than for benefits from initiatives which bolster the privileged (e.g., companies) to trickle down to the most vulnerable. Oil and Gas companies might divest from fossil fuel and reinvest in renewables, but the new investment will not necessarily be domiciled in previous host communities and even when it is, it is not guaranteed to benefit the most vulnerable.[118] Leopold raised a similar point in 1993 where he pointed at the capital mobility of multinational companies.[119] The point was reiterated by Ken Smith in 2015 who lamented that while the employers move to "the next shiny thing", the workers have nowhere to go.[120]

The above informs another characteristic of just transition – it focuses on the most vulnerable. How then is vulnerability defined and the 'most vulnerable' identified in the just transition context? Fineman proposes an empirical rather than a normative notion of vulnerability. Under Fineman's framing, we are vulnerable because we are embodied beings who are constantly susceptible to positive and negative changes over the course of life, and dependent on "social institutions and relationships throughout life".[121] Resilience is another essential component of Fineman's conception of vulnerability. She argues that resilience is based on resources (material, social etc.) through which individuals respond to vulnerability, and it is measured by the ability to "survive or recover from harm or setbacks that inevitably occur over the life course".[122] While

---

[117] *Ibid* at 71.
[118] Swilling refers to the outcome of an unjust transition as a case of an armed lifeboat which will emerge from a technocratic conception of sustainability which aims to address the sustainability problem without reducing the powers and wealth of the affluent, on the terms that "serve the elites, while poverty is allowed to persist". See Swilling, supra note 7 at 4. For example, BP's announcement to slash its oil and gas production by 40% and increase investment in low-carbon technology by 10 times resulted in its share price increasing by 7%. See Jordan Davidson, "BP to cut Oil and Gas Production 40%, Invest 10x More in Green Energy", *EcoWatch* online: <https://www.ecowatch.com/bp-green-energy-investment-2646892538.html?rebelltitem=2#rebelltitem2>. Its energy transition plan, however, seems silent on how to address the effect of its transition on communities and workers. See BP, "Advancing the Energy Transition" (2018) online: <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/sustainability/group-reports/bp-advancing-the-energy-transition.pdf>.
[119] Leopold, *supra* note 12 at 82.
[120] Prystupa, *supra* note 89.
[121] Martha Fineman, "Vulnerability and Social Justice" (2019) 53:2 Valparaiso University Law Review 341 at 358.
[122] *Ibid* at 363.

Fineman represents her vulnerability concept as not being synonymous to weakness, disadvantage or impermissible discrimination,[123] the sum of her proposed elements – vulnerability, dependence, and resilience – leads to a conclusion that weaknesses and disadvantages in respect of which people are not resilient and for which support systems are lacking, are primary indicators of vulnerability. Further, this socially embedded notion of vulnerability is not complete. Harris suggests the complementary concept of ecological vulnerability.[124] Ecological vulnerability recognizes the embeddedness of humans in and reliance of humans on the "complex relations of "interbeing" with nonhuman and nonliving systems".[125] This interdependence on trans-human systems, she argues, is a source of resilience and vulnerability.[126]

A combination of Fineman and Harris's work grounds another characteristic of just transition - social and ecological disadvantages in respect of which resilience is compromised or limited are minimum determinants of vulnerabilities to be prioritized. *Table 5* is useful in determining, particularly, the social disadvantages. The inclusion of ecological disadvantages makes the restoration of ecosystems, to the fullest extent possible, an essential element of the just transition discourse, as injustice will not be addressed fulsomely until such restoration occurs.[127] While there is intrinsic value in restoring nature for nature's sake, human socio-cultural wellbeing is also predicated on ecosystem restoration. The Indigenous Environmental Network (IEN), for example, notes that "just transition is food sovereignty" which includes "a restorative framework for indigenous-based policy reform in hunting, fishing and gathering rights".[128]

Although the idea of social and ecological vulnerabilities has direct implications at the local level, it must also be situated in a global context. As already shown in chapter 1, while the energy transition is required to occur at pace and a substantial proportion of unexplored fossil must be left underground, there is a remaining carbon budget which is essential to filling the transition gap

[123] *Ibid* at 342.
[124] See generally Angela Harris, "Vulnerability and Power in the Age of the Anthropocene" (2014) 6:1 Washington and Lee Journal of Energy, Climate, and the Environment 98 – 161.
[125] *Ibid* at 115.
[126] *Ibid* at 126.
[127] Restoration of ecosystems is not a frontline component of mainstream just transition Guidelines or policies. For example, while the ILO Just Transition Guidelines made a passing reference to "restoration of natural resources", it is not part of its nine key policy areas. Contrariwise, the Indigenous Environmental Network (IEN) made the necessity of the "full restoration of ecosystems" one of the central pieces of its just transition principles. See IEN, "Indigenous Principles of just Transition", online: <http://www.ienearth.org/wp-content/uploads/2017/10/IENJustTransitionPrinciples.pdf>.
[128] *Ibid*.

without pushing the global temperature past the 1.5ºC limit. What are the considerations and justifications for determining how this budget is distributed? While this question is central to chapter 3, some preliminary points are made here. There are multiple reasons why just transition cannot be confined as a domestic concern. Climate change is the quintessential global problem, which is primarily globally addressed. A key part of the climate change problem are emissions from the fossil fuel industry, which is itself essentially global.[129] Also, the 'global' is inherent in the notion of ecological vulnerability. As noted by Harris, the complex ecosystems which human lives are part of "operate on various levels of scale, from the local to the global".[130] At the global level, there is also an intersect between social and ecological vulnerability. For example, resource states like OPEC countries due to possible loss of resources (arguably to fund the attainment of capabilities like social welfare, education etc., which would induce social vulnerabilities) inhibit ambitious climate commitments which could forestall further ecological vulnerabilities. The point is that for the transition to be truly 'just', subjects of justice must also be identified at the global level. As in the case of 'local' just transition, a key consideration in determining such subjects should be the extent to which they are socially and ecologically vulnerable. This is a departure from models which emphasize economically efficient extraction[131] or greater past extraction.[132] As I will expound in chapter 3, the justice principle determining the subjects of justice is in many ways, determinant of the vision of just transition that will be pursued. For example, if a multinational oil company commits to cutting thousands of jobs or shut certain production facilities in its transition to 'low-carbon',[133] it matters where the shuttered and created jobs and facilities are located and who will be affected.

---

[129] Illustrating this point, Sinn notes that the "decisions to pollute or not to pollute the climate aren't independent of one another, but are linked directly to other such decisions through the global market for fossil fuels … The CO_2 that we emit into the atmosphere came out of the ground as carbon, and we bought it on the world market for carbon. If the Germans buy and burn less coal, crude oil, or natural gas, the Chinese, say, will be able to buy and burn more". See Hans-Werner Sinn, *The Green Paradox: A Supply-side Approach to Global Warming* (Cambridge: The MIT Press, 2012) 127 – 128.

[130] Harris, *supra* note 123 at 127.

[131] See Christophe McGlade & Paul Ekins, "The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2ºC" (8 January 2015) 517 Nature 187.

[132] See generally, Sivan Kartha et al, "Whose Carbon is Burnable? Equity Consideration in the Allocation of a "Right to Extract"" (2018) 150 Climatic Change 117 – 129.

[133] While it has been framed as part of a low-carbon transition move, Royal Dutch Shell announced a cut of about 9000 jobs as a cost-cutting decision. The BP also announced that 10,000 employees from "its global workforce of 70,000" will be released. What is unclear, however, is the places where these cuts would occur, the principles determining such cuts, and whether this results in actual emission cut (that jobs are slashed does not mean production

D. The 'How' of Just Transition

Having addressed the 'what', 'why', and 'who' of justice in the context of just transition, I now turn to the question of 'how'. As shown above, the central feature of the contemporary understandings of just transition is the emphasis on procedural justice. The ILO Guidelines for Just Transition identifies 'social dialogue' to be an integral part of the just transition institutional framework.[134] Such 'social dialogue' entails the involvement of government, workers, and industry (tripartism), formalization of dialogue mechanisms, forging of consensus on sustainability transition pathways, and the active participation of "members", and collective bargaining and agreements.[135] I will not rehash the argument on the inappositeness of a tripartite approach to social dialogue rather than a more multipartite approach. A more consequential issue is the constitution of the 'players' under either approach.

Under the tripartite approach, how is government scoped (federal, provincial, municipal, and/or Indigenous governments), what does industry entail (the Board, shareholders, or stakeholders), and how is 'labour' constituted (international labour bodies, oil and gas specific labour bodies, unorganized labour, identity specific labour bodies (immigrant, women, Indigenous, disabled workers))? Under the broader multipartite framing, which communities are relevant (right holders, environmental NGOs, community stakeholders)? The identification of the 'right' participants is the first challenge of any meaningful discourse process. This is, in part, because 'who' is invited to the 'table', arguably, influences what is discussed there.[136] Another challenge is determining if and to what extent a discourse process is to be informational, consensus building, or consent

---

would decline). See Jillian Ambrose, "Shell to cut up to 9000 jobs as COVID-19 Accelerates Green Drive", *The Guardian* (30 September 2020) online: <https://www.theguardian.com/business/2020/sep/30/shell-to-cut-up-to-9000-jobs-on-back-of-covid-19-crisis>.

[134] ILO, *supra* note 33 at para. 13.

[135] ILO, para. 17, 18. The UNFCCC also notes that the "mechanisms of social dialogue, including tripartism and collective bargaining, serve as effective tools for the design of policies at all levels. Social dialogue can contribute to just transition by building on the commitment of workers and employers to joint action". See UNFCCC, "Just Transition of the Workforce, and the Creation of Decent Work and Quality Jobs – Technical Paper" < https://unfccc.int/sites/default/files/resource/Just%20transition.pdf> 25. See also Anabella Rosemberg, "Building a Just transition: The linkages Between Climate Change and Employment" (2010) 2:2 Intl Journal of Labour Research 143 – 144.

[136] Arguably, the prominence of the labour movement in advocating for just transition in both the domestic and international spheres is considerably responsible for the jobs-centric notion of just transition. For example, Stevis et al note that the lobbying of the labour movement was considerably responsible for the inclusion of the just transition language in Paris Agreement, which has "contributed to further anchor the concept within the union movement". See Stevis et al, *supra* note 2 at 19.

obtaining. Organized labour's preferred model is the building of consensus.[137] The consensus building model is, however, built on compromise of negotiating positions.[138] While consensus building is a mainstream principle in the tripartite framing of just transition based social dialogue, engaging with right-holders might warrant a form of dialogue predicated on obtaining consent. This is perhaps most evident in the Indigenous context given the expectation under international law that Indigenous peoples are consulted in order to obtain their free, prior and informed consent (FPIC) before the adoption and implementation of legislative or administrative measures that may affect them.[139]

The notion of recognition is crucial to identifying the 'right' stakeholders and affording them appropriate 'powers' in a process of social dialogue. Agyeman, in his work on just sustainabilities, argues that in multicultural and intercultural societies, 'recognition' is an essential dimension of justice.[140] While there are different schools of 'justice as recognition',[141] Fraser's status subordination and participatory parity framing is more apposite here. Fraser argues that misrecognition and social subordination arise when some actors are constituted as inferior, excluded, wholly other or invisible.[142] To be misrecognized, she continues, is to be "denied the status of a full partner in social relation, as a consequence of institutionalized patterns of cultural

[137] ILO, *supra* note 33 at para. 17(a).

[138] Describing the agreements reached to close the Centralia Coal Plant in Washington State, United States, Galgoczi notes that "the deal (between the state government, trade unions, employer, and ENGOs) was a significant compromise between a number of organizations with competing interests". It includes a staggered closure arrangement for 2020 and 2025 which would allow 40% of the workforce to reach retirement before the closure. See Bela Galgoczi, "Just Transition Towards Environmentally Sustainable Economies and Societies for All" (2018) ILO ACTRAV Policy Brief 7.

[139] United Nations Declaration on the Rights of Indigenous Peoples, art. 19. Art. 32(2) of UNDRIP requires States to consult with Indigenous peoples to obtain their FPIC before approving any project affecting their lands, territories, and other resources. A literal interpretation of this provision, given that it refers to 'approval of projects' might, however, disapply it to instances where a government refuses a project an Indigenous community desires to proceed. The broader wording of art. 19 reasonably deals with this problem. Further affirming the relevance of FPIC to just transition, the IEN notes that just transition "requires the need … to create policies that harmonize the duty to consult … with the terms of FPIC". IEN, *supra* note 126.

[140] Julian Agyeman, Introducing Just Sustainabilities: Policy, Planning and Practice (London: Zed Books, 2013) 39. Schlosberg points out that injustice and unjust distribution is in part due to "a lack of recognition of group difference". See Schlosberg, *supra* note 54 at 16. Iris Young, whom Schlosberg drew substantially from, argues that "where social group differences exist and some groups are privileged while others are oppressed, social justice requires explicitly acknowledging and attending to those group differences in order to undermine oppression". See Iris Young, *Justice and the Politics of Difference* (Princeton: Princeton University Press, 2011) 3.

[141] Schlosberg identifies two broad schools of the theory of recognition – the psychology-oriented interpretation of writers like Alex Honneth and Charles Taylor (they emphasize the need for reciprocal and intersubjective recognition which self-worth is predicated on), and status-based recognition advocated by writers like Iris Young and Nancy Fraser (although with major differences). See Schlosberg, *supra* note 54 at 17 – 20.

[142] Nancy Fraser, "Rethinking Recognition" (May/June 2000) 3 New Left Review 107 at 113.

value that constitute one as comparatively unworthy of respect or esteem".[143] For social dialogue to be just, therefore, we must consciously confront and overcome subordination. To be clear, this is not to be achieved through the subordination of previously dominant parties, but about making visible the previously invisible. For example, when workers are mentioned in the just transition context, the interests of oil and gas workers are preeminent, recognition-based participation, requires equal attention to 'workers' in non-oil and informal dependent sectors. This constitutes another characteristic of just transition, social dialogue must be recognition-based, the status of parties and the real implications of class dichotomy must be critically analyzed and addressed, and parity-impeding norms and institutional structures must be removed.

While Fraser criticizes the identity model of the recognition framework as reifying groups and valorizing group specificity,[144] she appreciates instances where "hitherto underacknowledged distinctiveness" needs to be considered.[145] Sustainability transition is one such instance. Here, gender, place, age, disabilities and culture are key identity factors as they inform varying forms and degrees of vulnerabilities and access to resources to effectively engage in 'social discourse'.[146] Showing how sustainability transition initiatives fail to recognize and respect distinct identities, Ciplet and Harrison identify the marketization-recognition tension where ecological services are commodified without regard for the impacts on the rights of socially marginalized communities and the verification-recognition tension where the use of 'standardized' forms of verification which fail to recognize norms, values, rights, and alternative forms of knowledge.[147] These

[143] *Ibid* at 113 – 114.
[144] *Ibid* at 112, 116.
[145] *Ibid* at 115.
[146] The example of the Alberta oil patch where the labour force is overwhelmingly made up of 'white' males has already been referenced (see Mertins-Kirkwood, *supra* note 56). An oil and gas labour movement centric just transition process inevitably represent the interest of its dominant constituents (white men) leaving out the essential voices of women who experience the effects of the transition differently whether as participants of other sectors or given their frontal involvement in families. The World Bank, for example, notes that women are more likely to be impacted by coal mine closure programs in terms of loss of direct jobs, increased domestic responsibilities, and increase in intra-house tensions and violence. See World Bank Group, *Managing Coal Mine Closure: Achieving a Just Transition for All* (Washington D.C.: World Bank, 2018) 36. Age is another example. The workforce is not monolithic, it is made up of individuals of different age-groups – persons close to retirement, mid-career persons, and early professionals. The dominant age demographic in a company could impact on negotiating positions and ultimate concessions. An age-demographic often not represented or deemed relevant are the underage, who are left in the conflicting positions of losing future job opportunities (intergenerational unemployment) and greater proneness to future extreme climate events. See O. Sartor, "Implementing Coal Transitions: Insight from Case Studies of Major Coal-consuming Economies" (2018) IDDRI & Climate Strategies 30. Also fundamental to effective discourse are place-based peculiarities. The diverse results of the transition in Ruhr and Lusatia referred to in chapter 1 exemplify this need.
[147] David Ciplet & Jill Harrison, "Transition Tensions: Mapping Conflicts in Movements for a Just and Sustainable Transition" (2020) 29: 3 Environmental Politics 435 at 444 – 445.

tensions, they argue, produce sustainable misrecognition (bold and timely sustainability; limited recognition of diverse rights and values), unsustainable recognition (inadequate and delayed sustainability; strong recognition of rights and values), and unsustainable misrecognition (inadequate and delayed sustainability; limited recognition of rights and values).[148] Contrariwise, a balanced recognition and sustainability mix would result in just transition - where sustainability gains are accompanied by strong recognition of diverse forms of rights and values,[149] particularly those of marginalized and vulnerable people. This, I argue, is another key characteristic of just transition.

On the question of whether social dialogue should be simply informational, consensus building focused, or consent seeking in just transition processes, I argue that there is no one-size-fits-all answer. Arnstein, in 1969, proposed eight tiers of public participation (which she agrees are way more in the real world) citizen participation ladder including manipulation, therapy, informing, consultation, placation, partnership, delegated power, and citizenship control.[150] While information is at what she describes as the "levels of tokenism", citizenship control is the ultimate level of participation where decision-making power is transferred to the 'people'.[151] As Arnstein also recognized, this ladder description of participation is an over-simplification of a more complex reality. Rather than this model, I construe information, consensus, and consent more like tools in a toolbox which could be used singularly or jointly depending on the circumstance. In certain instances, participation needs to be mutually and respectfully informational (e.g., indigenous people conveying distinct cultural information to industry and/or government or government disseminating commissioned studies). Elsewhere, consensus building is essential (e.g., questions surrounding processes which would not undermine ecological integrity, rights and/or core values). In other instances, consent must be sought and obtained, particularly where rights and/or the interests of the vulnerable and marginalized are at stake. This 'toolbox' understanding of what social dialogue should aim for is another crucial characteristic of just transition.

---

[148] *Ibid* at 445.
[149] *Ibid* at 446.
[150] Sherry Arnstein, "A Ladder of Citizen Participation" (1969) 35: 4 Journal of American Institute of Planners 216 at 217.
[151] *Ibid* at 217, 223. See also Patrick Bishop & Glyn Davis, "Mapping Public Participation in Policy Choices" (2002) 61:1 Australian Journal of Public Administration 14 at 16.

Table 6 – 'Just' Characteristics of Just Transition

Objective	a. The realization of combined capabilities and enrichment of human and ecological wellbeing is the central objective of just transition.
Demands	b. Fossil fuel dependent communities must have sufficient resources to guarantee the realization of combined capabilities and wellbeing. c. Just transition includes ensuring that existing injustices to the environment, culture, and people are redressed and that sustainability initiatives do not re-invent previous injustices.
Subjects	d. Just transition prioritises the most vulnerable. e. Vulnerability includes social and ecological vulnerability. f. Socially and ecologically vulnerable subjects must be both locally and globally scoped.
Process	g. A multipartite approach should be taken to identify participants for social dialogue. h. Social dialogue should aim to achieve participatory parity and parity-impeding norms and structures should be identified and removed. i. Sustainability processes must entail a strong recognition of diverse forms of rights and holders of rights, and values and identities, particularly those of marginalized and vulnerable people. The scope, mode and pace of transition must be diversity sensitive but also responsive to the urgency of far-reaching climate actions. j. A toolbox approach should be taken to determining the aim of a social dialogue process (information, consensus and/or consent).

In this part, I have focused on deconstructing what the qualifier 'just' in "just transition" means. While this inevitably redefines the nature, direction, and scope of the concept of 'sustainability transition', which it qualifies, I do not dwell on what sustainability transition means here. This I have briefly done in chapter one. It is, however, important to note that the 'just' characteristics proposed here are consistent with the adopted description of sustainability as the sustenance of life support system, nature, and community in chapter one. Compared to the just transition framings in *table 4*, the proposed just characteristics are more holistic and seek to weave both human needs and nature demands into an inextricable web. The characteristics listed in *table 6* are neither entirely novel nor exhaustive. While the characteristics can be found in various scholarly and policy materials, they are rarely brought together in the way I have done, more so, with the capability approach as pivot. In parts 2.4 and 2.5, I explore separately how just transition has been approached in the oil and gas, and coal sectors in different parts of the world. But more immediate is the need to attend to arguments challenging the relevance of the just transition discourse. This is the focus of the next section.

2.4 The Injustice of the Starting Point[152]

While I have critiqued and re-conceptualized just transition above, there remain questions about the validity of the foundational assumptions of just transition, including that it is possible to ensure both a just and timely transition and that communities and peoples who depend on the exploration of fossil fuels have legitimate claims to compensatory measures. Müller, on the issue of just and timely transition, argues that as there has been no successful rapid just transition examples, "rapid just transition is not a set of policy proposals at all – it is an empty set".[153] He concludes that denial of the need to make hard choices between 'quality jobs' and protecting the climate and the implicit construction of an ethical equivalence (between jobs and the climate) have resulted in time wasting just transition discourse.[154] Another argument is that if just transition were to have any credence, its primary focus should be persons and communities vulnerable to or impacted by climate change caused by emissions from fossil fuel industries rather than communities and workers who have benefited over time from such industries.[155]

Rather than being anti-just transition, I construe the above arguments as simply highlighting the problems of a narrowly scoped just transition narrative. Starting with Müller's argument, the point has already been made here that a job-centric notion of just transition, among other things, fails to appreciate that while indeed the green economy affords plenteous opportunities, this does not in itself translate to substitute jobs or equally privileged alternative opportunities for fossil fuel workers. It is in this sense that I agree with Müller that the pursuit of a job-centric just transition could be a waste of time or worse still bolster the justification for the continued existence of the fossil industries. The narrative, however, changes when the focus of just transition is capabilities and well-being as shown in tables 5 and 6 rather than just jobs. In this sense, rather than talking about the trade-off of the well-being of people and the climate, we are compelled to do the hard

[152] The phrase 'injustice of the starting point' is credited to Sara Seck who, in her review of this chapter, used the term to describe the problématique of the starting point of mainstream just transition discourse and the exclusion of communities that have suffered the effects of climate change caused by the fossil fuel industry from both the just transition discourse.
[153] Tadzio Müller, ""As Time Goes By …": The Hidden Pitfalls of the "Just Transition" Narrative", *Just Transition Research Collaborative* (14 June 2018) online: <https://medium.com/just-transitions/mueller-fc3f434025cc>.
[154] *Ibid.*
[155] Commenting on the first draft of this paper, for example, Sara Seck made the point that it is ironical that while just transition advocates argue for relocation assistance to fossil fuel workers at risk of losing their jobs, no such assistance is given to those who must relocate due to climate impacts caused by the industry that is shutting down.

work of taking the wellbeing of people and the climate as mutually enhancing.[156] Again, a beyond jobs just transition framework as proposed in this chapter exposes the injustice inherent in pathways even when they put the world on track to meet global climate targets. Agyeman admonishes that just sustainabilities both requires guiding against wasting human potential and denial of capacity as well as preserving ecological potential.[157] In his words, "… human inequality (the loss of human potential) is as detrimental to our future as the loss of environmental potential".[158] This is no false equivalence. In the same way that sacrificing intergenerational and ecological equity on the altar of intragenerational equity cannot and should not be permitted, there is no justification for trading off intragenerational equity for intergenerational and ecological equity. Table 6 not only shows that intergenerational, intragenerational, and ecological integrity can be achieved in an integrated manner, but that they are mutually integral to the attainment of wholesome just transition. The bottom line is that low carbon transition, whether it is the implementation of policies like fossil fuel subsidy reforms and divestments or green technologies, have considerable justice implications which if not frontally dealt with will create new forms of injustice or perpetuate existing inequities. Just transition (and the JTIA framework), broadly defined, is meant to ensure that transitions are justice compliant.

The point on the unjust exclusion of persons at risk of climate change from the just transition conversation is again not a wholesale indictment of just transition but a criticism as to scope. As I will show in chapter 3, historical responsibility, as one of the key principles of climate change governance, mandates that those who are responsible for climate change and its impact take the lead in addressing both the cause and consequences of climate change. This principle necessarily translates into the responsibility of the global fossil fuel industry to contribute to addressing climate risks and vulnerabilities across the world. Recognizing climate vulnerabilities, however, does not make less legitimate more traditional just transition claims on the effects of the transition on communities and peoples in FFDEs. There are numerous angles to this. One, to contend that

[156] While Rosemberg took a very worker focused approach in her response to Müller, she made a point similar to mine. She argues that "history … has shown that neither people nor the planet wins when they are played against each other … I cannot cope with the idea that as humans we cannot come up with a better answer to a real dilemma". See Anabella Rosemberg, "The hidden Pitfalls of the Just Transition Narrative: A Response", *Just Transition Research Collaborative* (26 June 2018) <https://medium.com/just-transitions/the-hidden-pitfalls-of-the-just-transition-narrative-a-response-39c4ed0c0624>.
[157] See Agyeman, *supra* note 138 at 7.
[158] *Ibid.*

FFDEs have less claim to interventions aimed at addressing the consequences of the transition is to take a 'scapegoat' approach which takes FFDEs as 'wrongdoers' and the rest of the world as 'victims.' This is not only misguided and incorrect but is also needlessly divisive. One might even be compelled to respond to proponents of the scapegoat approach that "let the one who has never sinned throw the first stone".[159] Civilization, as we know it, and the lifestyle it commands including how we live, commute, eat and engage in other basic functions of life, is built on and still overwhelmingly powered by energy from fossil fuels.[160] To varying extents, we have all derived and continue to derive benefits from the exploration and combustion of fossil fuels. Hence, if equity considerations and incentives can be justifiably factored into demand side climate policies (e.g., carbon pricing and targeted refunds) in respect of the consumers of fossil fuels, communities and people on the supply side do not have less claim to equity considerations.

Taken further, even if the scapegoat argument were to be correct, an indiscriminate use of the transition 'whip' risks inflicting even greater harm on populations within FFDEs which have either been marginalized in the fossil economy or outrightly harmed by the fossil economy. The Fort McMurray example earlier referenced in this chapter is again useful here. The primary beneficiaries of the explored oil from the tar sands are the oil companies and oil workers who are mostly from outside the host community. Whereas an impact-blind transition would be of consequence to these companies and workers, it is arguable that they are more resilient than people in the service sector who are more likely to be permanently resident in Fort McMurray, less mobile and financially secure, and mostly women and or immigrants. In fact, it is more likely that in an impact-blind transitional framework, the rich will get richer and the poor, poorer. I have shown examples of this possibility under different supply side climate policies in chapter 3.

The purpose of just transition is not the sustenance of the fossil fuel industry or even the retention or provision of substitute jobs or palliatives to fossil fuel workers. Rather, it is to ensure that the transition from fossil fuel based socio-economic systems serves the end of wellbeing both within and outside FFDEs. In this wise, just transition is justified less by the notion that benefits and costs of the transition should be equitably shared, and more by the fact that the transition has potential adverse and positive implications for wellbeing, and there is need for deliberateness in ensuring

[159] The Holy Bible, New Living Translation, John 8:7.
[160] See generally Vaclav Smil, *Energy and Civilization: A History* (Cambridge: MIT Press, 2017) 296 – 384.

that the most vulnerable is protected from the adverse effects and also positioned to benefit from the positives. While I will explore this theme further here and in the next chapter, I have extensively quoted from the 2020 Production Gap Report to highlight the connection between just transition discourse and wellbeing:

> The Covid-19 pandemic has given us a peek into the potential inequity of this transition. The fossil fuel industry has been hit hard by the recent global economic disruption, which came on the heels of an expansion in oil supply that was already pushing down oil prices. This has resulted in painful social costs across the world, and particularly in developing countries. In Nigeria, lost oil revenue has driven a 25% cut to government spending, forcing the country deeper into debt to pay for its pandemic response and public health costs … Iraq's salaries and social benefits – even more dependent on oil revenues – have been significantly reduced as well … And Ecuador's public sector has been severely affected by the combined impact of the pandemic and collapse of oil revenue, which has impaired its ability to manage the Covid-10 crisis.[161]

The determination of whether the starting point of a just transition analysis is 'just' is dependent on the starting assumptions, which will in turn determine the 'what' and 'who' of the transition. The narrower it is (e.g., focusing solely on workers and industry), as proposed by Eisenberg, the higher the likelihood of persons who do not come within the narrow remit are left out, invariably making just transition policies and approach unjust. A broader perspective (as proposed here), however, infuses justice considerations into the starting point of a just transition analysis, which would also potentially impact the making and implementation of just transition policies. The latter parts of this chapter focus on such policies within FFDEs, while chapter three considers the global justice effects of sustainability transition policies both in fossil fuel and non-fossil fuel dependent jurisdictions.

2.5 Just Transition in Coal Communities

There is no shortage of literature on just sustainability transition in coal communities and industry. They, however, focus mostly on a political economy analysis of transition trends and the conditions for successful or unsuccessful transition. Common examples of coal transition include the closure of coal mines in Ruhr and Lusatia (Germany), the Appalachia region (United States),

[161] See SEI et al, "The Production Gap Report: 2020 Special Report" (2020) online: <http://productiongap.org/2020report/> at 29.

La Trobe Valley (Australia), and coal phase-out in Poland, Canada, and the United Kingdom.[162] While I will draw from these political-economy analyses, I pay more attention to the laws and policies that undergird the phase-outs, the extent to which they did or did not cater to just transition concerns, and whether they align with the characteristics in *table 6.* This approach is necessary as the analysis of just transition legal frameworks is rare in the literature. While practices are crucial and soft laws (e.g., the ILO Guidelines) are important, the codification of just transition in laws takes just transition beyond being a selective sustainability transition add-on and potentially helps to re-assure host communities of the commitment of governments to ensuring that sustainability transitions are just.

Unlike the relative newness of the transition discourse in oil and gas, the need to transition from coal has gotten more evident over the years, largely for non-climate reasons.[163] While western countries were historically the largest producers of coal, countries in the 'global south' are, however, increasingly replacing developed countries as major producers of coal.[164] One of the implications of this trend is the continuation in the rebound of the global coal demand and usage in 2018, as developing countries increasingly rely on it to fuel development.[165] In 2019, coal

[162] See generally Philip Lewin, ""Coal is Not Just a Job, It's a Way of Life": The Cultural Politics of Coal Production in Central Appalachia" (2019) 66 Social Problems 51 – 68; Julia Haggerty et al, "Planning for the Local Impacts of Coal Facility Closure: Emerging Strategies in the U.S. West" (2018) 57 Resources Policy 69 – 80; Hanna Bosca & Josephine Gillespie, "The Coal Story: Generational Coal Mining Communities and Strategies of Energy Transition in Australia" (2018) 120 Energy Policy 734 – 740; Lauren Vriens, *The End of Coal: Alberta's Coal Phase-out* (IISD Report) (Winnipeg, Manitoba: IISD, 2018); Mike Foden et al, *The State of the Coalfields: Economic and Social Conditions in the Former Mining Communities of England, Scotland and Wales* (Centre for Regional Economic and Social Research, 2014); Hanna Brauers et al, *Coal Transition in Germany: Learning from Past Transitions to Build Phase-out Pathways* (Berlin: IDDRI, 2018); Aleksander Szpor & Konstancja Ziokowska, *The Transformation of the Polish Coal Sector: GSI Report* (Winnipeg, Manitoba: IISD, 2018).

[163] The World Bank identifies mine mechanization, government policies and competition from other fuels in downstream energy demand markets as the main drivers of transition from coal. See World Bank, *supra* note 146 at 13, 18 - 21.

[164] The World Bank points out that with the movement of global coal production from West to East, Asia is likely to be most impacted from future transition from coal. For example, the United Kingdom and Germany in 1960 were jointly responsible for 20% of global coal production (394 million tons of coal), in 2016 they produced less than 10 million tons. See World Bank, *supra* note 146 at 14. China, India and Indonesia make up three of the top five largest producers of coal in 2019 with China (3693 MT) and India (769 MT) ranking first and second. See IEA, "World Total Coal Production, 1971 – 2019 Provisional", (29 July 2020) online: <https://www.iea.org/data-and-statistics/charts/world-total-coal-production-1971-2019-provisional>. In 2019, Indonesia displaced Australia as the largest exporter of coal. IEA, "Coal Information Overview", (July 2020) online: <https://www.iea.org/reports/coal-information-overview>.

[165] IEA, "Coal 2019: Analysis and Forecasts to 2024", (December 2019) online: <https://www.iea.org/reports/coal-2019#executive-summary>. There has, however, been a steep decline in the demand for coal due to the outbreak of the covid-19 pandemic in 2020. The IEA projects that the global coal demand will fall by about 8% in 2020. While the decline would be worldwide, the rate of decline would differ. For example, while China (highest consumer of coal)

accounted for about 40% of electricity generation and above 40% of carbon dioxide emissions from the energy sector.[166] This is important as it often means that coal producing countries, exporters and non-exporters alike, have energy systems coupled to the production of coal.[167] Hence, the energy supply – demand dichotomy is less clear in respect of coal, as there is a higher likelihood that a transition would not just affect local host communities, but also larger regions which depend on locally produced coal for 'cheap' electricity.[168] Transition from coal is further complicated by the geographical isolation, mono-industry economy, lack of higher grade qualifications and education, and, essentially, the coal-based identities and culture of coal communities.[169] Caldecott et al, in their study of the transition of six coal jurisdictions conclude that in the longer term, transition in their case studies left regions with high dependency ratios, low educational attainment, low wages, wage stagnation, and environmental problems related to site remediation.[170] Common proposals to address these attending challenges include improving connectedness with metropolitan areas, diversifying economies and attracting new industries, and catering to soft location and culture reorientation factors like the establishment of educational and research institutions and transformation of former industrial sites into cultural landmarks.[171] These proposals are in addition to the more general just transition recommendations like the replacement and stabilization of revenue streams for coal communities and workers and the retraining of workers.[172] Further, given the recognition that abrupt transitions are often unjust, it is commonly

---

will decline by about 5%, the United States and the European Union will experience 25% and 20% decline respectively. See IEA, "Global Energy Review 2020: The Impacts of the Covid-19 Crises on Global Energy Demand and CO2 Emissions" (April 2020) online: <https://www.iea.org/reports/global-energy-review-2020/coal>.

[166] IEA, "Coal 2019: Analysis and Forecasts to 2024", *Ibid.*

[167] Poland and Germany are good examples of coupled coal production and local energy systems. See Brauers et al, *supra* note 162; Szpor & Ziokowska, *supra* note 162.

[168] The Canadian taskforce on Just Transition notes that electricity rates may increase, and supply become unreliable when energy systems transition from coal to other fuels. See the Task Force on Just Transition for Canadian Coal Power Workers and Communities, *supra* note 90 at 15.

[169] Ben Caldecott et al, *Lessons from Previous 'Coal Transitions – High-Level Summary for Decision-Makers'* (IDDRI and Climate Strategies, 2017) 15; World Bank Group, *supra* note 146 at 15; Lewin, *supra* note 162 at 56 – 60; Bosca & Gillespie, *supra* note 162 at 736 – 740; Foden, et al, *supra* note 162 at 20 – 21, 35 – 37.

[170] Caldecott, *ibid* at 8.

[171] See Pao-Yu Oei et al, "Lessons from Germany's Hard Coal Mining Phase-out: Policies and Transition from 1950 to 2018" (2020) 20:8 Climate Policy 963 at 972 – 974.

[172] Haggerty et al, *supra* note 162 at 72 – 73; Alberta Federation of Labour (AFL) & Coal Transition Coalition, *Getting it Right: A Just Transition Strategy for Alberta's Coal Workers* (AFL, 2017) 21 – 25; Sanya Carley et al, "Adaptation, Culture, and the Energy Transition in American Coal Country" (2018) 37 Energy Research & Social Science 133 at 138; Brauers et al, *supra* note 162 at 31.

recommended that transitions should entail long term, wide reaching, and inclusive planning which should begin early.[173]

Policies to transition from coal have, except for a few cases, often failed to address socio-economic and cultural concerns of coal communities. Caldecott et al find that policy responses were, in most cases, developed and implemented either too late or post-closure, and coherent visions and strategies for the replacement of employment and income were lacking.[174] Similarly, Schindler notes that only two G20 members (Canada and Germany) include 'substantial' just transition actions in their coal phase-out plans.[175] In appraising the Canadian just transition content, Schindler referenced the Pan-Canadian Framework on Clean Growth and Climate Change (PCF) and the constitution of the just transition taskforce.[176] While a cursory reference is made to 'just and fair transition' in the PCF, its focus on investing in clean technology solutions is generally framed, predicated on market dynamics and technological possibilities, but it fails to consider the effect of the transition on individuals and societies, especially communities with interest in the fossil fuel industry.[177] The Greenhouse Gas Pollution Pricing Act (GPPA), which makes the carbon pricing component of the PCF legally enforceable, while containing provisions which are arguably meant to lessen the burden of the carbon pricing mechanism on eligible Canadians (e.g. rebates and exemptions),[178] fails to directly incorporate just transition measures.[179]

---

[173] Haggerty et al, *ibid* at 78; AFL & Coal Transition Coalition, *Ibid*, 26; Caldecott et al, *supra* note 169 at 14 – 15.
[174] Caldecott et al, *supra* note 169 at 21.
[175] Eleven of the G20 countries have no reported government action, while seven have some government action. See Hannah Schindler, *Managing the Phase-out of Coal: A Comparison of Actions in G20 Countries* (Berlin: Climate Transparency, 2019) 15 – 24. It is, however, noteworthy that the just transition outcome of Germany's (ongoing) transition from coal is at best mixed. For example, while a region like Lusatia still reels from socio-economic difficulties attending the transition, the Ruhr area has had a better experience.
[176] Schindler, *ibid* at 16.
[177] Government of Canada, *Pan-Canadian Framework on Clean Growth and Climate Change* (Ottawa: Government of Canada, 2016) 37 – 44.
[178] The GPPA mandates the Minister to distribute the net amount of charges collected under the Act from a province or area to such province, prescribed persons or a combination of both. The Act, further, does not apply to famers, fishers (in respect of qualifying farming fuel) and any other prescribed person. See *The Greenhouse Gas Pollution Pricing Act,* SC 2018, c 12, ss 165(2), 17(2)(iii)(iii.1), 36.
[179] Canada's more recent Strengthened Climate Plan referred to the work of the just Transition Task Force. Further to the task force's work, the government has launched the Canada Coal Transition Initiative entailing a $35 million fund to support skills development and economic diversification in Canada's coal regions, a $150 million infrastructure fund, and a Canada Training Benefit of up to $5000 for every Canadian to gain new skills. Environment and Climate Change Canada, *A healthy Environment and a Healthy Economy: Canada's Strengthened Climate Plan to Create Jobs and Support People, Communities and the Planet* (Ottawa: Environment and Climate Change Canada) 49 – 50 (Strengthened Climate Plan).

The 2012 Regulations for the reduction of CO_2 emissions from coal fired generation of electricity are the most direct enforceable legal instrument on coal transition in Canada.[180] Under the Regulations, as amended in 2018, there is commitment to phase out coal powered electricity generating units in 2030, with the exemption of captured, transported and stored emissions done in accordance with federal or provincial law.[181] It is noteworthy that phase-out efforts have focused more on the generation of electricity from coal than the production (and exportation) of coal. Hence, while the use of coal in electricity generation decreased by 24.7 million tonnes (Mt) between 2008 and 2018 in Canada, the production of coal has only reduced by about 9Mt around the same period (2009 - 2019).[182] Here, a distinction should be made between thermal coal used in electricity generation and metallurgical coal used in the making of iron and steel. While metallurgical coal makes up 95% of Canada's total coal exports in 2019,[183] thermal coal is mostly used within the country to generate 7.4% of its electricity. Rather than describe current policies as pertaining to coal phase-out writ large, they are more narrowly focused on 'thermal coal'. This is the focus of the 2012 coal phase out Regulations. This also means that Canadian thermal coal communities will experience the disruption from the phase out of coal as against communities where metallurgical coal is mined. The disparate fates of these communities are premised on the determination of which coal is 'dirtier', with the contested conclusion that metallurgical coal emits less carbon.[184]

Alberta, which produces most of Canada's thermal coal, has some of the most concrete just transition programs in the country. The program includes a coal community transition fund and a support scheme for affected 'Albertans'.[185] The coal community transition fund offers one-off funding to municipalities and First Nations affected by the coal phase out in Alberta's electricity system. While eligible projects include those that would build economic development capacity and aid transition to long-term economic stability, projects including major infrastructure and land

[180] *Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations*, SOR/2012-167.
[181] *Ibid*, s. 3.
[182] Government of Canada, "Coal Facts" (6 October 2020) online: <https://www.nrcan.gc.ca/science-data/data-analysis/energy-data-analysis/energy-facts/coal-facts/20071>.
[183] *Ibid.*
[184] Greenpeace, "Steeling the Future: The Truth Behind Australian Metallurgical Coal Exports" (2017) online: <https://www.greenpeace.org.au/wp/wp-content/uploads/2017/06/280517-GPAP-Steeling-the-Future-Report-LR.pdf> 5.
[185] Alberta, "Phasing Out Emissions from Coal" online: <https://www.alberta.ca/climate-coal-electricity.aspx#toc-1>.

acquisition are excluded.[186] The project website shows that application for the fund closed in November 30, 2017.[187] Under the Alberta Coal Workforce Transition Program, Albertans are construed as employees who have worked in an affected coal-fired power plant or mine for at least one year immediately prior to a layoff notice effective January 2, 2018 or later.[188] The program includes a re-employment bridge, retirement bridge, relocation assistance, tuition voucher, onsite and offsite employment services, First Nations employment training, and workforce adjustment service.[189] Although Alberta's coal transition plan is more aligned with the traditional framing of just transition which focuses on providing financial support and training to workers, it goes farther in attempting to directly address transition concerns of host communities. It, however, falls short in various ways. As with many other transition plans, the Albertan plan is more focused on coal workers, than coal communities. It fails to recognize or attend to the impact of coal mine and plant closure on other dependent economic sectors of the communities. Given the far-reaching and long-lasting implications of coal transition, the coal community transition initiative did not just begin too late (2015); its duration was very short (application ended in 2017, while successful applicants were announced in 2018).[190]

Further, while putting the onus on communities to trigger the province's intervention potentially makes such intervention more place-specific, the need for a more regional approach is emphasized in the literature.[191] This necessarily requires a more direct involvement of all levels of government in recognizing the intersection of socio-economic systems within and outside the province, conducting a cumulative assessment of impacts of the coal transition, and designing a comprehensive just transition plan. This is not a case for a wholly top-down approach to just transition policy design. But a bottom-up approach is not the same as a 'bottom-only' approach. Rather, it entails the consideration of realities at the local level as construed by the various classes

[186] Alberta, "Coal Community Transition Fund" online: <https://www.alberta.ca/coal-community-transition-fund.aspx>.
[187] *Ibid.*
[188] Alberta, "Support for Albertans affected by Coal Phase-out" online: <https://www.alberta.ca/support-for-coal-workers.aspx>.
[189] *Ibid.*
[190] In respect of their case studies, Caldecott et al point out that "many of the transitions identified in the case studies that begin decades ago are still ongoing (e.g., in Spain) or have only recently ended in terms of mining (UK). Only the Limburg region – a transition that began in 1965 – can in a sense be said to have finished its "transition" …". See Caldecott et al, *supra* note 169 at 7 – 8.
[191] For example, the successful transition of the Ruhr area is, in part, attributed to "the polycentric coordination of national, state and regional policy making, and the majority of policy focus and support dedicated to industries and sectors other than the coal and steel industries". See Brauers et al, *supra* note 162 at 26.

of people in different places affected by the coal transition, identifies issues that are best addressed together, while recognizing that there are also peculiarities that must be catered to on a place-by-place basis. Again, the exclusion of embarking in infrastructure related project and the purchase of property makes it more difficult to develop soft location and cultural regenerating facilities in the communities. Also, while identifying factors like age and indigeneity feature to some extent in Alberta's plan, other essential factors like gender and disability were absent. And, while allowing communities to trigger the process, generic requirements to access supports fail to take into consideration the unequal and distinct capacities of the communities (e.g., some have more know-how and experience in accessing developmental funding than others).

Coal transition in other jurisdictions mirrors the Alberta-Canada example in their ad-hoc non-legislated forms, focus on workers, and emphasis on the allocation of funds rather than ensuring wellbeing outcomes. Poland, for example, rolled out its most comprehensive coal restructuring program in 1998. Like the Albertan example, the social mitigation component of the program included the mining social package (MSP) for mine workers and new entitlements for mining communes.[192] The MSP is like the Albertan workforce transition program in various ways, including the provisions for retirement transition, redundancy payment, welfare allowance and retraining courses. The Polish redundancy payment was, however, designed as what is described as a "golden handshake" which entails a one-off unconditional payment of a sum of 24 months of a miner's average salary.[193] The idea was that with such one-off payment, miners would invest in and begin new ventures. While this component was very popular among the miners, it was found that only few miners invested the money and the economic situation of the families worsened after leaving their jobs.[194]

The community intervention component of the Polish program was designed fundamentally differently from the Albertan community transition plan. Mining communes were allowed to create new enterprises with the mining companies; the Mining Law implemented in 1998 and the Tax Law of 1997, respectively, allowed the free transfer of properties from companies to communes and the passage of property by companies in lieu of debts owed to the communes; and the communes got a higher percentage of transferred personal income tax and were offered preferential

[192] Szpor & Ziokowska, *supra* note 162 at 12.
[193] *Ibid* at 14.
[194] *Ibid* at 15.

loans to increase economic activity in their communes.[195] While some communes were unable to access government's preferential loans as they lacked the know-how and real estate previously owned by mining companies were not deployed to initiate economic activities, there were positive examples of communes which used the acquired properties to create new ventures and establish educational and research hubs.[196] And while the Polish national government was centrally involved in coordinating the transition, like the Alberta example, it was primarily locally implemented. As noted elsewhere, "a wider regional policy … rather than a local, commune-based intervention, could have a bigger potential for alleviating the negative social consequences …[197]" On the whole, the Polish approach led to impoverishment, dissolution of social bonds, and the disintegration of group identity.[198]

Patterns similar to the Albertan and Polish examples can be observed in other coal jurisdictions including Australia, the United Kingdom and South Africa.[199] For example, while the closure of Australia's most carbon-intensive coal reliant power station (Hazelwood) in the Latrobe valley was different in that it was not triggered through government policies, but by its French multinational owner (Engie) due to commercial reasons,[200] it has been described as sudden, hence "violating a core procedural tenet of just transition", and devoid of any *ex ante* just transition policy at the federal and state levels.[201] The Latrobe transition has been considered relatively successful given the unprecedented ex-post interventions of the Australian and Victoria State governments.[202]

---

[195] *Ibid* at 16.
[196] *Ibid* at 17.
[197] *Ibid.*
[198] *Ibid.* See also Jan Baran et al, *Coal Transition in Poland: Options for a Fair and Feasible Transition for the Polish Coal Sector* (IDDRI & Climate Strategies, 2018) 27 – 32.
[199] Eskom's (South Africa's state-owned utility company) plan to close five of its coal fired power stations is projected to result in job losses, declining revenues for local governments, and spiral economic effects on local economies. Initiatives including the National Employment Vulnerability Assessment, Sector Job Resilience plans, and the Stakeholder Dialogue on Pathways for a just Transition are some of the responses of the South African government. See Claudia Strambo et al, *The End of Coal? Planning a "Just Transition" in South Africa* (Stockholm: Stockholm Environment Institute, 2019) 4, 9 – 10.
[200] Engie, "Hazelwood Power Station in Australia to Close at the End of March 2017" (3 November 2016) online: <https://www.engie.com/en/journalists/press-releases/hazelwood-power-station-australia>.
[201] Fergus Green, "Australia: caught Between a 'Just Transition' and 'No Transition'" (March 2019) Foundation for European Progressive Studies – Policy Brief, 4. See also John Wiseman et al, "Prospects for a "Just Transition" away from Coal-fired Power Generation in Australia: Learning from the Closure of the Hazelwood Power Station" (November 2017) CCEP Working Paper
[202] The interventions include AU$ 43 million package from the federal government to support local infrastructure, as part of the labour market structural adjustment program and regional jobs and investment package; and AU$266 million package by the State government to fund infrastructural projects, schemes to help coal/electricity sector workers and other economic interventions for the Latrobe valley. See Wiseman et al, *ibid* at 19 – 21.

Stand-out features of the ex-post interventions include the tripartite Worker Transfer Scheme Partnership Agreement between the State government, energy companies and workers, establishment of an economic growth zone (including multiple local government areas), and the establishment of a dedicated agency of government - the Latrobe Valley Authority- to manage the transition.[203] The use of an Agreement (instead of a legislation) while only applicable to a narrowly defined set of individuals (Latrobe workers), arguably provides an opportunity to litigate any breach of the agreement, thereby providing additional protection to the government.[204] However, there is no similar agreement between the government and the community. In her appraisal of the policy sub-structure of the Latrobe transition, Weller concludes that it failed to attend to the challenges facing the most affected locations, side-stepped local fears about the transitional impacts, and denied the real problems of poverty, disempowerment and disenfranchisement.[205] Similarly, it has been found that despite the interventions of governments, the Latrobe region remains one of the most disadvantaged regions in the State of Victoria, has experienced an increase in crime rate with women and girls being particularly vulnerable, several market and non-market interventions have failed, promises of substitute jobs have remained unmet, and the transition process has been disrespectful of cultural identity and industrial heritage sites.[206]

A common trend in the examples above is the overall ad-hoc nature of just coal transition and the absence of concerted and dedicated legislation and policies. This is in spite of the fact that the transition from coal has been evident for decades, and indeed many coal producing countries have experienced continual decline for many decades. For example, it was in early 2019 that Germany produced a report on growth, structural change and employment in its coal sector,[207] despite the

---

[203] Latrobe Valley Authority, "About" online: <https://lva.vic.gov.au/about>.

[204] Other countries like Spain and France have also adopted this 'contract' model. Spain, for example, signed a just transition agreement with 'social partners' by which the Spanish government committed to invest €250 million in 'mining communities'. See ETUC, "Spain Guarantees a Just Transition for Miners" online: <https://www.etuc.org/en/spain-guarantees-just-transition-miners>. Likewise, France has developed the ecological transition contracts initiative for territories to voluntarily sign unto and co-construct with the central government (although none has been signed as at the writing of this chapter). See Ministry for the Ecological Transition, "Ecological Transition Contracts" online: <https://www.ecologie.gouv.fr/contrat-transition-ecologique#e0>.

[205] Sally Weller, "Just Transition? Strategic Framing and the Challenges Facing Coal Dependent Communities" (2019) 37:2 EPC: Politics and Space 298 at 313.

[206] Cheryl Wragg & Peter Gibbons, *Regional Inequality in Australia - Submission 132* (Canberra, Australian Senate Standing Committees on Economics, 2019) 3 – 14.

[207] The report reiterates similar interventions in the countries already considered including the need to safeguard the prospects of persons employed in the coal regions, long term investment and the creation of new jobs and prospects for companies, long term financing of measures, and socially balanced and equitable distribution of the advantages

commencement of the transition process in regions like Ruhr and Lusatia in the 1950s and 1980s respectively.[208] None of the countries considered in this section attended to just coal transition in their legislation on climate change or related mitigation policies.[209] This is indicative of the isolated consideration of climate change, particularly, climate mitigation, and the seeming secondary status of just transition concerns. As argued elsewhere, "just transition should not be an 'add-on' to climate policy; it needs to be an integral part of a sustainable development policy framework".[210] The failure of governments to consider just transition within their climate policies in the coal context mirrors the Powering Past Coal Alliance (PPCA) (the world's largest coal transition coalition) treatment of the issue.[211] While the PPCA declaration refers to an economically inclusive coal phase-out which includes "appropriate support for workers and communities", its more specific commitments do not include just transition.[212] To join the alliance, governments only need to commit to stop building new coal plants, stop providing international finance, set a phase-out date, and align policies with the global temperature goal under the Paris Agreement.[213] The need to ensure that the phase-out and transition are just and equitable is, however, not a requirement.

In countries where just coal transition is being attended to, it is mostly underpinned by the notion of distributive justice – equitable distribution of advantages and burdens. While this notion is rarely

---

and burdens. See Commission on Growth, Structural Change and Employment, *Commission on Growth, Structural Change and Employment – Final Report* (Berlin: Federal Ministry for Economic Affairs and Energy, 2019) 3 - 4.

[208] Brauers et al, *supra* note 162 at 24.

[209] There, however, appears to be increasing appetite for incorporating just transition in legislation or enacting stand-alone laws. The United States, for example, has multiple climate Bills in Congress with just transition provisions. See Climate Protection Act, 2013, S. 332 – 113th Congress, s. 197; American Clean Energy and Security Act, 2009, H.R. 2454 – 111th Congress, ss. 421 - 433; Low Carbon Economy Act, 2007, S. 1766 -110th Congress, s. 502. The Canadian government also indicated its intention to draft and pass a just transition Act. See Alex Ballingall, "New Environment Minister Pledges 'Thoughtful and Sensitive' Approach to Climate Action", *The Star* (26 November 2019) online: <https://www.thestar.com/politics/federal/2019/11/26/new-environment-minister-pledges-thoughtful-and-sensitive-approach-to-climate-action.html>.

[210] Bela Galgoczi, "Phasing Out Coal – A Just Transition Approach" Working Paper 2019.04 European Trade Union Institute, 26.

[211] The EU Coal Regions in Transition initiative is another multilateral coalition on coal transition. The initiative, however, engages with the concept on just transition more frontally than the PCCA. See European Commission, "Coal Regions in Transition" online: <https://ec.europa.eu/energy/topics/oil-gas-and-coal/EU-coal-regions/coal-regions-transition_en>.

[212] The PCCA, specifically, requires government members to phase-out existing coal power generation and place a moratorium on new coal stations without carbon capture and storage; businesses and non-government members to power their operations without coal; and all members to support clean power generation through policies and investments, including by restricting financing for coal power generation. See PPCA, "Declaration", online: <https://poweringpastcoal.org/about/declaration>.

[213] PPCA, "PPCA Co-chairs Announce Expanded Membership Offer for National Governments", online: <https://poweringpastcoal.org/news/PPCA-news/membership-options-national-governments-declaration-group>.

defined,[214] the interpretation in practice, as seen in the examples considered above, seems to be the dedication of large sums to transition programs and initiating job substitution initiatives. In turn, the mere existence of these initiatives becomes their metric of success. Compared to the characteristics listed in *table 6,* most coal transition policies considered here only satisfy the characteristic on the availability of resources, although the resources (e.g., funding, investments, new job opportunities etc.) are rarely situated in the context of the realization of combined capabilities and wellbeing. While the Latrobe transition framework references the improvement of wellbeing as one of its objectives, there is no evidence that it has achieved this. Recommendations in Germany's 2019 *structural change and employment* report include the need for continuous active involvement of stakeholders in coal regions; ensuring that equal living conditions are created not only through a strong economy but by the supply of basic necessities; institutionalization and creation of a legal framework for the structural development process and integration of federal states, local communities and local stakeholders; and the deployment of funding to improve the quality of life and soft location factors, come closest to the characteristics contained in *table 6.*[215] However, it remains to be seen the extent to which the recommendations would be implemented.

2.6 Just Transition in Oil and Gas Communities

Compared to the coal sector, just transition is scarcely engaged with within the context of transition from the oil and gas economy.[216] It has been noted that even a complete transition from coal will fall short of the commitments needed to save the world from the most drastic implications of global warming as carbon emissions from oil and gas in operating fields alone are considered enough to push the world past the 1.5ºC mark.[217] When existing current policies and investment plans in oil and gas proven reserves are also taken into consideration, then it becomes impossible to reach even

[214] Germany's 2019 report, for example, refers to a "socially balanced and equitable distribution of the advantages and burdens". See Commission on Growth, Structural Change and Employment, *supra* note 207 at 4.
[215] *Ibid* at 82 – 84.
[216] For example, in their review of just transition policies, Piggot et al only reference the Scottish Oil Worker Transition Fund as an illustrative example of an oil specific just fossil fuel transition policy. They, however, note that the fund was not specifically focused on transitioning away from fossil fuels as 44% of re-employed participants remained in the oil and gas sector. See Georgia Piggot et al, "Realizing a Just and Equitable Transition away from Fossil Fuels" (January 2019) SEI Discussion Brief 2.
[217] Jeff Gailus, "Oil, Gas and the Climate: An Analysis of Oil and Gas Industry Plans for Expansion and Compatibility with Global Emission Limits" (December 2019) online: <https://www.ciel.org/wp-content/uploads/2019/12/oilGasClimateDec2019.pdf> 3.

the lower mark of 2ºC.[218] The bottom-line is that like coal, oil and gas must be transitioned from. The three fossil fuels while with different implications are, however, linked as failure to make the required cuts in the more carbon intensive (coal) compels even steeper cuts in comparatively less carbon intensive sectors (oil and gas).[219] The oil and gas transition raises vital justice questions bordering on the extent and pace of the transition, the ecological and social implications of transition pathways,[220] whether the continued role of oil and gas in the short, medium and long term is framed only as an energy transition issue or also a justice question, whether the transition should be left to the vagaries of the market or whether there should be an agreed order in which oil fields and gas reserves should close, and the justice dimensions of stranded oil and gas assets (stranded volumes, capital and value). I will come back to these questions in chapter three. It is sufficient to note for now that just as in the case of coal transition, the transition from oil and gas will be riddled with diverse socio-economic implications which if not proactively addressed would potentially result in an unjust transition.[221]

Transitioning from coal as an energy source is generally viewed as a low-hanging tool given the more viable existing alternatives, the economic decline of the sector over time and its immense carbon intensity.[222] On the other hand, oil, particularly, in the transportation and manufacturing sectors, are considered not as easily replaceable and global demand is projected to be on the increase until at least 2030,[223] while gas is widely accepted as a transition fuel (a bridge to a low-

[218] Under the IEA's Stated Policies Scenario (STEPS) where about 640 barrels of new oil and 115 tcm of new natural gas projects are embarked on, there is a 50% probability of reaching 2.7ºC temperature increase and 66% chance of hitting 3.2ºC. A 1.5ºC compliant pathway requires USD 1,600 billion less in oil and gas investment compared to the STEPS. See International Energy Agency, *The Oil and Gas Industry in Energy Transitions: Insights from IEA Analysis* (Paris: IEA, 2020) 49, 100.
[219] *Ibid* at 54.
[220] The IEA outlines four 'strategic options' for the transition of the oil and gas sector: traditional oil and gas operations management (focusing on lower cost resources and projects with shorter payback periods, giving preference to natural gas and lighter crude oils, and reducing emissions along the oil and gas value chain), the use of carbon capture, utilization and storage (CCUS) technologies, transition towards low-carbon liquids and gases, and the transition of fuel companies to renewable energy companies. *Ibid* at 122 – 160. These options have varying implications whether considered singularly or jointly. For example, emphasis on lower cost resources and lighter crude oils advantages crude oil products from places like the Middle East and Russia, while recent finds in Africa or countries with offshore fields are disadvantaged.
[221] For example, it has been estimated that, globally, more than one million workers in oilfield services will lose their jobs by the end of 2020. See Gabrielle Jeliazkov et al, "Offshore Oil and Gas Workers' Views on Industry Conditions and the Energy Transition", (2020) online: <https://www.greenpeace.org.uk/resources/offshore-oil-and-gas-workers-report/>.
[222] See Robert Pollin and Brian Callaci, "The Economics of Just Transition: A Framework for Supporting Fossil-Fuel Dependent Workers and Communities in the United States" (2019) 44:2 Labour Studies Journal 93 at 97.
[223] *Ibid.* See also IEA, *supra* note 218 at 57 – 58.

carbon future).[224] These varied conceptions inform varying levels of urgency and attention to transitioning from coal, oil and gas. Other unique features of the oil and gas sector including the more prominent role of multinational companies, susceptibility to trends in an integrated international market, and value chain are other features which make transitioning from oil and gas different from coal.[225] However, as the experience with coal transition instructs, an early start is a key determinant to whether such the oil and gas transition will be just. The EU Regulation on Just Transition, which references the phase out of shale oil and the transitional role of gas, and the Scottish Oil Worker Transition initiative are two of the very few policy examples of just transition in the oil and gas sector. This section focuses on these instruments and concludes by comparing them to the characteristics listed in *table 6.*

The EU Just Transition Fund Regulation (JTF Regulation) is arguably one of the most targeted binding legal instruments on just transition.[226] The Regulation is further to the European Green Deal adopted by the European Commission in 2019 which proposed a just transition mechanism for EU member states.[227] The mechanism was established in 2020 entailing an investment scheme under InvestEU, a public sector loan facility, and the JTF.[228] While the InvestEU and public loan schemes are scoped broadly to support activities relating to the energy transition, the JTF focuses on "the economic diversification of the territories most affected by the climate transition and the reskilling and active inclusion of their workers and jobseekers".[229] Importantly, the JTF is

[224] See generally IEA, *The Role of Gas in Today's Energy Transitions* (Paris: IEA, 2019); Amir Safari et al, "Natural Gas: A Transition Fuel for Sustainable Energy System Transformation" (2019) 7 Energy Science and Engineering 1075 at 1094.

[225] The IEA maps the oil and gas industry as including national oil companies (NOCs), international national oil companies (INOCs), international oil companies (IOCs) and the independents. Service companies, pure downstream companies and trading companies are part of the oil and gas value chain. While NOCs and INOCs are the largest companies in terms of oil and gas production and reserves, the upstream division of the IOCs represents the majority of the industry's financial value and their role both in the upstream and midstream sectors makes them active players in the international oil market. Further, while IOCs own only a small portion of global oil production (about 13%), they have some level of influence over three times the production they directly own. See *Ibid,* 16 – 24. Further, in a recent report, Tienhaara and Cotula show the chilling effect of multinational companies' threat of investor-state dispute settlement proceedings against States that enact climate policies which adversely affect their operations. See generally Kyla Tienhaara and Lorenzo Cotula, *Raising the Cost of Climate Action? Investor-State Dispute Settlement and Compensation for Stranded Fossil Fuel Assets* (London: IIED, 2020).

[226] EC, *Proposal for a Regulation of the European Parliament and of the Council Establishing the Just Transition Fund*, 2020/006 (COD) (final).

[227] EC, *Communication from the Commission to the European Parliament, the European Council, The Council, The European Economic and Social Committee and the Committee of the Regions – The European Green Deal*, COM(2019) 640 final, 15 – 19.

[228] EC, *supra* note 19.

[229] EC, *supra* note 226 at 2, recital 12.

premised on the principle of economic, social and territorial cohesion enshrined in the Treaty for the Functioning of the EU (TFEU) which mandates that the "Union shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions".[230] The scope of support in the version of the Regulation proposed by the European Commission mirrors the coal transition's overall focus on economic diversification and conversion, upskilling and reskilling of workers and provision of job-search assistance.[231] The problem with such narrow focus on jobs, particularly the tendency of the creation of jobs and diversification of the economy becoming the key success metric, has been the running theme of this chapter. This is reflected in the JTF common output and result indicators which, in essence, reaffirmed job creation, private investment, patent applications, provision of digital services, enterprise survival and job search support as key outcome metrics.[232]

The amendments to the JTF Regulation adopted by the EU Parliament are in many ways an improvement on the version proposed by the Commission.[233] The amended Regulation specifically draws attention to outermost regions, sparsely populated, rural, remote, and geographically disadvantaged areas "whose small population make the transition … more difficult to implement and taking into account the starting position of each Member State".[234] This place-based sensitivity draws from experience with the coal transition, where coal mines which are often concentrated and located in isolated places are further isolated and disadvantaged when the mines are shuttered. The amended Regulation further highlights the promotion of balanced socio-economic transition, regeneration of natural assets, mitigation of negative repercussions on standards of living as some of the JTF's objectives.[235] Rather than the narrow requirement that investments support local economies in the proposed regulation, the amended version requires investment to support people, communities and local economies, be sustainable in the long term and take into account the objectives of the European Green Deal and the European Pillar of Social Rights.[236] This

[230] *Treaty of the Functioning of the European Union*, 17 December 2007, 326 OJ 49, art. 174 (entered into force 1 December 2009).
[231] EC, *supra* note 226 at art. 4(2)(a) – (k)
[232] *Ibid* at recital 5
[233] European Parliament, *Amendments Adopted by the European Parliament on 17 September 2020 on the Proposal for a Regulation of the European Parliament and the Council Establishing the Just Transition Fund (COM(2020)0022 – C9-0007/2020 – 2020/0006(COD))*, P9_TA-PROV(2020) 0223 (amended Regulation).
[234] *Ibid* at recital 8
[235] *Ibid* at recital 5.
[236] *Ibid* at recital 10, art. 6(1).

amendment recognizes that the improvement of economies does not in itself translate into the improvement of the states of people and the community. The incorporation of the European Pillar of Social Rights particularly aligns the Regulation with the outcome-centric approach to just transition argued for in this work. The pillar speaks directly to the promotion of people's wellbeing, combatting social exclusion and discrimination, promotion of social justice, gender equality, generational solidarity and the protection of the rights of the child.[237] The Regulation further provides that "the importance of culture, education and community building for the transition process should also be met by supporting activities that address the mining heritage".[238] This more inclusive framing takes the scope of the JTF beyond the previous limited investments in jobs, energy and digital connectivity by allowing support for items relating more directly to wellbeing and functionality including investments in sustainable mobility, social housing, creation and development of social and public services of general interest, and investments in culture, education, community building, "including the valorisation of tangible and intangible mining heritage and community hubs".[239] Further, activities which actively include jobseekers "particularly women, disable persons and vulnerable groups" are to be supported.[240]

To draw from the JTF, eligible Member States are required to prepare and submit territorial just transition plans (TJTP) covering affected territories. Such plans are required to be prepared with "relevant local and regional authorities of the territories concerned".[241] While the Regulation lacks specificity on the meaning of 'relevant local and regional authorities', it further requires that "relevant partners" shall be involved in the preparation and implementation of the TJTP in accordance with Article 6 of the 2018 Common Provisions Regulation (CPR).[242] The CPR requires partnership with urban and other public authorities, economic and social partners, and relevant bodies representing civil society, environmental partners and other bodies promoting social inclusion, fundamental rights etc.[243] Given the importance of social dialogue in just transition

[237] The European Pillar of Social Rights has twenty principles including education, training and life-long learning, gender equality, equal opportunities, fair wages providing for a decent standard of living, work-life balance, childcare and support to children, social protection, minimum income, old age income and pensions, healthcare, inclusion of people with disabilities, long term care, housing and assistance for the homeless, and access to essential services. See EC, *Interinstitutional Proclamation on the European Pillar of Social Rights,* [2017] OJ, C 428/10 at 12 – 15.
[238] European Parliament, *supra* note 233 at recital 10.
[239] *Ibid* at art. 4(2)(da)(db)(ga)(gb).
[240] *Ibid* at art. 4(2)(j).
[241] *Ibid* at art. 7(1).
[242] *Ibid.*
[243] EC, *Common Provisions Regulation*, COM(2018) 375 final, art. 6(1).

discourse, subjecting the participation regime of the Regulation to a provision in a generic instrument is flawed. There also appears to be an equation of the various bodies required to participate in the design of the TJTP, without preference for the voice of affected communities and, particularly, the voice of specific vulnerable sub-groups within the larger identified vulnerable community. The TJTP is required to contain a description of the national transition process to EU 2030 climate targets and 2050 climate neutral economy, justification for the identified territories, and impact assessment of the territories' transition challenges "including the social, economic and environmental impact of the transition".[244] It is also required to describe how the JTF support will cater to social, demographic, economic, health and environmental impacts of the transition, and provide justification for support for investment other than small and medium enterprises through a gap analysis demonstrating how the investment helps to make up for number of jobs lost.[245]

Key gateway provisions to accessing the JTF include that the territories must qualify as "most negatively affected" and the proposed activities must fall within the exclusive list in article 4(2).[246] Eligible territories are expected to be "precisely defined and correspond to NUTS level 3 regions or should be parts thereof".[247] There are 1345 regions under the 2021 NUTS classification.[248] NUTS level 3 regions are considered small regions of 150,000 – 800,000 population.[249] Other than this specification, there is no other express indicators for identifying the "most negatively affected" communities. The only other implied indicator is "expected job losses in fossil fuel production … industrial facilities with the highest greenhouse gas intensity".[250] These eligibility criteria are narrow, potentially exclude territories not within the NUTS level 3 classification, fail to pay adequate attention to non-job and nonquantifiable effects, overlook past and existing injustice, and pay no attention to less manifest injustices within sub-groups which might not be evident in data on jobs and other territorial economic indices. Support under the JTF is graduated to reflect the level of climate policy ambition while also recognizing the economic and developmental

[244] European Parliament, *supra* note 233 at art. 7(2)(c).
[245] *Ibid.*
[246] European Parliament, *supra* note 233 at art. 6(1).
[247] *Ibid* at recital 15.
[248] Eurostat, "NUTS – Nomenclature of Territorial Units for Statistics" online: <https://ec.europa.eu/eurostat/web/nuts/background>.
[249] Eurostat, "Principles and Characteristics" online: <https://ec.europa.eu/eurostat/web/nuts/principles-and-characteristics>.
[250] European Parliament, *supra* note 233 at art. 7(1).

constraints of regions.[251] This is consistent with the differentiation principle which undergirds the international climate regime, and which will be considered in detail in chapter three.

Particular attention is given to the oil shale industry in the JTF Regulation given its "very high carbon-dioxide emissions" and the numerous additional indirect jobs depending on its value chain.[252] The JTF does not support "investment related to the production, processing, transport, distribution, storage or combustion of fossil fuels" and operations in a new or reopened coal, lignite, oil shale mine or peat extraction field if such is in a NUTS 2 region.[253] This latter provision appears to suggest that operations in, for example, an oil shale mine in a NUTS 3 region are eligible for support, an interpretation which while tenable, undermines the exclusion of support of investment in fossil fuel related activities. Other provisions seem to support this interpretation. A newly introduced provision by the EU Parliament provides that, derogating from the provision on non-support for fossil fuel activities, TJTPs from regions heavily reliant on fossil fuel extraction which include investments in activities related to natural gas may be approved if they qualify as environmentally sustainable, used as a bridging technology to replace coal, lignite, peat or oil shale, and falls within the limits of sustainable availability or compatible with the use of clean hydrogen, biogas and biomethane.[254] Such activity should also contribute to the EU's climate objectives, deliver significant reductions in emission, air pollution and increase energy efficiency, contribute to tackling energy poverty, and compatible with the subsequent use of renewable energy sources.[255] Other non-qualifying activities could also be approved in accordance with criteria for environmentally sustainable economic activities under Regulation 2020/852.[256]

The exception of certain natural gas projects while consistent with the characterization of natural gas as a transitional fuel, has the potential of undermining and obfuscating the attempted signal both in the JTF Regulation and Regulation 2020/852 to discourage fossil fuel investments in the EU. This is even more so given that as pointed out by the IEA, "it is not possible in practice to make a sharp distinction between oil and gas production and investment" because most wells

[251] *Ibid* at art. 3b, 3c.
[252] EC, *supra* note 225 at 1.
[253] European Parliament, *supra* note 233 at art. 5(1)(eb).
[254] *Ibid* at art 5(1a).
[255] *Ibid.*
[256] *Ibid.*

targeting oil formations also yield natural gas liquids and natural gas, and vice versa.[257] Hence, the allowance of "activities related to natural gas" is potentially permissive of oil or even shale oil projects insofar as such projects yield natural gas (whether as conventional associated gas or shale gas). This derogation brings to the fore the questions including if oil and gas have any role in a just global transition to a post-fossil era and if they do, what are the roles? The literature seems to suggest that oil and gas have roles to play given the current state of the replacement technologies and the need to bridge the global developmental gap. The cumulative conditions listed in the JTF Regulation to trigger the derogation provision reflect these realities. The conditions are, however, vaguely couched with many key terms like 'bridging technology', 'sustainable availability', 'contribution to Union's environmental climate change mitigation and adaptation objectives', 'significant reductions in GHG' left to subjective interpretations. Further, other than the reference to energy poverty, the effects of allowed oil and gas projects on the questions of old, existing, and new justice concerns were not included in the conditions. For example, would an existing or new investment be required to play a role in making the host community resilient to the various socio-cultural effects of its subsequent closure?

While not having a dedicated just transition instrument like the EU, Scotland has incorporated just transition principles in its 2019 Climate Change (Emissions Reduction Targets) (Scotland) Act.[258] The Act, which commits Scotland to 56%, 75% and 90% emissions reductions by 2020, 2030, and 2040 all relative to a 1990 baseline,[259] requires Scottish Ministers to prepare and present a climate change plan every five years from when the provision comes into force.[260] The plan should include proposals and policies on the exploration of fossil fuels including the exploitation of onshore unconventional oil and gas (UOG) reserves.[261] For context, Scotland accounts for 82% of the total oil and gas production in the United Kingdom and there has been a steady increase in production although oil and gas extraction in Scotland peaked in 1999.[262] In 2015, Scotland placed a

[257] About one-quarter (850 billion cubic meters (bcm)) of the globally marketed produced natural gas were in 2018 were associated gas (from oil formations), while about 200 bcm was flared (40% of scope 1 and 2 emissions from oil production). See IEA, *supra* note 218 at 21, 128.
[258] *Climate Change (Emissions Reduction Targets) (Scotland) Act 2019* (Scot), ASP 15, s 35c. (Scotland Climate Change Act)
[259] *Ibid* at s 2(1).
[260] *Ibid* at s 35(1).
[261] *Ibid* at s 35(8).
[262] Scottish Government, "Oil and Gas Statistics: 2018" (2019) online: <https://www.gov.scot/publications/oil-and-gas-production-statistics-2018/>.

moratorium on UOG exploration, and through a 2019 policy, the Scottish government while not foreclosing consideration of future applications for licencing UOG reserves, it stated that it does not anticipate granting new UOG licences.[263] It is worth noting that UOG reserves are concentrated in some of the most densely populated areas in the Midland valley of Scotland (area including Glasgow and Edinburgh),[264] while its offshore reserves are mostly in the North East (area including Aberdeen, Aberdeenshire, Angus, Banffshire and Buchan Coast, Dundee).[265]

Unlike the moratorium placed on UOG, the Scottish government continues to allow exploration and production in the North Sea on the condition that the sector acts to help ensure a sustainable energy transition. Despite this, North Sea exploration has been made less economically viable given the downturn in the international global oil market which has led to closure of facilities and its attendant effects on workers and proximate communities in North East Scotland.[266] In 2016, the oil and gas transition training fund with a three year mandate (2016 - 2019) was established.[267] This stop-gap limited response has been criticized as failing to get the workers out of the sector as most of the workers went back to the sector when the conditions improved.[268] More recently, as part of its Covid-19 response, the Scottish government announced a £62 million Energy Transition Fund to support the growth and diversification of oil, gas and energy businesses in North East Scotland and attract private investment over five years.[269] From the above, one can conclude that

---

[263] Scottish Government, "Scotland's Onshore Unconventional Oil and Gas Policy" (2019) online: <https://www.gov.scot/publications/scottish-governments-finalised-policy-position-unconventional-oil-gas-development/>.

[264] See generally, Graham Dean, "The Scottish Oil-Shale Industry from the Viewpoint of the Modern-day Shale-gas Industry" in Jonathan Craig et al, *History of the European Oil and Gas Industry* (London: Geological Society, 2018) 53 – 69.

[265] Just Transition Commission Scotland, "Paper 4/1 – Oil and Gas Sector background Information" online: <https://www.gov.scot/binaries/content/documents/govscot/publications/minutes/2019/10/just-transition-commission-meeting-papers-september-2019/documents/paper-4-1-oil-and-gas/paper-4-1-oil-and-gas/govscot%3Adocument/Paper%2B4.1%2B-%2BOil%2Band%2Bgas.pdf> 4 - 5.

[266] European Commission, "Case Study: Oil and Gas Transition Training Fund, Scotland" (2019) online: <https://ec.europa.eu/energy/topics/oil-gas-and-coal/EU-coal-regions/resources/oil-gas-transition-training-fund-scotland_en>.

[267] *Ibid.*

[268] Jeliazkov, *supra* note 209 at 8. See also Andrew Fawthrop, "UK Trade Body Warns of up to 30,000 North Sea Job Losses amid Pandemic" *NS Energy* (28 April 2020) online: <https://www.nsenergybusiness.com/news/industry-news/north-sea-job-losses-oguk/>.

[269] Scottish Government, "£62 million Fund for Energy Sector" (12 June 2020) online: <https://www.gov.scot/news/gbp-62-million-fund-for-energy-sector/>.

the Scottish government has taken a narrow business focused, jobs-centric, and short-term approach to just transition in the oil and gas sector.[270]

This narrow approach contradicts the more extensive just transition principles and climate justice principle which the Scotland Climate Change Act mandates the Scottish government to refer to in explaining how proposals and policies affect different sectors and regions in Scotland and how they support the workforce, employers and communities in the sectors and regions.[271] It further provides that the plan must explain how the implementation contributes to the achievement of sustainable development, including the UN sustainable development goals.[272] The Act describes the climate justice principle as taking action to reduce GHG emissions and adapt to climate change in ways which support people most affected by climate change, have done least to cause it and are least equipped to adapt to its effect, and help to address inequality.[273] This provision borrows the language of climate justice in the international context and appears to affirm the historical responsibility recognized in the preamble to the 1992 United Nations Framework Convention on Climate Change.[274] As framed, it is reasonable to assume that the climate justice provision is meant to apply in the global context. This raises the question of how such provisions can be given effect to in FFDEs, particularly, in developed FFDEs like Scotland. Again, I will delve more fully into this in the next chapter.

Just Transition principles recognized under the Scotland Climate Change Act include actions reducing net GHG emissions which support environmentally and socially sustainable jobs, support low-carbon investment and infrastructure, develop and maintains social consensus, create decent, fair, and high-value work while not negatively affecting the current workforce and overall economy, and contribute to resource efficient and sustainable economic approach which addresses inequality and poverty.[275] The Act also establishes a citizens assembly to consider how to address

[270] For example, OGUK's Roadmap 2035 for the UK oil and gas sector includes the industry being on track to become net-zero by 2050, met 50% of UK oil and gas demand, grow and diversify energy supply chain export revenues, secure at least 130,000 direct and indirect jobs, and create over £10 billion in economic value through technology and innovation. See OGUK, *Economic Report 2019* (OGUK, 2019) 45 – 47.
[271] Scotland Climate Change Act, *supra* note 258, ss 35(20)(22).
[272] *Ibid,* s 35(24)(b).
[273] *Ibid,* s 35(23).
[274] UNFCCC, preamble. See generally, Rikard Warlenius, "Decolonizing the Atmosphere: The Climate Justice Movement on Climate Debt" (2018) 27:2 Journal of Environment and Development 131 – 155; Paul Chatterton et al, "Articulating Climate Justice in Copenhagen: Antagonism, the Commons, and Solidarity" (2013) 45:3 Antipode 602 – 620.
[275] Scotland Climate Change Act, *supra* note 258*,* s 35C.

climate change effects and make recommendations on how to achieve the emission reduction targets and other matters relating to climate change. While the just transition principles themselves are narrow, the requirement that plans and programmes align with climate justice principle, seek to attain the sustainable development goals, and the citizens assembly are consistent with key elements of the just transition characteristics in *table 6.* That said, it remains to be seen how this robust framing of just transition translates into how existing and new oil and gas projects are managed, and the extent to which people, communities, and nature, and not just jobs and economy, inform decisions.

2.7 Justice and the Transition of FFDEs: Right(s) to a Just Transition?

We can begin to draw a few preliminary conclusions here. First, both theoretically and in policy, there has been a movement away from the more restricted notion of just transition to a broader vision which captures broader socio-ecological objectives. Second, the earlier examples of just transition policies and interventions in coal communities show the limitations of the narrow job-focused approach to just transition as it, generally, left communities socio-economically decimated and stripped of communal cohesion and sense of cultural identity. Third, the more recent examples of transition in oil and gas communities, while rare and generally focused on unconventional oil and gas, are admissive of the more expansive conceptualization of just transition. The EU and Scottish examples considered here show the possibilities of the implementation of the vision of just transition articulated in *table 6*. Fourth, unlike the more ad hoc approach to just transition in the coal context, there are early signs of the codification of just transition in legislative instruments on climate change, providing more certainty to affected communities. Fifth, as reflected in the EU JTF Regulation there is an essential rights dimension to the just transition discourse. I conclude this chapter with reflections on the issue of just transition as a human rights issue.

While Sen and Nussbaum disagree on some framings of the capability approach, they agree that the capability approach to justice and human rights are aligned. The end goal of both is human wellbeing and functioning, although this goal is more frontal in the capability approach where there is an insistence that rights transcend what has been put down on paper.[276] I have argued in

[276] Nussbaum argues that the language of rights, while uplifting, obscures issues and is not "especially informative", hence, the need for the language of capabilities to talk about people's basic entitlement. See Martha Nussbaum, "Capabilities and Human Rights" (1997) 66:2 Fordham Law Review 273 at 274 – 275, 293.

this chapter that the attainment of wellbeing and functioning through the engendering of capabilities should be the primary objective of just transition. Why then is it important to frame capabilities in the language of rights? Nussbaum argues that this is necessary as rights language speaks to normative conclusions drawn from basic capabilities, recognition of 'fundamental rights' places great emphasis on the importance of rights guaranteed by the state, emphasises people's choice and autonomy, and "preserves a sense of the terrain of agreement".[277] More relevant to this work are the legal guarantees provided by the rights language and the correlating rights – duties relationship that it fosters. This leads to the question of whether a case could be made for a *right to a just transition*. For one, the recognition of such right raises just transition from being a mere add-on in climate policies and an afterthought in sustainability transition decisions by States and corporations, to becoming an essential component of such policies and a duty owned to affected communities and individuals. While this subject is deserving of a more extensive inquiry, I only offer some initial thoughts here.

Studies on the nexus between human rights (HR) and just transition are a rare find in the literature. Nevertheless, HR has presence in the works of international organizations on just transition. For example, the ILO Guidelines recognize 'rights' as one of its key policy areas.[278] The rights highlighted by the ILO include those in its standards covering freedom of association, collective bargaining, prohibition of forced labour and child labour, non-discrimination, minimum wage, and social security.[279] The UNFCCC also affirms that the transition towards inclusive and low-carbon economies must maximize opportunities for rights and social protection for all.[280] Further, the ITUC argues that social protection,[281] an internationally recognized human right, is an essential component of just transition.[282] As shown above, the EU JTF Regulation is the only known just transition instrument to explicitly reflect the nexus between 'social rights' and just transition.[283] More recently, the UN special rapporteur on extreme poverty and human rights reports that while

[277] *Ibid* at 295 – 296.
[278] ILO, *supra* note 22 at 7.
[279] *Ibid*.
[280] UNFCCC, *supra* note 135 at 21
[281] The ITUC defines social protection as systems that "consist of policies that help people manage social risks in order to prevent poverty and maintain decent incomes and living standards". ITUC, "ITUC Economic and Social Policy Brief: The Role of Social Protection in a Just Transition" <https://www.ituc-csi.org/IMG/pdf/role_of_social_protection_in_a_just_transition_en.pdf> 4.
[282] *Ibid.*
[283] EC, *supra* note 224.

just transition requires the protection of workers and community affected by the impacts of ecological transformation, it also mandates the opening of new opportunities and strengthening of "the rights of people living in poverty".[284] Further, principle 16 of the Framework Principles on Human Rights and the Environment, states that "States should respect, protect and fulfil human rights in the actions they take to address environmental challenges and pursue sustainable development".[285] Arguably, such human rights centered approach makes sustainable development policies "more legitimate, coherent, robust and sustainable" and helps to ensure that they improve the lives of people.[286]

Just transition scholars have considered the connection between just transition and Indigenous peoples rights;[287] human rights-based social protection;[288] right to work;[289] and human rights approach to fulfilling climate-related human rights obligations.[290] These different 'rights' perspectives show that while there is indeed an essential role for human rights in the just transition discourse, a *right to a just transition* is best construed as a bundle of different rights rather than a stand-alone right. The 'right' to just transition acknowledges that response measures to climate change have potential social impacts, including human rights effects, and holders of these rights are entitled to expect and demand the prevention or redress of such human rights impacts. Fisher rightly notes that the non-retrogression and progressive realization principles, when read together, mandate that "mitigation programmes improve, not limit or impair, human rights".[291] The non-retrogressive principle requires States not to "allow existing protection of economic, social and

---

[284] *Interim Report of the Special Rapporteur on Extreme Poverty and Human Rights, Olivier De Schutter: The "Just Transition" in the Economic Recovery: Eradicating Poverty within Planetary Boundaries* (7 October 2020) 75th Sess. UNGA, A/75/181/Rev. 1, para. 8.
[285] *Report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment*, (26 February – 23 March 2018) 37th Sess. HRC, A/HRC/37/59, Framework Principle 16.
[286] *Ibid* at para 55.
[287] May Thazin Aung, "A Just Transition to Renewables must Recognize the Rights of Indigenous Peoples", *Stockholm Environment Institute Perspective* (2020) online: <https://www.sei.org/perspectives/a-just-transition-to-renewables-must-recognize-the-rights-of-indigenous-peoples/>.
[288] Dunja Krause, "Why Human Rights-Based Social Protection is Needed in Climate Change Responses: A Just Transition", *Social Protection and Human Rights* (2019) online: <https://socialprotection-humanrights.org/expertcom/why-human-rights-based-social-protection-is-needed-in-climate-change-responses-a-just-transition/>.
[289] Sean Stephenson, "Jobs, Justice, Climate: Conflicting State Obligations in the International Human Rights and Climate Change Regimes" (2010) 42:1 Ottawa Law Review 155 – 179.
[290] Aled Dilwyn Fisher, "Human Rights in the Transition to a "Green Economy" – Critical Human Rights-Based Approaches to Climate change in Norway" (2014) 32:3 Nordic Journal of Human Rights 258 – 279.
[291] *Ibid* at 269.

cultural rights to deteriorate unless there are strong justifications for a retrogressive measure" by demonstrating that the measure was only adopted after considering all options, assessing the impact and fully using its maximum available resources.[292] Further, the principle of progressive realization imposes an obligation on States to "take appropriate measures towards the full realization of economic, social and cultural rights to the maximum of their available resources".[293] These principles further reinforce the predication of just transition on human rights. These rights, which reframe the characteristics in *table 6* using the language of rights, at the minimum, include right to a healthy environment, right to work, right of self-determination, right to social protection, property rights, right against discrimination, and right to meaningful participation. I provide a brief sketch of the contours of the first three of these component-rights in the context of a right to just transition.

The relationship between the right to work and just transition is the most common context in which human rights is considered in the sustainability transition context. Both the Universal Declaration of Human Rights (UDHR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR) recognize this right, which includes "the right of everyone to the opportunity to gain his living by work which he freely chooses or accepts" and States Parties are required to "take appropriate steps to safeguard these rights".[294] Although this right does not translate into "the right to a job",[295] States are obligated to take steps to achieve full realization of the right.[296] This includes through providing technical and vocational guidance and training, making policies and adopting techniques "to achieve steady economic, social, and cultural development and full and productive employment under conditions safeguarding fundamental political and economic freedoms to the individual."[297] Further to this right, is the right of everyone to the enjoyment of just and favourable conditions of work including one which ensures fair wages and equal remuneration, decent living

[292] Office of the United Nations High Commissioner for Human Rights (OHCHR), "Frequently Asked Questions on Economic, Social and Cultural Rights" Fact Sheet No. 33 online: <https://www.ohchr.org/Documents/Publications/FactSheet33en.pdf> 16.
[293] *Ibid* at 13.
[294] *Universal Declaration of Human Rights*, GA Res 217A (III), UNGAOR, 3rd Sess, Supp No 13, UN Doc A/810 (1948) 71, art 23(1) (UDHR); *International Covenant on Economic, Social and Cultural Rights*, 16 December 1966, 993 UNTS 3, art 6(1) (entered into force 3 January 1976) (ICESCR).
[295] Jeremy Sarkin and Mark Koenig, "Developing the Right to Work: Intersecting and Dialoguing Human Rights and Economic Policy" (2011) 33:1 Human Rights Quarterly 1 at 8 - 9, 25 – 26.
[296] ICESCR, art 6(2).
[297] ICESCR, *Ibid.*

for themselves and their families, and safe and healthy working conditions.[298] States have a duty in international law to respect, protect and fulfil these rights. While to respect is to refrain from interfering with the enjoyment of the right, to protect and fulfil mandates prevention of violations from third parties and taking positive measures to ensure full realization.[299]

Stephenson argues that although States could 'legally' fulfil their climate obligations and guarantee the right to work, viewed through what he describes as a "progressive legal approach" which takes into consideration the political and economic contexts of policy implementation,[300] there is normative conflict between both duties.[301] This conflict, he argues, pertains to consequences, "since a necessary consequence of a developed state's climate change obligations violates the right to work".[302] While I disagree that the violation of the right to work is a "necessary consequence" of climate change obligations, the actual implications of climate change policies, which have been variously referenced here, support Stephenson's premise. What then does the State's duty to respect, protect, and fulfil the right to work in the sustainability transition mean? While such duty cannot be interpreted as constricting States from having ambitious pro-climate policies, it compels similarly ambitious job-related measures, particularly targeted at persons now deprived of their 'right to work'.[303] It also means that as much as possible, the State has the duty to protect workers from measures taken by corporations which although often designed to protect bottom-lines are often framed as pro-climate measures. Here, workers qualify as right holders with justiciable claims under international human rights (IHR) instruments like the ICESCR, depending on the domestic legal status of such instruments.[304] Framed this way, climate policies must be

---

[298] *Ibid* at art 7.

[299] International Commission of Jurists, *Maastricht Guidelines on violations of Economic, Social and Cultural Rights*, (26 January 1997) online: <http://hrlibrary.umn.edu/instree/Maastrichtguidelines_.html>, para 6.

[300] See Stephenson, *supra* note 289 at 170 – 171.

[301] Stephenson defines normative conflict as "the impossibility of complying with or reconciling all of the requirements of two norms". This could occur when the same act is subject to different norms (e.g., obligatory and prohibitory norms), when norms require conflicting acts, when a norm prohibits an essential precondition of another norm, or when a norm prohibits a necessary consequence of another norm. *Ibid* at 165 – 166.

[302] *Ibid* at 173.

[303] Similarly, Stephenson argues that states "are obligated to take a comprehensive approach towards employment policy, taking into account all necessary measures to ensure the right to work, which includes work-related security". *Ibid* at 165.

[304] In *Nevsun Resources Ltd v. Araya*, 2020 SCC 5, para 119 (Nevsun), the SCC held that "… like all state parties to the *International Covenant on Civil and Political Rights* (ICCPR), Canada has international obligations to ensure an effective remedy to victims of those rights (art. 2)". The court further referenced the findings of the Human Rights Committee that States must protect against the violation of rights by private persons and entities, and that States should ensure the enjoyment of *Covenant* rights to all individuals. Although the eventual finding of the court is premised on

made alongside concrete measures that at the very least satisfy the minimum steps listed in article 6(2) of the ICESCR (technical and vocational guidance, training etc). While this is already being done by many States as already seen, it is largely still considered optional. For example, as at the end of 2020, the Canadian government has not articulated any coherent jobs related just transition plan although it released its climate change plan (PCF) in 2016.[305]

The UN special rapporteur on human rights and the environment, David Boyd, finds that more than 80% of UN State members legally recognize the right to a healthy environment, including in 110 States where the right enjoys constitutional protection, 101 States which have incorporated it into national legislation, and 126 States which have ratified it in regional treaties.[306] In 2022, 161 members of the United Nations General Assembly voted to recognize the right to a clean, healthy and sustainable environment.[307] Given this widespread recognition, the argument has been made that the right qualifies as a principle of customary international law.[308] In the specific context of just transition, the right to a healthy environment potentially grounds a justiciable claim for reclamation of a coal mine or oil and gas field upon decommissioning or closure of oil wells or coal mines. In his report, Boyd highlights "non-toxic environments in which to live, work and play" and "healthy ecosystems and biodiversity" as some of the substantive elements of the right to a healthy environment.[309] While the reclamation of former mines or oil wells is not specifically

---

the basis that the allegations (forced labour, slavery, cruel, inhuman and degrading treatment, and crimes against humanity) by Eritrean workers against *Nevsun* (a Canadian company) come under customary international law which is automatically part of Canadian law (paras 86 - 103), its reference to the ICCPR affirms Canada's obligation under the covenant. A similar case can be made in respect of the ICESCR, which like art 2 of the ICCPR, obligates a State party to take steps to, to the maximum of its available resources, achieve progressively "the full realization of the rights recognized … by all appropriate means". See ICESCR, *supra* note 280 at art 2(1).

[305] Norway is one other example. Fisher notes in 2014 that "there are no targeted worker protection schemes for petroleum's inevitable decline, and no unified programme for green, decent jobs to replace it". Without such policy, she argues that "Norway risks violating the right (to work) … especially as the country has pushed for tougher global climate action that effectively accelerates petroleum's decline". See Fisher, *supra* note 290 at 269.

[306] *Right to a Healthy Environment: Good Practices – Report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Development*, (24 February – 20 March 2020) 43rd Sess, Human Rights Council, A/HRC/43/53, paras 10 – 13. (Good Practices)

[307] United Nations General Assembly, *The Human Right to a Clean, Healthy and Sustainable Environment*, A/76/L.75, 26 July 2022.

[308] See generally John Lee, "The Underlying Legal Theory to Support a Well-defined Human Right to a Healthy Environment as a Principle of Customary International Law" (2000) 25:2 Columbia Journal of Environmental Law 283 – 346; Rebecca Bratspies, "Reasoning Up: Environmental Rights as Customary International Law" in John Knox & Ramin Pejan, *The Human Right to a Healthy Environment* (Cambridge: Cambridge University Press, 2018) 122 – 135.

[309] Good Practices, *supra* note 306 at paras 90 – 112.

mentioned here, it qualifies as an essential activity to make environments non-toxic (e.g., as in the case of tar sand with tailing ponds) and in restoring the health of the ecosystem.

There is an arguable case for the right to a reclaimed environment further to the right to a healthy environment in Canada. While there is no right to a healthy environment in the Canadian Constitution,[310] Canada endorsed the UN resolution on the right to a healthy environment. Although UN resolutions are generally deemed not binding or enforceable, arguments have been made that they are interpretive in nature and could be indicative of a general practice accepted as law (*opinion juris*).[311] The recognition of the interpretive value of UN Resolutions has precedent in Canada. For example, while noting that the Supreme Court of Canada has not pronounced on the legal status of the United Nations Declaration on the Rights of Indigenous Peoples, the British Columbia Supreme Court agreed with the plaintiffs that UNDRIP is an interpretative tool for Canadian laws.[312] Similarly, it is arguable that Canadian laws, particularly the Charter of Rights and Freedoms, can be interpreted in the light of the UN Resolution on the Right to a Healthy Environment. Such interpretation provides support for the right to a reclaimed environment, and other procedural and substantive environmental rights relevant to the right to a just transition.

The right to a reclaimed environment could also be argued for under other regimes. For example, the Alberta Environmental Protection and Enhancement Act (EPEA) under its "duty to reclaim" provision requires an operator to conserve, reclaim, and unless if exempted, obtain a certificate in respect of the conservation and reclamation of a land where coal mining or oil exploration is or has been carried out.[313] The Supreme Court of Canada (SCC) describes the requirement that a bankrupt operator in receivership complies with abandonment and remediation obligations as acting in the 'public interest' and that it is the public that "is the beneficiary of those environmental obligations".[314] These obligations were, in effect, accorded super-priority over other creditors' claims as the court ordered that proceeds from the sale of the operator's assets should be used to

[310] David Boyd, *The Right to a Healthy Environment: Revitalizing Canada's Constitution* (Vancouver: UBC Press, 2012) 3 - 4.
[311] Alex Castles, "Legal Status of U.N. Resolutions" (1967) 5 Adelaide Law Review 68 at 79 – 81. Also see generally Marko Divac Öberg, "the Legal Effects of Resolutions of the UN Security Council and General Assembly in the Jurisprudence of the ICJ" (2006) 16:5 The European Journal of International Law 879 – 906.
[312] *Thomas and Saik'uz First Nation v Rio Tinto* 2022 BCSC 15, paras 206 – 212. The preamble to the Canada's UNDRIP Act also affirmed UNDRIP "as a source for the interpretation of Canadian law". See *UNDRIP Act*, SC 202, c 14, preamble.
[313] *Environmental Protection and Enhancement Act*, RSA 2000, c E-12, s 137.
[314] *Orphan Well Association v. Grant Thornton Ltd*, 2019 SCC 5, para 112.

address its end-of-life obligations.[315] Although this decision was in the context of bankruptcy, it, arguably, supports the general principle that fossil fuel companies have an obligation to abandon and/or reclaim responsibly when transitioning. While regulators, generally, have the *locus* to initiate action to enforce compliance, private individuals like surface right holders could, however, litigate to compel reclamation subject to the terms of a Surface Lease Agreement.[316]

At first glance, some rights might seem to conflict with the objective of achieving the global climate goals while steadily journeying towards a sustainable world. A closer look, however, affirms the argument that not securing these rights would either constrict progress or imperil progress supposedly achieved. Take the right of self-determination as an example. The International Court of Justice referred to the right of self-determination as "one of the essential principles of contemporary international law".[317] Integral to the right of self-determination, is sovereignty over resources – described elsewhere as "a basic constituent of the right of self-determination".[318] Affirming this, both the ICESCR and ICCPR provide that by virtue of this right, people can freely pursue their economic development, and for their own ends, "freely dispose of their natural wealth and resources".[319] This right is without prejudice to "obligations arising from international economic co-operation, based upon the principle of mutual benefit, and international law".[320] For example, the do no harm principle is an established qualification to the right of sovereignty over natural resources under international law.[321] Nevertheless, under no condition

[315] *Ibid,* para. 163.

[316] A standard Alberta Surface Lease Agreement has such requirement. It provides that "the Lessee shall have the right at any time and from time to time by written notice to the Lessor to surrender all or any portion of the leased premises and terminate this Lease agreement as it relates to the surrendered premises, provided however, … that all provisions for abandonment and reclamation have been complied with in accordance with applicable laws and regulations". See "Alberta Surface Lease Agreement, <https://caplacanada.org/wp-content/uploads/2015/02/Alberta-Surface-Lease-Agreement.pdf>.

[317] *Case Concerning East Timor (Portugal v Australia) Merits*, Judgment, ICJ Reports 1995 4 at 102, para 29.

[318] General Assembly Resolution 1803 (XVII) of 14 December 1962, "Permanent Sovereignty over Natural Resources", preamble.

[319] ICESCR, art 1(1)(2); *International Covenant on Civil and Political Rights*, 16 December 1966, 999 UNTS 171, art 1(1)(2) (entered into force 19 May 1976) (ICCPR).

[320] ICESCR, art 1(2); ICCPR, art 1(2).

[321] As established in the Stockholm and Rio Declarations, while States have the sovereign right to exploit their resources pursuant to their own environmental and developmental policies, they have a responsibility to ensure that "activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction". See United Nations, United Nations Conference on the Human Environment, 15 December 1972, A/RES/2994 (The Stockholm Declaration), principle 21; The Rio Declaration on Environment and Development, 1992, A/CONF.151/26 (The Rio Declaration), principle 2. As discussed later in. this thesis, this qualification is recognized as a norm of customary international law. As reiterated by the Permanent Court of Arbitration in the Kishenganga case, "there is no doubt that states are required under contemporary customary

could people be deprived of their means of subsistence.[322] The UNDRIP affirm the "right to self-determination,[323] and the right to "determine and develop priorities and strategies for the development or use of their lands or territories and other resources".[324]

The necessity of leaving fossil fuel under the ground and attendant policies like the Scottish moratorium on unconventional oil and gas production and Canada's thermal coal policy are *prima facie* infringement of the right of self-determination and resource governance. One response to this 'conflict' is that the right could be restrained to achieve sustainability objectives more so as failing to meet such sustainability imperatives would potentially inflict human rights harms on present and future generations.[325] However, it could also be argued that regardless sustainability and climate imperatives, people, in all instances, have limitless right to do as they wish with their resources. It is clear from the ICESCR and ICCPR that the right of self-determination and resource governance is not absolute. The covenants subject it to international law obligations, obligations arising from international economic cooperation, and the principle of mutual benefit. While mitigation measures under the international climate regime could easily be brought under these limitations, the Siracusa Principles, require that limitations be interpreted in favour of the rights at issue and must not be interpreted so as to jeopardize the essence of the right concerned.[326] A more availing interpretation, therefore, is one which allows and facilitates the deployment of the right of self-determination and resource governance for the attainment of sustainability and climate objectives.

---

international law to take environmental protection into consideration when planning and developing projects that may cause injury to a bordering state". See *Indus Waters Kishenganga Arbitration (Pakistan v India)*, 2011-01, Permanent Court of Arbitration (Partial Award Delivered 18 February 2013), para 449. It is, however, worthy of note that the do no harm principle is qualified; the transboundary harm is expected to be of 'serious consequence' and 'established by clear and convincing evidence'. See *Trail Smelter Arbitration (United States v. Canada)* (1941) 3 UN Rep Intl Arb Awards 1905, 1965. For more on sovereignty over natural resources and the do no harm principle, see International Law Commission, *Prevention of Transboundary Damage from Hazardous Activities* (1999) Document A/CN.4/501; Joyeeta Gupta and Susanne Schmeier, "Future Proofing the Principle of No Significant Harm" (2020) 20 International Environ Agreements 731 – 747; Franz Perrez, "The Relationship Between "Permanent Sovereignty" and the Obligation Not to Cause Transboundary Environmental Damage" (1996) 26:4 Environmental Law 1187 – 1212.

[322] ICESCR, art 1(2); ICCPR, art 1(2).

[323] UNDRIP, art 3.

[324] *Ibid,*

[325] See generally Petra Gümplová, "Restraining Permanent Sovereignty over Natural Resources" (2014) 53 Enrahonar. Qaderns de Filosofia 93 – 114.

[326] American Association for the International Commission of Jurists, "Siracusa Principles on the Limitation and Derogation Provisions in the International Covenant on Civil and Political Rights" (1985) online: <https://www.icj.org/wp-content/uploads/1984/07/Siracusa-principles-ICCPR-legal-submission-1985-eng.pdf>, principles 2, 3.

Under both the ICESCR and ICCPR, this at least means that: (a) peoples (e.g., Indigenous peoples, host communities) should play key roles (and in some cases give consent) in decisions about the future of fossil fuel resources; and (b) substitute means of subsistence must be provided, particularly, for communities and States which have fossil fuel as their primary means of subsistence. On point (a), we must return to Habermas who, as noted in chapter 1, has argued that inclusive and public argumentative deliberations can yield (pro-climate) rationally motivated agreements.[327] Similarly, Sen argues that "open-minded engagement in public reasoning is … central to the pursuit of justice".[328] But whether the deliberative or decision-making role of self-determination right-holders would be pro-sustainability is dependent on point (b) – whether subsistence concerns have been taken into consideration.[329] An apt analogy, perhaps, is the failure of non-Indigenous fishermen in Nova Scotia to take into consideration the right of Indigenous fishermen to subsistent and moderate livelihood fishing in their case for 'sustainable' fishing.[330] A hasty conclusion that the right to self-determination and resource governance inhibits sustainability transition is recipe for an unjust transition. This is not only in respect of effects of transitioning 'from' carbon intensive industries, but also as regards the low-carbon industries transitioned 'to'. Mazin Aung, for example, notes that violations of Indigenous peoples' rights characterize large-scale renewable energy projects in Southeast Asia and that such projects could be both sustainable and equitable if "Indigenous peoples are empowered to manage their own resources to develop renewables that benefit their communities".[331]

---

[327] Jurgen Habermas (translated by William Rehg), *Between Facts and Norms: Contributions to a Discourse Theory of Law and Democracy* (Cambridge: The MIT Press, 1996) 305.

[328] Sen, *supra* note 60 at 390.

[329] Mezirow notes that "economic, social, and psychological conditions fostering social justice are essential for inclusion in effective critical-dialectical discourse – the process by which we come to understand our own experience – overcoming the threat of exclusion constitutes a significant epistemological rationale for adult educators to commit themselves to economic, cultural, and social action initiatives". See Jack Mezirow, 'Transformative Learning as Discourse' (2003) 1:1 Journal of Transformative Education 58 at 60.

[330] See Amanda Coletta, "Indigenous People in Nova Scotia Exercised their Right to Catch Lobster. Now they're Under Attack", (26 October2020) *Washington Post* < https://www.washingtonpost.com/world/the_americas/canada-nova-scotia-indigenous-lobster-fishery/2020/10/24/d7e83f54-12ed-11eb-82af-864652063d61_story.html>. In R v. Marshall [1999] 3 SCR 533, the SCC affirmed that the respondent had right treaty rights to (catch) to secure necessaries which it construed as "moderate livelihood"'. This, however, does not extend to "the open-ended accumulation of wealth".

[331] Aung, *supra* note 287. On human rights effects of renewable energy projects, see Business and Human Rights Resource Centre, "Renewable Energy Risking Rights and Returns: An Analysis of Solar, Bioenergy and Geothermal Companies' Human Rights Commitments", (2018) <https://media.business-humanrights.org/media/documents/files/Solar_Bioenergy_Geothermal_Briefing_-_Final_0.pdf>.

More remains to be said on just transition and the right to social protection, right against discrimination, right to meaningful participation, and property rights. These rights, like the ones considered above, are recognized in IHR instruments, and are implicated to varying degrees by sustainability transition initiatives and policies.[332] I have shown a few examples of how other rights are implicated in the sustainability transition discourse above. These examples suffice, for now, to support the claim that the just transition discourse is a human rights discourse. Hence, it is not an optional component of climate policies. People and communities impacted by measures to combat climate change are entitled to project their wellbeing-concerns as human rights issues. Rather than inhibiting ambitious sustainability and climate measures, this human-rights sensitive approach has the potential of protecting pro-climate policies from becoming another domain of injustice and/or reinforcing past injustices. As I will show in the next chapter, this rights-framing also plays a role in the global iteration of the just transition discourse. Further still, the brief analysis here provides a foundation for the relevance of the human rights impact assessment lens to the JTIA Framework developed later in this work.

[332] *Right to social protection (social security)* – ICESCR, art 9; UDHR, art 22. The right includes right to access and maintain benefits to secure protection, *inter alia,* from lack of work-related income, unaffordable access to health care, and insufficient family support, particularly for children and adult dependents. See UN Economic and Social Council, *General Comment No. 19 – The Right to Social Security (art. 9)*, (4 February 2008) E/C.12/GC/19, para. 2. *Right against discrimination* – ICESCR, art 2(2), 10(3); UDHR, art 7, 23(2). *Right to Meaningful Participation – Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters*, 25 June 1998, 2161 UNTS 447 at art 1, 6 – 8 (entered into force 30 October 2001) (Aarhus Convention). *Property Rights* – UDHR, art 17(1)(2). On property rights, for example, in *Pennsylvania Coal Co. v. Mahon* (1922) 260 US 393, 415, where state law had been enacted preventing a company from extracting coal from a property it has right to, Justice Holmes of the US Supreme Court held that "while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking". (Referring to the provision under the 5th and 14th Amendments to the U.S. Constitution prohibiting the expropriation of private property without compensation and forbids government from forcing individuals to bear burdens which should be borne by the whole public). See Joseph Margolies, "Fossil Fuel Extraction Bans: A Takings Analysis" (2018) 30:1 Environmental Claims Journal 87 at 89 – 94.

CHAPTER THREE
THE GLOBAL FOSSIL FUEL INDUSTRY AND CLIMATE CHANGE: FRAMING A GLOBAL JUST TRANSITION APPROACH

3.1 Introduction

The argument has been made in chapters 1 and 2 that the 'global' is an essential, although largely overlooked, element of the just transition discourse.[1] This is necessarily so considering that climate change is a global problem which compels a global response. While the argument could be made that the adverse impacts of climate change response measures, which just transition aims to prevent or redress, are mostly local and should therefore be addressed locally, such logic as shown in the cases of adaptation and loss and damage is flawed. For example, prior to the Paris Agreement, adaptation was construed as a 'local-to-national problem',[2] since climate change consequences mandating adaptation measures (e.g., flooding, drought, etc.) are mostly experienced locally. At the introduction of the African Group of Negotiators, however, the global goal on adaptation was recognized in the Paris Agreement. Parties to the agreement acknowledge that "adaptation is a global challenge faced by all with local, subnational, national, regional and international dimensions".[3] Benzie et al argue that this recognition is vital given the borderless nature of climate risks in several regards.[4] They note that "adaptation measures taken in one part of the world have the potential to alter and affect cross-border links and flows, and … have positive and/or negative effects in other places".[5] The effects include disruption of trade (price, quality and availability of goods), alteration of ecosystems, effect on people (e.g., climate displacement), and foreign investment downturn (e.g. return on overseas investments and remittance flows).[6] While the impacts of mitigation measures are derived effects of climate change rather than the more direct

[1] As noted in the 2020 Production Gap Report, "policies to transition away from fossil fuels will be most effective if supported by countries collectively, as this will send consistent, directional signals to energy producers, consumers, and investors. International cooperation, both through established channels and in new forums, can support a just and equitable wind-down of fossil fuels". See SEI et al, "The Production Gap Report: 2020 Special Report" (2020) online: <http://productiongap.org/2020report/> at 7.
[2] Alexandre Magnan & Teresa Ribera, "Global Adaptation after Paris: Climate Mitigation and Adaptation cannot be Uncoupled" (2016) 352:6291 *Science* 1280 at 1281.
[3] Paris Agreement, art 7(1)(2).
[4] Magnus Benzie et al, "Meeting the Global Challenge of Adaptation by Addressing Transboundary Climate Risk", *Stockholm Environment Institute Discussion Brief* (April 2018) 4.
[5] *Ibid.*
[6] *Ibid.*

adaptation-effects, the arguments made by Benzie et al apply similarly in the just transition context.

Response measures will affect people, ecology, trade, and investments on a global scale. Take the effects on trade and people as examples. On trade, Bacchus explains that article 4(8) of the UNFCCC (which recognizes the need to give "full consideration" to the impact of response measures) was, in part, incorporated given the concerns of fossil fuel producing developing countries "about prospective disruptions to their trade and, thus, their economies, that could be caused by climate mitigation measures by developed countries".[7] The incorporation of the provision has, however, not prevented what some have described as green protectionism.[8] Green protectionism is in different shapes and shades. They include policies with overt environmental goals which supposedly apply to both foreign and domestic companies but confer covert privileges on domestic industries,[9] or which transfer the costs of implementing environmental obligations

[7] James Bacchus, "What is a Climate Response Measure? Breaking the Trade Taboo Confronting Climate Change" (2019) CIGI Papers No. 220, 8.

[8] "Environmental protectionism exists when a law, regulation, measure or program is used by the government of a legal jurisdiction to achieve a stated level of environmental quality and from which firms of the given jurisdiction derive a competitive advantage over firms outside the jurisdiction; competitive advantage they would not have derived if another law, regulation, measure or program is used to achieve the same stated level of environmental quality". See Benoit Laplante and Jonathan Garbutt, "Environmental Protectionism" (1992) 68:1 Land Economics 116 at 117.

[9] The local content requirements (LCR) of Ontario's feed-in-tariff program which required the use of locally produced materials was ruled to violate Canada's WTO obligations by the Dispute Settlement Panel and Appellate Body in 2012 and 2013 respectively. Japan and the European Union had complained that the program breached the national treatment and actionable subsidy principles of the WTO, hence, discriminating against foreign goods and treating 'like' domestic goods more favourably. Both the Panel and Appellate Body upheld the national treatment arguments of the complainants. And while not reaching a conclusion on the program's compliance with the Subsidies and Countervailing Measures (SCM) agreement, the Appellate Body suggested the program might have conferred undue benefits. See generally *Canada – Certain Measures Affecting the Renewable Energy Generation Sector; Canada – Measures Relating to the Feed-in-Tariff Program* (2012), *WTO Doc* WT/DS412/R, WT/DS426/R (Panel Report); *Canada – Certain Measures Affecting the Renewable Energy Generation Sector; Canada – Measures Relating to the Feed-in-Tariff Program* (2013), *WTO Doc* WT/DS/412/AB/R, WT/DS426/AB/R (Appellate Body Report). See generally Steve Charnovitz and Carolyn Fisher, "Canada-Renewable Energy: Implications for WTO Law on Green and not-So-Green Subsidies" (2015) 14:2 World trade Review 177 – 210. The Appellate Body's decision delineating the 'wind and solar energy' market from the larger electricity market has, however, been criticized. Rajib Pal, for example, argues that the decision "permits WTO members to parse an existing product market into separate markets defined according to production technology, and provide support to chosen higher cost producers … without fear of repercussions under the SCM Agreement". See Rajib Pal, "Has the Appellate Body's Decision in Canada – Renewable Energy/Canada – Feed-in Tariff Program Opened the Door for Production Subsidies?" (2014) 17 Journal of International Economic Law 125 at 136. More recently, India initiated a complaint against incentives under eleven renewable energy programs in eight states in the United States (Washington, California, Montana, Connecticut, Michigan, Delaware, Minnesota, and Massachusetts). For example, the Washington Renewable Energy Cost Recovery Incentive Program (RECIP) provides credits to assist individuals and entities who generate electricity using renewable energy systems to offset the cost of purchasing the systems. Additional incentives are given for systems which are 'made in Washington'. The other challenged programs have similar incentives for local production. The WTO Panel

(meeting mitigation obligations) to third countries in an acclaimed bid not to lose competitiveness.[10] Another example of green protectionism is the liberalization, subsidization and veneration of 'green products' which only a few countries have the means and expertise to produce and export as against the more carbon intensive products which less developed countries produce.[11] The argument here is not that some of these seemingly 'protectionist' policies are not ecologically relevant, necessary, or even effective, but that they are often crafted and implemented without regard to their cross-border social and economic implications, particularly in less developed countries. The attempt to decouple 'green economy' or 'green growth' from a sustainable development framing which emphasises social and economic effects alongside ecological impacts have been resisted by developing states in different international fora.[12] For example, in Rio+20 it was resolved that:

> … green economy policies in the context of sustainable development and poverty eradication should … not constitute a means of arbitrary or unjustifiable discrimination or disguised restriction on international trade, avoid unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country and ensure that environmental measures addressing transboundary or global environmental problems, as far as possible, are based on international consensus.[13]

There is a risk of having conversations on the trans-border impacts of response measures as a distant macro-economic subject or in people-neutral terms. Perhaps, what qualifies such conversations as justice concerns are the impacts on people, and the environment that the policies are designed to 'protect'. Let us take the 'green paradox' as an example. The green paradox is often described as capturing the often counter-productive, or even worse outcomes, of well-intended demand and supply-side climate policies.[14] There is a weak variant of the green paradox where anticipated climate policies inform the quicker extraction of fossil fuel, and a strong variant

found ten of the eleven (with the exception of the Massachusetts measure) to be in violation of USA's WTO obligations. See generally *United States – Certain Measures Relating to the Renewable Energy Sector* (2019), *WTO* Doc WT/DS510/R (Panel Report). While appeal has been lodged at the Appellate Body, no decision has been made as at the time of writing.

[10] Lottici and Galperín note that the costs of meeting international mitigation obligations are being transferred to developing States through response measures like carbon footprint labeling standards and border carbon adjustments. See Marìa Lottici and Carlos Galperìn, ""Green Trade Protectionism": An Analysis of Three New Issues that Affect Developing Countries" (2014) 2:2 Chinese Journal of Urban and Environmental Studies 1 at 15 – 21, 28.

[11] *Ibid*, 21 – 27.

[12] *Ibid*, 10 – 12.

[13] *The Future We Want*, GA Res 66/288, UNGAOR, 66th Sess, UN Doc A/Res/66/288 (2012), 1 at para. 57(h).

[14] Frederick van der Ploeg and Cees Withagen, "Global Warming and the Green Paradox: A Review of Adverse Effects of Climate Policies" (2015) Oxcarre Research Paper 116, 2.

where resource owners are still able to extract all of their resources despite climate policies alongside the forward shift in extraction.[15] Ploeg and Withagen also refer to a spatial version of the green paradox where carbon leakage occurs as governments fail to coordinate and implement a global carbon tax.[16] What is often missing in these technical economic analyses is that only a few countries and multinational companies with low extraction costs, more accessible reserves, the ability to ramp up production and access markets, and the capacity to absorb nosedived prices of commodities will potentially benefit from a 'green paradox scenario'. For example, the IEA reports that the risk of stranded volumes (of oil and gas) is lower for oil majors and independents as they plan to produce reserves on their books within the next 20 to 30 years, unlike national and international national oil companies (NOCs and INOCs) which are in greater risk of stranded resources.[17]

The IEA also notes that even if NOCs which are generally low-cost resource holders compete for market share with their cheaper resource, it would lead to a drop in global oil price and consequentially, huge strains on fiscal balances, making it difficult to "finance essential areas such as education, health care, public sector employment and so on".[18] The need to maintain a floor under oil prices then allows higher-cost oil supplies and non-conventional fuels like American Shale to grow into the 2020s.[19] Even in the event that cheaper oil is allowed to flood the global market like during the Covid19 pandemic, only a handful of countries like Saudi Arabia and Russia (particularly, Russia) have the capacity to absorb such price shocks.[20] The point is that beyond volumes and prices, are real consequences to people who need the education, health care and

---

[15] See Svenn Jensen et al, "An Introduction to the Green Paradox: The Unintended Consequences of Climate Policies" (2015) 9:2 review of Environmental Economics and Policy 246 at 246 – 247.
[16] Ploeg and Withagen, *supra* note 14 at 2.
[17] See International Energy Agency, *The Oil and Gas Industry in Energy Transitions: Insights from IEA Analysis* (Paris: IEA, 2020) 99. The IEA defines NOCs as oil companies fully or majority owned by national governments with focus on domestic production, while INOCs are also fully or majority owned by governments but with both domestic and significant international operations. 'Majors' are integrated (international) oil companies listed on US and European stock markets (these companies are not owned fully or majorly by state governments). Independent (oil companies), on the other hand, could also be fully integrated like oil Majors but are smaller in size. See *Ibid*, 16 - 17.
[18] *Ibid,* 76.
[19] *Ibid,* 60.
[20] Although Saudi Arabia has considerable foreign reserves (put at US$ 464 billion in 2020), it lacks the resilience to bear the low cost of oil for a long period of time, compared to Russia which is said to be able to live with an oil price of $25 per barrel for years. See Simon Watkins, "Oil Price War Puts Entire kingdom of Saudi Arabia at Risk", *OILPRICE* (11 May 2020) online: <https://oilprice.com/Geopolitics/Middle-East/Oil-Price-War-Puts-Entire-Kingdom-Of-Saudi-Arabia-At-Risk.html>; Tsevetana Paraskova, "Putin Would Like to See Oil Prices Above $46 per Barrel", *OILPRICE* (27 August 2020) online: <https://oilprice.com/Energy/Energy-General/Putin-Would-Like-To-See-Oil-Prices-Above-46-Per-Barrel.html>.

employment that the IEA identified as being at risk.[21] This makes sustainability transition a people-oriented global justice subject. Is it 'just' that although deemed as a global climate leader, Norway enriches its oil-funded sovereign wealth fund, earning $180 billion in 2019 alone,[22] while less developed FFDEs struggle and compete for an increasingly shrinking global market and dial down welfare programs due to reduced fossil fuel returns? Is it 'just' that by primarily focusing on economic efficiency, a country like the United States is only expected to leave 9% and 6% of its oil and gas reserves underground, while African States and the Middle East are expected to leave 26% and 34%, and 38% and 61%, respectively, of their oil and gas unexploited?[23] Is it 'just' that in a free-for-all global race to the bottom scenario, while a handful of States would be able to capitalise on the unfortunate state of affairs, seize global market shares and are able to cater to the welfare needs of their people, many more will continue to languish in want and poverty? As emphasized in chapter two, while the distributive and procedural notions of justice are relevant in the conception of justice in this work, the capability approach is the basis of what is considered as the overall objective of justice here – the enablement of capabilities for the attainment of people's wellbeing.

Aligning the above questions with the global climate mandates brings to the fore issues bordering on the carbon budget, the current 'distribution' landscapes (fossil fuel supplies and market shares), and how it should be distributed if justice and fairness were to be key underpinning normative principles. As Kartha et al aptly ask: "whose carbon is burnable"[24] and how is that determined? As I will show throughout this chapter, scholars have considered this question extensively. I, however, take a more robust yet targeted approach to the question by not just considering

[21] As noted in the 2020 Production Gap Report, "[d]eveloping countries have borne the brunt of the fossil fuel industry's fragility during the pandemic, with lost oil revenue, for example, driving a 25% cut in government in Nigeria, significantly reducing Iraq's social benefits, and sincerely affecting Ecuador's public sector". See SEI, *supra* note 1 at 6, 29.

[22] Reuters, "Norway Wealth Fund Earned a Record $180 billion in 2019", *CNBC* (27 February 2020) online: <https://www.cnbc.com/2020/02/27/norway-wealth-fund-earned-a-record-180-billion-in-2019.html>. Norway is said to have the fifth most aggressive near-term oil and gas expansion plans in the world. In 2019, it offered a record number of 93 oil and gas exploration blocks in the Barents Sea alone. See Jeff Gailus, "Oil, Gas and the Climate: An Analysis of Oil and Gas Industry Plans for Expansion and Compatibility with Global Emission Limits", *Center for International Environmental Law* (December 2019) <https://www.ciel.org/wp-content/uploads/2019/12/oilGasClimateDec2019.pdf> 10.

[23] McGlade & Paul Ekins, "The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2ºC" (8 January 2015) 517 Nature 187 at 189.

[24] Sivan Kartha et al, "Whose Carbon is Burnable? Equity Consideration in the Allocation of a "Right to Extract"" (2018) 150 Climatic Change 117 – 129.

normative principles and institutional designs (the dominating themes on the subject). Instead, I examine current trends particularly in the light of the justice implications of fossil fuel ownership, supply and demand, supply-side mitigation tools deployed by governments, and industry approaches to climate change. I also consider ongoing discourse on the carbon budget and proposals on its fair distribution. The point here is that whereas FFDE and industry mitigation initiatives are mostly domestic, there is a justice component with global dimensions often not considered. In the subsequent parts of this chapter, I consider the relevance and application of the principle of *differentiation* under international climate change law and how the principle can be interpreted to identify the principles of an equitably managed carbon budget. Within the broader just transition impact assessment (JTIA) focus of this thesis, I argue that the global dimension of the just transition discourse has considerable implications for impact assessment, particularly when considering whether to commission new fossil fuel projects, continue or decommission existing ones, or determine low carbon transition (LCT) approaches.

3.2 The Global Fossil Fuel Industry: Trends

The production and use of fossil fuel (coal, oil, and gas) preceded the 1st industrial revolution. Earlier civilizations employed various forms of fossil fuel for different purposes whether it was the use of bitumen for the construction of Babylon's wall around for 4000 B.C. or the latter use of petroleum for medicinal purposes in the 10th Century ancient Persians and Sumatrans.[25] In fact, the Chinese are said to have used oil and natural gas for heat and light about 2000 years ago.[26] Hence, Pirani identified four distinct periods of the history of fossil fuels consumption: the pre-Industrial revolution era where fossil fuels were used, primarily, locally; the first industrial revolution (mid-18th century to about 1870) where coal fired steam engines drove industrialization; the second industrial revolution (1870 to mid-20th century) where through coal, oil and gas (with coal dominating) electricity networks, manufacturing, internal combustion engines and petrochemicals were powered; and the post-2nd industrial revolution (mid-20th century to present) where the use of fossil fuel skyrocketed and oil overtook coal as the dominant fuel.[27] The above shows both how long in time and how broad in scope fossil fuels have been used. Rather than the

[25] See generally Government of Louisiana, "How the Ancient People and People Before the Time of Oil Wells Used Petroleum" online: <http://www.dnr.louisiana.gov/assets/TAD/education/BGBB/2/ancient_use.html>.
[26] *Ibid.*
[27] Simon Pirani, *Burning Up: A Global History of Fossil Fuel Consumption* (London: Pluto Press, 2018) 9.

current epoch being completely removed from previous eras, it is more accurate to construe it as a culmination of previous and present usages ranging from the local and domestic relevance of fossil fuel in the pre-industrial revolution era to the oil-saturated global industrial complex in the post-2nd industrial revolution period. It is indeed this ubiquitous and entrenched status of fossil fuels that has made transitioning away from them very difficult despite being known to be the primary precipitants of a warming globe and a changing climate.[28]

While fossil fuels have historically been produced and used all around the world, there is a considerable difference in the rate of production and usage across place and time. In the 1st and 2nd industrial revolution, for example, about 75% of the globally produced fossil fuel were in North America and Western Europe, with both being responsible for about 1,050 tce (millions of tonnes of coal equivalent) of the total estimated production of 1350 tce in 1913.[29] The same trend applies to consumption, with North America and Western Europe consuming more fossil fuel than the rest of the world combined throughout the 1st and 2nd industrial revolutions.[30] 1989 was the first time that a (disputedly) developing country, China, overtook a developed country (the United States of America) as the highest producer of coal, while Saudi Arabia and the United States have over the years competed for the dominant share of global oil production, with 1977 being the first time that Saudi Arabia overtook the United States.[31] Until 1986, when Russia became the largest gas producer, the United States produced the most, and both countries have competed for the position of top producer since then.[32] Presently, the United States is the highest oil and gas producer

[28] On oil, for example, Heidi Scott painted a visual narrative - "Literary critics call our modern state an 'oil oncology', which is to say that it has become so omnipresent, we can't even see oil because we look through oil glasses, or oil eyes … We are, ourselves, petroleum products, an intermixture pf self-generating and manufactured parts. This makes us cyborgs, and not just because some of us have artificial hips and pacemakers made of petroleum parts. Materially, we are part petro because the food we eat is fertilized, harvested, processed, distributed, and sold using petrochemicals. Our car wheels are prosthetics for the legs we less often use; our computers are our hands and voices and the brain-like repositories of our habits and ideas". See Heidi Scott, *Fuel: An Ecocritical History* (London: Bloomsbury Academic, 2018) 178. Elsewhere, the Energy Transitions Commission (ETC), for example, identify what it describes as six "major harder-to-abate" sectors entailing the heavy industry (cement, steel and plastics) and heavy-duty transport (heavy road transport, shipping and aviation). These sectors together contribute about 30% of the total global emissions, with prospect for further growth. See ETC, *Mission Possible: Reaching Net-Zero Carbon Emissions from Harder-to-Abate Sectors by Mid-Century* (London: ETC, 2018) 14. See also Samantha Gross, "Why are Fossil Fuels so Hard to Quit", *Brookings* (June 2020) online: <https://www.brookings.edu/essay/why-are-fossil-fuels-so-hard-to-quit>.

[29] Pirani, *supra* note 27 at 15.

[30] For example, while North America and Western Europe consumed a cumulative of 3601 tce in 1968, the rest of the world consumed a total of 2706 tce. See *Ibid,* 19.

[31] Hannah Ritchie and Max Roser, "Fossil Fuels", *Our World in Data* (2017) online: <https://ourworldindata.org/fossil-fuels>.

[32] *Ibid.*

globally, while coming a distant second to China in coal production.[33] And while China currently ranks as the top consumer of fossil fuels in absolute figures, developed countries dominate the list of highest consumers of fossil fuel per capita with North America consuming over 18 times the fossil fuels used in Africa.[34] The exponential increase in the use of fossil fuels over time is also worth noting. Fossil fuels consumption quadrupled between 1900 and 1950 (with coal dominating) and again, between 1950 and 2000 (with oil dominating).[35] And while there is an appearance of a slowing down, there has been an over 50% increase in fossil fuel consumption in the past two decades (2000 - 2019).[36]

A key feature of the earlier period of the fossil fuel industries (particularly the oil industry) is the prevalent involvement of private enterprises and multinational companies. From the late 1970s, however, the trend began to change with the nationalization of existing fossil fuel companies and the formation of state-owned enterprises to directly manage the resources of the country.[37] I have explored this in greater detail below. It is enough to note, for now, that the establishment and greater involvement of State-owned enterprises in the exploration of fossil fuel has also resulted in an astronomic increase in their share of global fossil fuel production and consequentially a greater proportion of emitted carbon from those fuels. The 2017 Carbon Majors Report shows that compared to the 237 years between the 1st industrial revolution and 1987 where only 820 $GtCO_2e$ was emitted from fossil fuels, a total of 833 $GtCO_2e$ was emitted within a period of 27 years (1988 - 2015).[38] Of the 833 $GtCO_2e$, 100 fossil fuel producers are responsible for 635 $GtCO_2e$ with 59% of these companies being State-owned (many of which are owned by developing States).[39] Hence, while historical emissions from fossil fuel are largely attributed to developed countries in Europe and North America,[40] less developed countries in Asia, South America, and Africa have

[33] *Ibid.*
[34] *Ibid.*
[35] *Ibid.*
[36] While the total global energy consumption by fossil fuel source in 2000 was 94,314 Terawatt hours (TWh), it was 135,807 TWh in 2019. See *Ibid.*
[37] As shown in the Heede Report, "[t]he state-owned companies rose prominently after the oil embargo in 1973 and the subsequent rise of nationalization of oil and natural gas resources in the Persian Gulf, North Africa, and elsewhere in the mid-1970s". See Richard Heede, *Carbon Majors: Accounting for Carbon and Methane Emissions 1854 – 2010 – Methods and Results Report* (Snowmass, Colorado: Climate Mitigation Services, 2014) 33.
[38] Paul Griffin, *The Carbon Majors Database: CDP Carbon Majors Report 2017* (London: CDP, 2017) 7.
[39] *Ibid* at 8.
[40] See Hannah Ritchie, "Who has Contributed Most to Global CO_2 Emissions", *Our World in Data* (1 October 2019) online: <https://ourworldindata.org/contributed-most-global-co2>.

contributed more substantially to more recent emissions.[41] Whereas the extent of this current contribution was not evident in the years leading to the 1992 UNFCCC and its iteration of the differentiation principle which takes into cognizance historical responsibility,[42] the clearer picture of the current emissions by developing States necessitates a more pragmatic rethinking of the notion of differentiation, just transition and the carbon budget, as will be done below.

Although the above data provide a panoramic picture of the historical and current production and consumption landscape of fossil fuels, the picture is far more complicated. The languages of production and consumption are not encapsulating. The importation and exportation of fossil fuels, for example, have their own distinct implications for resource governance, derived benefits, and the vulnerability of peoples, entities, and countries. Similarly, broad terms like 'producers' and 'consumers' becloud relevant distinctions such as the type of producer (NOC, INOC, Major, Independents, locally owned (Indigenous) companies etc.), the market focus of the producer (domestic or international markets), the product focus of the producer (e.g. oil (conventional or unconventional), gas (conventional or unconventional) coal (thermal or metallurgical)), the consumer's location (developed or developing States; resource abundant or resource poor), and the type of consumer (individual or industry). Again, these have distinct implications for the climate, the carbon budget, and a global construction of just transition. I will focus on these distinctions under the next sub-section, and subsequently reflect on their implications on both industry and State climate approaches and policies, particularly in the context of just transition. Given the more domestic utility of coal (compared to oil and gas), the trends highlighted here are more tilted towards developments in oil and gas, particularly oil, as it is responsible for "most of the economic dependence on fossil fuel rents and exports".[43]

---

[41] *Ibid.*

[42] The preamble to the 1992 UNFCCC, in part, notes "that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries … and that the share of global emissions originating in developing countries will grow to meet their social and development needs". The UNFCCC further provides that Parties should provide the climate "on the basis of equity and in accordance with their common but differentiated responsibilities and respective capacities. Accordingly, the developed country Parties should take the lead in combatting climate change and the adverse effects thereof". See UNFCCC, art. 3(1).

[43] Grzegorz Peszko et al, *Diversification and Cooperation in a Decarbonizing World: Climate Strategies for Fossil-Fuel Dependent Countries* (Washington DC: World Bank, 2020) 45.

A. Ownership and Market Share

Ownership and market share are crucial issues in resource governance and global sustainability transition.[44] Who owns the fossil fuel that should be left unburnt and would thereby lose the rents that could have otherwise been obtained? Are there existing markets and whose products get to supply those remaining demands? And how does the interplay of supply and demand, locational availability, and reliability factors affect global and regional power balance and energy security? While appreciating the complex multi-faceted notion of ownership in resource management, I consider the subject at a more surface level here. Schlager and Ostrom's operational rights including rights to access and withdraw (obtain benefits) and definitional rights entailing the rights to alienate (sell or lease), exclude (determine who has access) and manage (regulate internal use patterns and transform resource) are useful in conceptualizing 'ownership' here.[45] But for exceptional examples like the United States where ownership by private citizens, and in Canada where ownership by individuals who were historically granted freehold estates with mines and minerals and Indigenous communities are recognized, ownership of fossil fuel generally resides in the State. The more consequential distinction pertains to the extent to which various States exercise their ownership rights. In oil, for example, there are two common approaches for such exercise of rights – the concession and contract models.

Under the classic concession model, oil companies were vested with the ownership of oil in what was often an enormous swathe of land over a long period of time, and the concessionaire controlled not only the operations but also determined whether or not to explore and the rate of exploration of particular fields or mines, with minimal payments, royalties or taxes going to the host States.[46] This is not the case under the contract model (e.g. production sharing contract (PSC) or risk service contract (RSC)) where private companies generally do not have ownership of the extracted fuel, and their relationship with the commodity is dependent on the mode and terms of contract. As

[44] These issues are recurrent and emphasized in Daniel Yergin's Pulitzer winning work on the history of oil (and more broadly fossil fuel). See generally Daniel Yergin, *The Prize: The Epic Quest for Oil, Money and Power* (New York: Simon & Schuster, 1991).

[45] See Edella Schlager and Elinor Ostrom, "Property-Rights Regimes and Natural Resources: A Conceptual Analysis" (1992) 68:3 Land Economics 249 at 250 - 252. More recently, Sikor et al have reconceptualized these rights and in lieu of them proposed eight types of property rights under three categories – use rights (rights to obtain direct and indirect benefits), control rights (management, exclusion, transaction and monitoring), and authoritative rights (definition and allocation). See Thomas Sikor et al, "Property Rights Regimes and Natural Resources: A Conceptual Analysis Revisited" (2017) 93 World Development 337 at 340.

[46] See Ernest Smith, "From Concessions to Service Contracts" (1991)27:4/3 Tulsa Law Review 493 at 495 – 498.

Omorogbe explains, unlike the concession model, under the contract model, "the host state is theoretically the undisputed owner of the petroleum, with the foreign corporations being engaged as contractors to perform certain specified tasks in return for a fee in kind".[47] Before the 1960s, the classic concession model as exemplified by the 1901 D'Arcy concession in Iran was rife in developing countries many of which were colonies and protectorates of western States.[48] The model gave pre-eminence to IOCs, particularly, the so-called 'seven sisters'.[49] The IOCs had control of the international market and determined both the quantity and posted prices of the commodities, which consequentially enabled or inhibited developing States, which relied on the taxes and royalties to meet their domestic needs.[50] Putting an end to this era was the formation of the Organization of Petroleum Exporting Countries in 1961, the recognition of the permanent sovereignty of States over their natural resources in 1962, and, subsequently, the wave of nationalization in the 1970s. Presently, developing states overwhelmingly adhere to the contract approach, while developed states dominantly apply a modern variant of the concession approach.[51]

Schlager and Ostrom's schema of proprietary rights in natural resources is helpful in explaining some of the trends occasioned by the diverse approaches to resource governance in developed and developing States. Distinguishing between owners and other right holders like proprietors, claimants, and authorized users, they argue that owners' rights to alienate and exclude, produce incentives to undertake long-term investment in the resource.[52] And while they note that ownership

[47] Yinka Omorogbe, "The Legal Framework for the Production of Petroleum in Nigeria" (1987) 5:4 Journal of Energy and Natural Resources Law 273 at 279.

[48] See Carole Nakhle and Francesco Petrini, "The Changing Relationship Between OPEC Countries and International Oil Companies: The Dynamics of Bargaining Power in an Evolving Market" in Dag Harald Claes and Giulano Garavani eds, *Handbook of OPEC and the Global Energy Order: Past, Present and Future Challenges* (Oxon; New York, Routledge: 2020) 157 - 158

[49] Enrico Mattei is reputed to have invoked the name of the mythological Pleiades (seven daughters of Atlas and Pleione) in describing the major international oil companies – British Petroleum (then Anglo-Iranian Oil Company), Royal Dutch Shell, Chevron (then Standard Oil Company of California), Gulf Oil (now merged with Chevron), Texaco (now merged with Chevron), Standard Oil Company of New Jersey (now part of ExxonMobil), and Standard Oil Company of New York (now part of ExxonMobil)) - that dominated the global oil industry until the 1970s. While these companies have changed names, they remain some of the most dominant international oil and gas companies in the world. Hence, they are currently referred to as oil Majors alongside other IOCs like Total and ConocoPhillips.

[50] Nakhle and Petrini narrate that the immediate circumstances informing the creation of OPEC included the unilateral decision of Standard Oil of New Jersey (latter became Esso, renamed Exxon and now part of ExxonMobil) to reduce its posted prices of oil by about 5%, a move followed by other oil companies. "In August 1960, posted prices were unilaterally lowered by 10%. As a result, millions of dollars of producing countries' expected revenues vaporized". See Nakhle and Petrini, *supra* note 48 at 159. Referring to the same incidence, Yergin quoted John Loudon of Shell as expressing the sentiments that "you can't just be guided by market forces in an industry so essential to various governments". See Yergin, *supra* note 44 at 521 – 522.

[51] See Nakhle and Petrini, *supra* note 48 at 156; Smith, *supra* note 46 at 494.

[52] Schlager and Ostrom, *supra* note 48 at 256.

does not guarantee the survival of resources,[53] the need to ensure long-term benefits for themselves and their offspring constitutes an additional incentive to prevent the overexploitation or overcapitalization of resources. IOCs which are largely claimants with management, access and withdrawal rights or authorized users with access and withdrawal rights do not have similar incentives in ensuring the long-term viability of the resource. Describing this trend, Muttitt notes that "while international oil companies aim to extract fields as quickly as they can, OPEC members generally do not do so, in order to both conserve reserves for future generations and sustain a higher price". Hence, "at the current rates of extraction, OPEC reserves would last 85 years, compared to 25 years for the rest of the world".[54] Similarly, the IEA notes that the risk of having stranded volumes is lower for Majors and Independents as they generally aim to produce the reserves on their books within the next 20 – 30 years, while there is a clear risk that resource holdings of States and State-owned enterprises could become stranded in energy transitions.[55] Again, the use of contract models like the PSCs which vest in the host States the title to the assets purchased for use in exploration operation,[56] as will be discussed later, also makes developing FFDEs more vulnerable to the stranding of these assets while the IOCs which purchased the equipment could have recouped the cost of purchase in the course of the contract.

The dominance of the contract approach while previously seen as a way of protecting the sovereignty of developing states and allowing them to derive more benefit from the oil and gas sector, now arguably constitutes a major vulnerability, particularly, in the context of the transition. The more direct participation of developing FFDEs has translated into the coupling of their economies with the exportation of fossil fuels, which has consequently led to a greater exposure to the vagaries of the global market and adverse socio-economic impacts of the transition.[57] This

[53] Greg Muttitt, "What Role for OPEC in the Last Generation of Oil?" in Dag Harald Claes and Giulano Garavani eds, *supra* note 45, 338 at 342.
[54] *Ibid.*
[55] See IEA, *supra* note 17 at 99.
[56] A model Indian PSC, like several other PSCs in developing FFDEs, in its transfer of assets' title clause provides that the "Government shall have the right to require vesting of full title and ownership …, free of charge and encumbrances, of any or all assets, whether fixed or movable, acquired and owned by the Contractor for use in Petroleum Operations …". The cost of acquiring and maintaining the assets are recoverable as "contract costs". See Government of India's Ministry of Petroleum and Natural Resources, "Model Production Sharing Contract: Fifth Offer of Blocks" (2005) online: <http://petroleum.nic.in/sites/default/files/MPSC%20NELP-V.pdf>.
[57] Peszko et al, in their World Bank study, applied the Principal Component Analysis in assessing the preparedness of countries for a low-carbon transition. The components are grouped under two categories – exposure (e.g., carbon intensity of manufacturing exports, committed power sector emissions, fossil fuel export as a proportion of GDP, and

is more so for oil exporting countries than for gas and coal rich countries.[58] For example, the top ten most dependent countries on oil exportation are developing countries with Iraq, Venezuela and Angola obtaining about 100% of their total export revenue from oil exportation.[59] Peszko et al note that further complicating SOE's capacity to transition are their non-commercial mandates which include providing employment and investing in infrastructure, and that the development plans of many developing FFDEs are directly predicated on realizing rents from fossil fuel exploration and exportation.[60]

Despite the reliance of developing FFDEs on returns from exportation and the best efforts of OPEC members to defend their market shares, these countries' market shares have shrunk over the years. Although holding over 70% of the world's oil reserves,[61] OPEC members produced only 26.7% of the total world oil supply in September 2020[62] compared to 52% and 42% in 1972 and 2017 respectively.[63] OPEC's market loss is attributable to the transition of a traditional oil importer like the United State into a major producer and exporter of oil, particularly through its shale 'revolution'.[64] Explaining the trend, Nakhle and Petrini note that the shale revolution is challenging to traditional FFDEs as it increases competition, has the ability to respond more rapidly to changes in oil prices, has a rapid payback period as it has a shorter lead time from investment to production, and has given IOCs an attractive alternative for the allocation of capital in more investment-friendly countries with some of the lowest government takes.[65] For example, of the 25 largest new

expected resource rents as a proportion of GDP) and resilience (Macroeconomic stability, adjusted net savings, financial market development, GDP per capita, economic complexity, technology adoption, ease of doing business, quality of infrastructure, human capital, institutional quality and governance, and position on the global supply curve). While developed countries like Germany, Sweden, United Kingdom, United States, Australia, Canada, Norway, Korea Republic, France, and Japan generally have high resilience and low exposure (although countries like Norway and Australia are more exposed than most), developing countries like Iraq, Libya, Kazakhstan, Qatar, Brunei Darussalam, Kuwait, Saudi Arabia, Oman, Vietnam, Iran, and Nigeria have high exposure with low resilience (Qatar, Brunei Darssalam, Kuwait, Saudi Arabia and Oman being more resilient than other countries on the list). Peszko et al, *supra* note 43 at 81.

[58] *Ibid* at 49.

[59] *Ibid* at 50.

[60] *Ibid.*

[61] British Petroleum, *BP Statistical Review of World Energy*, 69th Ed., (London: BP, 2020) 14.

[62] OPEC, *OPEC Monthly Oil Market Report* (Vienna: OPEC, 2020) 51.

[63] Nakhle and Petrini, *supra* note 48 at 165.

[64] *Ibid.*

[65] *Ibid* at 165 – 166. Yergin explains that "the emergence of shale had forced the oil industry to learn a new vocabulary – "short cycle" versus "long cycle". Short cycle was, most obviously, shale. A decision could be made to drill and within half a year, a well could be producing oil … This was in contrast to long cycle – an offshore oil or LNG project that could take five or ten years to bring on … Instead of $7 million (to explore for shale), a long-cycle offshore project would cost $700 million or $7 billion – or much more". See Daniel Yergin, *The New Map: Energy, Climate, and the Clash of Nations* (New York: Penguin Press, 2020) 277.

oil and gas development plans between 2020 and 2024, 18 plans have considerable shale percentage, with 7 of the plans completely in respect of shale production.[66] It is worth noting that only Total and Eni of the seven oil Majors (Shell, ExxonMobil, Chevron, BP, Total, ConocoPhillips, Eni) have less than 50% of their expansion plans in shale, while major NOCs like Gazprom and Saudi Aramco have no shale development in their 2020 - 2024 plans.[67] Beyond the growth in shale production, there has been increased support for the exploration of other unconventional oil and gas projects (e.g., tar sand project in Alberta) and other typically unprofitable explorations (e.g., deep offshore and arctic explorations).[68]

The just transition implications of the above trends are not too difficult to discern. In the Hobbesian global fossil fuel supply environment, only the fittest – less exposed and more resilient to the transition, reserves with shorter life span, tight oil that can be more quickly developed, capacity to provide direct and indirect support to producers – are propped to survive. The 'fittest', here, are mostly IOCs and developed States who are the major contributors of the historical emissions responsible for the current state of the climate, with diversified economies, and with comparatively lesser need for 'rents' from fossil fuel. In Muttitt's estimation, developing FFDEs and OPEC only have 'a losing hand' and it is only in a case where the carbon budgets are rationally allocated would such countries have an appropriate and fair market share.[69] There is already an ongoing tussle for the Asian market between US producers and OPEC exporters, with Nigeria and Angola considered as "first victims".[70] Attention must, however, be paid to the tendency of using broad phrasings that end up being both over-inclusive and under-inclusive. For example, describing developed FFDEs as generally having higher resilience and lower exposure risks excluding constituent parts which

[66] Gailus, *supra* note 22 at 5.
[67] *Ibid.*
[68] The OECD finds that, reversing a 5-year downward trend, fossil fuel direct and indirect support in 44 OECD and G20 economies (through budgetary transfers, tax breaks and spending programmes) rose by 38% 2019. See OECD, "Governments Should Use Covid-19 Recovery Efforts as an Opportunity to Phase-out Support for Fossil Fuels, say OECD and IEA" (5 June 2020) online: <http://www.oecd.org/environment/governments-should-use-covid-19-recovery-efforts-as-an-opportunity-to-phase-out-support-for-fossil-fuels-say-oecd-and-iea.htm>. Claes and Garavini also note that "crude oil producers outside OPEC+ are in fierce competition for market share and the development of oil resources, illustrated by heavy investment in unconventional oil such as one extracted from tar sands in Canada, low taxation in the UK to extract in the North Sea and US tight oil production that is marginally profitable if at all". See Dag Harald Claes and Giuliano Garavini, "OPEC and the Global Energy Order: Past, Present and Future Challenges", *supra* note 48 at 10. See also John Last, "What Russia's $300B Investment in Arctic Oil and Gas Means for Canada" (15 February 2020) online: <https://www.cbc.ca/news/canada/north/russian-arctic-oil-and-gas-explained-1.5462754>.
[69] Muttitt, *supra* note 53 at 342.
[70] Nakhle and Petrini, *supra* note 48 at 165.

have low resilience and high exposure, and the generic reference OPEC (and developing FFDEs) obscures the fact that the organization is an assemblage of un-equals including some of the richest and poorest countries in the world. It then becomes necessary to consider these realities when making proposals for just transition at a global level. I will come back to this subject.

B. FFDEs, Fossil Fuels and Supply-side Mitigation Policies

At the opposite end of the competition among countries and companies for fossil fuel market shares are the policies (or posturing) of FFDEs in respect of climate change mitigation. To the cynic, FFDEs' climate initiatives, while FFDEs are still locked in the fossil economy, are tantamount to a situation where the arsonist doubles as the fire fighter. Organizations like the IEA have, however, envisioned ways through which fossil fuel economies and industries can participate in mitigating against climate change while participating in the fossil fuel economy.[71] Mitigation policies range from coal, oil, and gas moratoria in places like the United Kingdom and Denmark to diversification in places like Saudi Arabia and the United Arab Emirates. Similarly, fossil fuel companies have adopted mitigation strategies ranging from outright divestment to the adoption of technological solutions. I consider some of these policies below, assessing their effectiveness, and the extent to which just transition implications have been considered in their design and implementation. While I critique these supply-side policies here using a just transition lens, my goal in the latter part of the chapter is to show how these policies can be made just-transition sensitive.

i. Moratoria on Fossil Fuel Exploration and Investment

Moratorium is one of the most common supply side mitigation tools recommended to and deployed by FFDEs. I adopt, in part, Fergus Green's definition of a fossil fuel ban in defining what fossil fuel moratorium means here. He defines fossil fuel ban as "a constitutional, legislative or executive prohibition on the exploration, production, supply, transportation, intermediate processing … of a type of fossil fuel … the construction of infrastructure for any such purpose … or the financing of any such activity".[72] Consistent with the focus of this thesis, I emphasize exploration, production, and supply here. While varying in scope, there is an increasing number of countries (including national regions) which announced some form of moratoria on fossil fuel exploration and

[71] For example, the IEA notes that "the resources and skills of the industry can play a central role in helping to tackle emissions from some of the hardest-to-abate sectors". See IEA, *supra* note 17 at 10.
[72] Fergus Green, "The Logic of Fossil Fuel Bans" (2018) 8 Nature Climate Change 444.

production. The diverse forms of moratorium in operation can be classified to include permanent total ban, temporary total ban, permanent partial ban, temporary partial ban, immediate ban, and future ban. A permanent total ban entails a prohibition of any activity pertaining to the exploration and production of fossil fuel regardless of the type of fuel, where it is produced or how it is produced. A temporary total ban has similar features as the permanent total ban with the exception that the prohibition is only for a set time. These two forms of fossil fuel moratorium are rare, with the prohibition of exploration in the Antarctic being the only known example of a permanent total ban as at the time of writing.[73] The 2017 French ban on oil and gas exploration while broader than most does not qualify under the total ban categories as it applies only to the issuance of new oil and gas exploration licences, while existing projects subsist until 2040.[74] More common, however, are permanent and temporary partial bans. A partial prohibition entails the prohibition of the exploration and production of specific kinds of fuel, the exploration of fuel in specific locations or the use of certain methods of exploration.[75] For example, although Canada described its moratorium on oil and gas exploration and activities in the Arctic as 'indefinite', it is subject to a review process every five years with the possibility of a subsequent allowance of the banned exploration activities.[76] Similarly, Uruguay's moratorium on hydraulic fracturing was for four years (2018 - 2021).[77]

Rather than being distinct types of moratoria, immediate and future moratoria describe the period when such bans on fossil fuel exploration or mining come into effect. For most, the operation of the ban is fixed for a future date. In 2020, European Union's largest oil and gas producer – Denmark, announced the stoppage of the issuance of new exploration licences for oil and gas in its part of the North Sea and a phase out of production of fossil fuels by 2050, while France fixed

[73] The Protocol on Environmental Protection to the Antarctic Treaty prohibits "any activity relating to mineral resources, other than scientific research". See *Protocol on Environmental Protection to the Antarctic Treaty*, 14 October 1991, 5778 UNTS 2941, art 7 (entered into force 14 January 1998).

[74] While France banned oil and gas exploration through its Act No. 2017-1839 of 30 December 2017, the ban is largely more symbolic than consequential as the country does not export oil or gas and imports about 99% of its oil demand. See Michael Guénaire et al, "Oil and Gas Regulation in France: Overview", *Thomson Reuters Practical Law* (2020) online: <https://uk.practicallaw.thomsonreuters.com/4-629-7328?transitionType=Default&contextData=(sc.Default)&firstPage=true>.

[75] Examples include the banning of shale oil exploration in Scotland and Bulgaria, offshore exploration in Belize, Denmark and New Zealand, arctic exploration in Canada and the United States, and hydraulic fracturing of natural gas and Petroleum in Uruguay and Ireland respectively. See SEI et al, *supra* note 1 at 65 – 66.

[76] Government of Canada, "Arctic Offshore Oil and Gas" (4 October 2018) online: <https://www.rcaanc-cirnac.gc.ca/eng/1535571547022/1538586415269>.

[77] SEI, *supra* note 1 at 66.

2040 for a complete phase-out of oil and gas production.[78] Also, under the Powering Past Coal Alliance (PPCA) Declaration, the phase out of coal in the OECD and EU is put at 2030, while the rest of the world is expected to achieve a phase out not later than 2050.[79] The need for a gradual wind-down in recognition of the investment companies have already made is one of the primary reasons for pushing operational dates of moratoria into the future. The French Law 2017-1839 (Mining Code), as interpreted by the French Administrative Supreme Court, for example, recognizes that the 1 January 2040 date is to allow companies to attain "economic equilibrium" and to "exploit the discovered deposit for a period of time sufficient to ensure the profitability of the investments".[80] Again, while the United Kingdom, in December 2020, declared a moratorium on financing oil and gas exploration abroad to take effect "as soon as possible",[81] it also restated the central obligation of oil and gas entities as taking the steps necessary to "secure that the maximum value of economically recoverable petroleum is recovered from the strata beneath relevant UK waters" in the OGA Strategy also released in December 2020.[82]

The examples above, while reflective of the consciousness of policy makers on the need for a 'managed transition' domestically, are largely oblivious of the implications of the scope of their policies on moratorium in the global sustainability transition context. To begin with, in fixing future dates for moratoria to come into effect, future bans (which most moratoria are) often fail to demand that existing fossil projects provide plans to wind down operations or gradually reduce production between when the ban is announced and the time it comes into effect. However, unlike most national moratoria plans, the Principles for Paris-Aligned Financial Institutions, require that financial institutions should immediately exclude financing for projects involving the exploration of new reserves or expansion of existing projects and that existing projects receiving support must

[78] Adrienne Murray, "Denmark Set to End all New Oil and Gas Exploration", *BBC* (4 December 2020) online: <https://www.bbc.com/news/business-55184580>; Lorraine Chow, "France Approves World's First Ban on Fracking and Oil Production", *EcoWatch* (20 December 2017) online: <https://www.ecowatch.com/france-fracking-ban-2518885658.html>. It is worth noting that in cases like that France future dates are not sacrosanct and could be extended if a proponent were to apply for an extension subject to the fulfilment of specific requirements. The French Administrative Supreme Court affirmed this provision in Law 2017-1839 when ruling against an oil and gas company which challenged the law which set the 2040 exploration end date. See *IPC Petroleum France SA v France* (2019) N º 421004 online: <http://climatecasechart.com/non-us-case/ipc-petroleum-france-sa-v-france/>.

[79] PPCA, "Declaration" online: <https://poweringpastcoal.org/about/declaration>.

[80] *IPC Petroleum France SA v France*, *supra* note 78.

[81] Ciara Nugent, "U.K. Says It Will End Support for Overseas Oil, Gas and Coal Projects with 'Very Limited Exceptions'", *TIME* (11 December 2020) online: <https://time.com/5920475/u-k-fossil-fuels-overseas/>.

[82] The OGA Strategy, however, further notes that in securing the maximum value, appropriate steps to "assist the Secretary of State" to meet the net zero target should be taken. See Oil and Gas Authority, "The OGA Strategy" (16 December 2020) online: <https://www.ogauthority.co.uk/news-publications/publications/2020/the-oga-strategy/>.

publish phase-out plans consistent with the 1.5ºC pathway.[83] But even if countries were to adopt a requirement such as the Principles for Paris-Aligned Financial Institutions, it remains unclear how to assess whether a specific fossil project in itself is consistent or inconsistent with the 1.5ºC pathway. A common recommendation to ascertaining such consistency is for projects to be assessed vis-à-vis a country's NDC obligation. The problems with this, however, are that NDC obligations considerably fall short of the level of ambition needed to achieve global climate targets, NDCs of FFDEs either completely exclude, vaguely include, or inadequately incorporate supply side mitigation measures,[84] and it is difficult to isolate and adequately assess the contribution of specific fossil project when not situated within global fossil carbon budget framework.

The justice dimension of the dominant genre of moratoria is most evident in its failure to factor in the reality of a sunsetting global fossil fuel industry and the global carbon budget. The window of profitability of the fossil fuel industry is increasingly closing as demand continually shrinks.[85] The period between now and 2040-2050, which several countries have fixed as when their moratoria will come into effect, could very well be the last years of any meaningful return for the industry. If the 1.5ºC target is to be met, it is not sufficient that new licences would not be issued or exploration would be completely halted in the next decades, current production must be considerably reduced.[86] It is arguable that with the increased diversification of the energy mix, the availability and competitive prices of green technologies, and more ambitious carbon pricing mechanisms, the market is well positioned to force the reduction of fossil fuel supply. While this might be correct, which supplier would be compelled to reduce 'supply' or stop producing altogether? As already shown, in a 'survival-of-the-fittest' market arrangement, IOCs and select developed and developing FFDEs are better placed to benefit more in these 'last days' of the fossil fuel industry. This is neither consistent with the notion of justice as fairness nor justice as being capacity enriching and wellbeing enhancing.

---

[83] *Principles for Paris-Aligned Financial Institutions – Climate Impact, Fossil Fuels and Deforestation*, (16 September 2020) online: <https://www.ran.org/wp-content/uploads/2020/09/RAN_Principles_for_Paris-Aligned_Financial_Institutions.pdf>, Principle 1 (A)(C).

[84] See See Cleo Verkuijl et al, "Untapped Ambition: Addressing Fossil Fuel Production through NDCs and LEDS" (June 2019) SEI Working Paper 11.

[85] See Tom Rabdall and Hayley Warren, "Peak Oil is Suddenly Upon Us", *Bloomberg* (1 December 2020) online: <https://www.bloomberg.com/graphics/2020-peak-oil-era-is-suddenly-upon-us/>.

[86] SEI et al, *supra* note 1 at 4.

The non-consideration of justice is also manifest in moratoria on fossil fuel investments and financing, the impact of such moratoria on less developed FFDEs, and the advantage it confers on better positioned fossil fuel producers. The United Kingdom's moratorium on investments in overseas fossil fuel projects, (which overwhelmingly go to low or middle-income countries[87]) while at the same time pledging to support 'healthy' levels of investment in its upstream oil and gas industry,[88] is one example. Bingler and Urgewald note that due to a combination of factors (high financing costs (of fossil fuel projects), low demand, market price volatility, political or social unrest etc.), only a few large fossil fuel projects can proceed in developing and emerging countries without some form of public assistance, particularly, from multilateral development banks (MDBs) and institutions like the United Kingdom Export Finance (UKEF).[89] MDBs and development institutions like the World Bank, Agence Francaise de Development (AFD), and the European Investment Bank, however, have different forms of moratoria in place ranging from AFD's exclusion of almost all upstream (e.g., oil and gas exploration or production) and midstream (e.g., refineries or pipelines) oil and gas projects in 2019 to the World Bank's moratorium on upstream oil and gas finance since 2019.[90] The point here is not that moratoria on investment and financing is not necessary, but that the current trend is more skewed in favour of fossil fuel projects in developed countries which enjoy more investors' confidence and have access to other sources of finance, unlike projects in developing countries which are more dependent on support from MDBs and Export Credit Agencies (ECAs). The world bank's exception to continue to finance

[87] Between 2013 and 2014 and 2017 and 2018, more than 90% of total energy support by the United Kingdom Export Finance (UKEF) went to fossil fuel projects in low and middle-income countries. See UK Parliament, "UK Export Finance's Support for the Energy Industry" (2019) online: <https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/1804/180402.htm>.

[88] Nick Coleman, "UK Government to back 'Healthy' North Sea Investment, but Faster Transition", *S&P Global* (14 December 2020) online: <https://www.spglobal.com/platts/en/market-insights/latest-news/coal/121420-uk-government-to-back-healthy-north-sea-investment-but-faster-transition>.

[89] Jacey Bingler and Urgewald, "Five Years Lost: How Finance is Blowing the Paris Carbon Budget", *Reclaim Finance* (2020) online: <https://reclaimfinance.org/site/wp-content/uploads/2020/12/FiveYearsLostReport.pdf> 23.

[90] Gailus, *supra* note 22 at 3. Generally, however, a recent report shows that financial institutions like the World Bank and Export Credit Agencies like Export Development Canada have continued to finance fossil fuel projects all around the world. The World Bank, for example, is said to have ongoing technical and development assistance operations for fossil fuel projects in over 40 countries with over $12 Billion invested since the 2015 Paris Agreement. See Bingler and Urgewald, *ibid* at 21, 25.

upstream gas in the poorest countries despite its moratorium,[91] which has been roundly criticized,[92] is purportedly in the light of the energy poverty in those countries. Nevertheless, the imbalance caused by the mostly lopsided investment moratoria, and the edge it gives to select FFDEs while disadvantaging others, have been left unaddressed in most moratoria policies.

A third justice-related implication of moratoria policies for more pro-climate albeit less developed FFDEs pertains to moratoria-connected investor-state disputes and the vulnerability of developing FFDEs to punitive compensations. In their recent study, which included a dataset of 257 coal power plants, Tienhaara and Cotula found that about 75% of the plants are protected by at least one treaty (particularly, the Energy Charter Treaty) with investor-state dispute settlement (ISDS) provisions.[93] More generally, they found that 17% (about 173 cases) of the ISDS cases listed on the UNCTAD investment dispute platform (Navigator) relate to fossil fuel investments.[94] While there are existing and prospective dispute proceedings in developed states,[95] Tienhaara and Cotula note that countries in the Global South are more vulnerable to potential liabilities over stranded assets.[96] One reason for this is that developed States could simply 'compensate' investors, as Germany did in respect of its 2035 coal phase-out plans;[97] developing States are not in such a position to 'pay-off' investors. There are, for example, multiple awards against Ecuador, including about $1.8 Billion in the *Occidental v. Ecuador* (II) case and millions of dollars more in damages in Chevron's case against it.[98] Venezuela, Egypt and Ecuador have all been litigated against in

[91] World Bank, "Press Release: World Bank Group Announcement at One Planet Summit" (12 December 2017) online: <https://www.worldbank.org/en/news/press-release/2017/12/12/world-bank-group-announcements-at-one-planet-summit >.
[92] Bingler and Urgewald note that contrary to the claim of the World Bank that its exception is to facilitate energy access in the poorest countries, none of the World Bank supported projects catalogued in their report provide new electricity connections to people without access. Bingler and Urgewald, *supra* note 89 at 26.
[93] Kyla Tienhaara and Lorenzo Cotula, *Raising the Cost of Climate Action? Investor-State Dispute Settlement and Compensation for Stranded Fossil Fuel Assets* (London: IIED, 2020) 27.
[94] *Ibid* at 15.
[95] Pending ISDS proceedings include Lone Pine and Westmoreland actions against Canada in respect of the ban on gas fracking and coal phase-out in Alberta, respectively under NAFTA, and Rockhopper's action against Italy in respect of Italy's ban on offshore oil exploration within 12 nautical miles of its coast under the ECT. See *Ibid* at 17.
[96] *Ibid* at 21, 32.
[97] Germany paid two energy companies – LEAG and RWE – about €4.35 Billion in compensation to transition from lignite coal power plants. Explaining why the compensation was at such a steep cost, Pinzler quotes legal scholar Tobias Stoll who notes that the amount was paid "… because it (German government) fears it would otherwise be drawn into proceedings before an international arbitration tribunal for years". See Petra Pinzler, "Why Phasing-out Coal is So Expensive", *ZEIT Online* (3 July 2020) online: <https://www.zeit.de/wirtschaft/2020-07/kohleausstieg-energiewende-leag-rwe-entschaedigung-bundesregierung>.
[98] See Tienhaara and Cotula, *supra* note 93 at 15, 16.

fossil-fuel related disputes with some of the largest ISDS awards in history issued against them.[99] These cases, although not explicitly in respect of a moratorium policy, exemplify the risks faced by developing States even when a fossil fuel moratorium is intended to protect or restore the environment as in the *Chevron v. Ecuador* case.[100]

ii. Fossil Fuel Subsidy Reform

There are different dimensions to fossil fuel subsidies. These include demand price distortions (e.g., price controls and purchase mandates) or producer subsidies (direct or indirect support including preferential tax treatment or direct government transfers).[101] It could also either be narrowly or broadly scoped. Narrowly, it entails the direct or indirect support to alter or keep the value (or price) of a commodity or service other than what it would have otherwise been if left to market dynamics, thereby giving an advantage the commodity would have not otherwise had.[102] More broadly, however, the failure to incorporate and reflect what has been described as the social cost of carbon (SCC) – environmental, health, social costs – in the cost of fossil fuel is considered

---

[99] *ConocoPhillips v. Venezuela* (2019) – Award: $8.446 Billion; *Union Fenosa Gas v. Egypt* (2018) – Award: $2.013 Billion; *Occidental v. Ecuador (II)* (2012) – Award: $1.769 Billion; *Mobil and Ors v. Venezuela* (2014) – Award: $1.6 Billion. See *Ibid*, 16. Also, in 2017, an award of about $6.6 Billion was issued against Nigeria in the *P&ID v. Nigeria* arbitration, an award which is now about $10 Billion considering accrued interests.

[100] The *Chevron v. Ecuador* case, initiated as a proceeding to enforce an arbitral award by Chevron, culminating in a decision of the Supreme Court of the United States that Ecuador should pay Chevron $96 Million in damages, is one of the many litigations between Chevron and Ecuador in multiple jurisdictions. At the root of these litigations was the exploration operation of Chevron in the Amazon between 1964 and 1992, which resulted into what has been described as the Amazon Chernobyl (See Alec Baldwin and Paul Pazy Mino, "Amazon is Refusing to Pay for the 'Amazon Chernobyl' – We Can Fight Back with Citizen Action", *The Guardian* (17 September 2020) online: <https://www.theguardian.com/commentisfree/2020/sep/17/chevron-amazon-oil-toxic-waste-dump-ecuador-boycott>). The immensity of the pollution and the harm to Indigenous communities led to the initiation of what is now known as Lago Agrio case in 1993, with a 2011 decision by an Ecuadorian court that Chevron pays the over 30,000 plaintiffs $9.5 Billion for the harm caused. Pre-emptively, Chevron commenced an arbitration proceeding claiming that Ecuador breached a 1993 Bilateral Investment Treaty between Ecuador and the United States in 2009. The panel decided in favour of Chevron in 2018. See *Chevron Corp & Texaco v. Ecuador* PCA Case No. 2009-23, Second Partial Award on Track II dated 30 August 2018. In 2016, however, the US Supreme Court (affirming another PCA arbitral award) decided that Ecuador breached a 1973 contract through which it permitted Chevron to explore oil fields in the Amazon. The contract was rescinded by Ecuador in 1992 on the ground that Chevron was causing irreversible damage to the Amazon through its massive oil spills. See Giulia McDonnell, "U.S. Supreme Court Rules that Ecuador Must Pay Chevron $96 Million", *Cultural Survival* (17 July 2016) online: <https://www.culturalsurvival.org/news/us-supreme-court-rules-ecuador-must-pay-chevron-96-million>.

[101] According to the IMF, producer subsidies "arise when prices received by suppliers are above a benchmark price or when producers make losses at the benchmark price", while "consumer subsidies arise when the prices paid by consumers are below a benchmark price". See IMF, "Reforming Energy Subsidies: Summary Note" online: <https://www.imf.org/external/np/fad/subsidies/pdf/note.pdf>.

[102] Koplow explains that "a core function of markets is to allocate risks and rewards among investors, producers and consumers. Many fossil fuel subsidies function by shifting risks away from energy producers or consumers". See Doug Koplow, "Defining and Measuring Fossil Fuel Subsidies" in Jakob Skovgaard & Harro Van Asselt eds, *The Politics of Fossil Fuel Subsidies and Their Reform* (Cambridge: Cambridge University Press, 2018) 27.

an indirect form of subsidy. Coady et al describe the narrow and broad notions of subsidy as pre-tax and post-tax subsidies, noting that the narrower notion has been the typical focus of international debates.[103] The total global subsidy was put at $5.2 trillion in 2017 with a projection that an efficient fossil fuel pricing (factoring in the economic cost of supplying fuel, environmental cost, and revenue-raising considerations) would have resulted in a 28% reduction in emissions, lowered fossil fuel air pollution deaths by 46%, and increased revenues of governments by 3.8% of GDP.[104] Despite the adverse effects of subsidies, Whitley and Van Der Burg note that there are often valid public policy objectives, including production subsidies aimed at sustaining jobs in the fossil fuel sectors and consumption subsidies meant to help improve energy access.[105] However, it is generally agreed that persons in the lowest income quintile benefit the least from fossil fuel subsidy regimes.[106] On another hand, removing subsidies without complementary palliatives is also more likely to affect the poor disproportionately through rising prices of fuel needed for sustenance (e.g., cooking) and, less directly, through the increased cost of food and transport.[107] In addition, subsidies have been found to limit spending in other areas of essential public needs (e.g., health and education), and even undermine the energy access objective of subsidy policies.[108]

Fossil fuel subsidy reform (FFSR), as presently known, has been traced to the 2009 Pittsburgh Summit where,[109] after the 2008 global economic recession, leaders of G20 countries committed

---

[103] David Coady et al, "Global Fossil Fuel Subsidies Remain Large: An Update based on Country-Level Estimates" (2019) IMF Working Paper, WP/19/89, 7 - 8.

[104] *Ibid* at 5 – 6.

[105] Shelagh Whitley and Laurie van der Burg, "Reforming Fossil Fuel Subsidies: The Art of the Possible" in Skovgaard and Van Asselt, *supra* note 102 at 47.

[106] Parry et al show that "only 3 percent and 7 percent, respectively, of the benefits from lower gasoline and diesel prices in countries that subsidize these fuels accrue to the bottom income quintile". See Ian Parry, et al, *Getting Energy Prices Right: From Principle to Practice* (Washington DC: IMF, 2014) 57 – 58. Van Der Burg and Whitley show elsewhere that "while protecting low-income households is an often-stated objective of subsidies to fossil fuel products and electricity, there is widespread evidence that the largest share of subsidies accrues to the rich rather than the poor, given the higher levels of energy consumption by high-income households". See Laurie van der Burg and Shelagh Whitley, "Unexpected Allies: Fossil Fuel Subsidy Reform and Education Finance" (2016) Backgrounder Paper – The Learning Generation, The Education Commission, 10.

[107] Whitley and van der Burg, *supra* note 105 at 58 - 59.

[108] *Ibid* at 49 – 50; van der Burg and Shelagh Whitley, "Unexpected Allies: Fossil Fuel Subsidy Reform and Education Finance", *supra* note 106 at 10 – 11.

[109] FFSR's history, however, precedes the Pittsburgh Summit. The 1951 Treaty Establishing the European Coal and Steel Community has been identified as the first major multilateral instrument to abolish and prohibit State subsidies and aids to a fossil fuel (coal) sector. See Thijs Van De Graff and Mathieu Blondeel, "Fossil Fuel Subsidy Reform: An International Norm Perspective" in Skovgaard and Van Asselt, *supra* note 102 at 85. Although not explicitly described as 'fossil fuel subsidy reform', the Kyoto Protocol refers to the "progressive reduction or phasing out of market imperfections, fiscal incentives, tax and duty exemptions and subsidies in all greenhouse gas emitting sectors

to "phase-out and rationalize over the medium-term inefficient fossil fuel subsidies while providing targeted support for the poorest".[110] The Pittsburgh subsidy reform commitment has been reiterated, in similar terms, in other multilateral declarations and communiques.[111] The Sustainable Development Goal (SDG) 12 also has the rationalization of inefficient fossil fuel subsidies in accordance with national circumstances taking into account the needs and conditions of developing countries and "minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities" as one of its targets.[112] Skovgaard shows that while countries like the United States, United Kingdom, and Denmark claim FFSR leadership on the global stage, they have continued to subsidize their fossil fuel industries.[113] This is also the case with Canada, which is estimated to have provided between $2.8 Billion and $43 Billion in fossil fuel subsidies annually.[114] The inconsistency between rhetoric and action is 'legitimized' by the vague operative terms used in virtually all the soft instruments referenced above, including words like 'inefficient', 'rationalize', and 'medium-term'.[115] The most consequentially problem of these vague terms is the impreciseness of 'inefficient subsidies' and the near endless allowance it has afforded many countries to defend their subsidy regimes. Skovgaard further notes that Australia, Brazil, France, Japan, Saudi Arabia, South Africa, the

---

that run counter to the objective of the Convention and application of market instruments" as one of the further measures that Annex 1 Parties could achieve their quantified emissi`on limitation and reduction commitments and promote sustainable development. See Kyoto Protocol, art. 2(1)(a)(v).

[110] "G20 Leaders Statement: The Pittsburgh Summit", (2009) online: <http://www.g20.utoronto.ca/2009/2009communique0925.html>.

[111] See the Asia-Pacific Economic Cooperation (APEC) Leaders' Declaration (2009) online: <https://www.apec.org/Meeting-Papers/Leaders-Declarations/2009/2009_aelm.aspx>; Friends of Fossil Subsidy Reform, "The Communique" (2015) online: <http://fffsr.org/communique/>; and G7, "G7 Ise-Shima Leaders' Declaration" (2016) online: <https://www.mofa.go.jp/files/000160266.pdf>.

[112] UN General Assembly, *Transforming Our World: The 2030 Agenda for Sustainable Development*, 21 October 2015, A/RES/70/1 (Sustainable Development Goals), Goal 12.c.

[113] Jakob Skovgaard, "International Push, Domestic Reform? The influence of International Economic Institutions on Fossil Fuel Subsidy Reform" in Skovgaard and Van Asselt, *supra* note 102 at 106 – 115.

[114] See Natural Resources Canada, "Calculating the Real Cost of Energy", online: <https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/GenEnergy/Calculating%20the%20Real%20Cost%20of%20Energy.pdf>; Coady et al, *supra* note 103 at 35 The reason for the wide disparity is the calculation method used by different agencies. Coady (and institutionally, the IMF), which puts Canada's subsidies at $43 Billion in 2015, for example, uses a post-tax approach (particularly, health-related externalities). Lower limits like $2.8 Billion or Environmental Defence's $3.3 Billion estimate are largely pre-tax subsidies (direct transfers, tax exemptions etc.). See Environmental Defence, "The Elephant in the Room: Canada's Fossil Fuel Subsidies Undermine Carbon Pricing Efforts", (2016) online: <https://d36rd3gki5z3d3.cloudfront.net/wp-content/uploads/2016/11/Fossil-Fuel-Subsidies-EN.pdf?x49259>. For more on the various methods through which subsidies are calculated, see generally Koplow, *supra* note 102.

[115] See Van de Graaf and Blondeel, *supra* note 109 at 94. It was only in the 2016 G7 Leaders' Declaration that the year '2025' was referenced as when "inefficient fossil fuel subsidies" should be eliminated by the G7 countries, while other countries are encouraged to follow suit. See G7, *supra* note 111.

United Kingdom, and the United States have all defended their existing fossil fuel subsidies as not being 'inefficient'.[116] In a 2019 report, it was found that Canada's Department of Finance failed to clearly define the criteria for inefficient tax subsidies and that its efforts to phase out the inefficient subsidies "would benefit from clearly defining what inefficient means".[117]

While the domestic implications of subsidy reforms are considered in most works on FFSR, the consideration of its effects more globally is a rarer find.[118] This, in some way, goes to the clamour for a clearer definition of what 'inefficient subsidy' means. From the examples of the countries given by Skovgaard, it is evident that the understanding of 'efficiency', although abstruse, is primarily domestically scoped. However, if the IMF's framing of efficiency is to be adopted – fossil pricing that reflects the economic costs of supply, and environmental and social considerations[119] - then, the determination of efficient or inefficient subsidies cannot be wholly domestic. This is for the simple reason that the externalities that such subsidies exclude, and which are to be factored into the pricing are beyond domestic boundaries. This takes us to the issue of Pigouvian taxes like carbon trading mechanisms (carbon tax and cap and trade) which attempts to place a price on carbon thereby making their prices 'more efficient'. While it could be argued that the primary purpose of such taxes is not to raise revenue but to disincentivize unsustainable conducts (e.g., emitting carbon), revenues are nevertheless raised. The question, which goes back to the justice theme of this work, is who deserves to be 'paid'? When Canadians are made to pay carbon tax or Canadian companies participate in a cap-and-trade scheme (or a hybrid of both) as required under the Pan-Canadian Framework on Clean Growth and Climate Change (PCF) and the GHG Pollution Pricing Act, is it justice consistent to simply pay Canadians back in rebates, reinvest same in domestic green technology development schemes or should there be a more internationalized system where societies bearing the brunt of the social and environmental costs of fossil fuel receive these revenues? The fundamentally transboundary nature of climate change and the fact that while it is primarily caused by consumption in developed and emerging

[116] Skovgaard, *supra* note 113 at 104, 107.
[117] Office of the Auditor General of Canada, "Fossil Fuel Subsidies", (2019) online: <https://www.oag-bvg.gc.ca/internet/English/esd_fs_e_43320.html>; Office of the Auditor General of Canada, *2019 Spring Reports of the Commissioner of the Environment and Sustainable Development* (Ottawa: Office of the Auditor General, 2019) Reports 3 and 4.
[118] For example, of all the soft instruments on FFSR only SDG 12.c incorporated the need to take "into account the specific needs and conditions of developing countries and minimizing the possible adverse effects on their development". See UN, *supra* note 112.
[119] See IMF, *supra* note 101.

economies, the effects (externalities) are largely borne in less developed countries are worth reiterating here. Commenting on externalities and their effects on FFSR, Steenblik et al note that there is a need for international cooperation as existing subsidies generate transboundary environmental externalities which, as in the case of climate change, are global.[120]

There is also the question of how the recognition of the unique effects of FFDR on developing countries and the mitigation of the effects on their development in SDG 12.c should be interpreted and operationalized, or whether such recognition is even valid. There is no reason to doubt that this provision applies equally to net importing and exporting developing countries. Inherent in SDG 12.c is the idea of a differentiated application of the notion of FFDR. The implication of an undifferentiated application is a one-size-fits-all demand for reform without paying attention to historical and current realities. For example, fossil fuel industries in the global north have largely leveraged both market and non-market subsidies from their home governments to arrive at their current position of dominance globally and relative ability to survive and even successfully diversify without the continuation of subsidies from their home government. *Prima facie,* one could say a system that demands the same level of FFDR obligations from fossil fuel sectors in the global north whose primary stake is profit-making vis-à-vis the relatively younger resource sector in the global south, which has more to lose in terms of what would then become its stranded assets and opportunity to meet developmental needs is unjust. But an equally tenable contention is that climate change and its impacts do not discriminate between emissions from petroleum either explored in the North Sea of Western Europe or the Agbami oilfields of south-south Nigeria. The recognition of these two realities – the actual externalities of a subsidized fossil fuel regime and the reverse externalities of a reform – is crucial in designing a just and sustainability transition sensitive FFSR regime.[121]

According to OPEC, over 50% of the price of fuel in the OECD accrued to consuming States in tax while only 27% was shared between costs, producer government revenue and company

[120] Ronald Steenblik et al, "Fossil Fuel Subsidies and the Global Trade Regime" in Skovgaard and Van Asselt, *supra* note 102 at 124.

[121] This is similar to the argument at the domestic level that "the implementation of measures to mitigate … the likely negative impacts (of reforms) increase the likelihood of successful fossil fuel subsidy reform". See Whitley and van der Burg, *supra* note 105 at 58. While not focusing on the global just transition implications of FFSR, Gass and Echeverria's, distinctly, considered the intersect between FFSR and the just transition. See generally Philip Gass and Daniella Echeverria, *Fossil Fuel Subsidy Reform and the Just Transition: Integrating Approaches for Complementary Outcomes* (Winnipeg: IISD, 2017).

profit.[122] This finding is consistent with Peszko et al's argument that "climate policies … have transboundary spillover effects and relocate wealth across countries",[123] and Franks et al's finding that carbon prices transfer portions of resource rents to importers.[124] Hence, Muttitt makes a case for the relocation of carbon pricing to the point of production and export.[125] Like Herman Daly argued about two decades ago, locating such pricing at the point of production (source) is more efficient as it promises a more concerted approach rather than the current dispersed consumption (sink) based pricing.[126] For this to work, major producing and exporting countries must commit to such pricing arrangement and the structure must be developed to detect and deal with the problem of free riding. In theory, if externalities are properly included in the prices of fossil fuel, there could be a default form of differentiation as the more expensive resource (e.g., Canada's tar sand, North Sea oil, and arctic oil) would remain more expensive than comparatively cheaper oil from the Middle East, which would also have become expensive by reason of the inclusion of externalities. While this arrangement could potentially give an edge to developing countries, it does not automatically make the FFSR regime either just or consistent with sustainability transition. As emphasized in chapter two, the availability of resource or even the seemingly 'just' distribution thereof does not in itself amount to 'justice'. Until such resource is translated into a tool of actualizing capability and attaining wellbeing, the end of justice has not been reached. Again, given the global nature of climate change, we cannot afford to define 'capability' and 'wellbeing' within the narrow context of the domestic FFDE. It should as well apply to such places where climate change has limited or deprived people of their means of actualizing capability and attaining wellbeing.[127] I will come back to this. Relocating the point of carbon pricing does not also translate into sustainability transition. As Muttitt points out it might as well become "an

[122] Muttitt, *supra* note 53 at 338 – 339.
[123] Peszko et al, *supra* note 43 at 65.
[124] Max Franks et al, "Why Finance Ministers Favor Carbon Taxes, Even If They Do Not Take Climate Change into Account" (2017) 68:3 Environmental and Resource Economics 445 at 459 - 460.
[125] Muttitt, *supra* note 53 at 344. Similarly, Franks et al note that "when importers charge a tax for the use of fossil resources, the government of the exporting country has an incentive to tax its exports to prevent the rent from being captured by the importers". See also the proposal for wellhead carbon tax by Peszko et al. See Peszko et al, *supra* note 43 at 69.
[126] Herman Daly, "Sustainable Development and OPEC" (Paper delivered at OPEC and the Global Energy Balance: Towards a Sustainable Energy Future Conference, Vienna, Austria, September 2001) 6.
[127] In making a case for OPEC being the collecting point of prices on carbon, Daly argues that the organization (member countries) should serve as a global fiduciary for the ethical distribution of the collected rents in the interest of sustainable development, especially for the poor. He distinguishes between source rents (cost of petroleum) and sink rents (atmospheric rights). While OPEC countries own their petroleum deposits and therefore the source rents, they do not have exclusive right to sink rents. Hence, its fiduciary duty to redistribute the sink rents. *Ibid* at 6 – 8.

alternative means of capturing the same rent" for FFDEs.[128] This reaffirms the need for an international approach to FFSR which will among others require that returns from a point of production or export are used to meet justice demands both domestically and globally in ways consistent with sustainability.

iii. Diversification

Peszko et al distinguishes between traditional and asset diversification strategies, arguing that both could be combined depending on a country's existing strength, market position and capabilities.[129] Traditional diversification, which developing FFDEs have typically adopted, entails a vertical shift from upstream engagement in the fossil fuel sector to downstream or other carbon intensive capacities (e.g., oil refinement, petrochemical, cement or fertilizer production).[130] This form of diversification has, generally, made the economies of FFDEs more resilient to the volatility of the price of fossil fuel resources and helps them retain an area of comparative advantage. However, traditional diversification's sustainability transition credential is questionable since the 'new' sectors are often, in addition to existing upstream capacity (rather than being a replacement), carbon intensive, and in the long-term, make FFDEs susceptible to border adjustments policies of import states who seek to capture the carbon cost of such carbon intensive products.[131] On the other end of the diversification spectrum is asset diversification which, instead of focusing on output, emphasizes the diversification of inputs, that is, humans (e.g., people and skills), naturally delivered ecosystem services, and intangible assets (e.g., knowledge capital and institutions).[132] Developed FFDEs like Norway, Australia and Canada are examples of countries which have embarked on asset diversification using, in part, profits from fossil fuel exploration and production.[133] While suggesting that both traditional and asset diversification can be combined, Peszko et al conclude that the latter is the best long-term economic strategy for FFDEs.[134]

The UNFCCC describes diversification as "a strategy to transform the economy from using a single source to multiple sources of income spread over primary, secondary and tertiary sectors,

[128] Muttitt, *supra* note 53 at 345.
[129] Peszko et al, *supra* note 43 at 56.
[130] For example, Peszko notes that traditional oil and gas countries in the GCC (Gulf Cooperation Council) have mostly diversified into the manufacturing in the chemical sector, and that steel and aluminium also received significant investment by Saudi Arabia and Qatar. See *Ibid* at 58.
[131] *Ibid* at 59.
[132] *Ibid.*
[133] *Ibid* at 61.
[134] *Ibid* at 71 – 72, 122.

involving large sections of population".[135] The logic is that when mono-economy countries have other multiple sources of income, it becomes easier to transition to a low carbon economy. So far, this aspiration has remained largely elusive whether it is in the case of Gulf Cooperation Council (GCC) countries that have gone the traditional diversification route or the more developed countries whose diversification is more asset oriented. Norway, Australia, and Canada remain some of the highest producers of fossil fuels in the world. Further, as shown by Muttitt, while diversification has been the singsong of GCC countries for decades, success has been very limited.[136] One explanation for this is that, as described by the UNFCCC the primary purpose of diversification is to multiply income sources rather than the replacement of such sources. Hence, even in relatively successful examples like Indonesia which is said to have reduced oil's share in its export mix from 50% in 1970 to 15% in 2000,[137] this does not necessarily translate into a 35% drop in production or exportation within the same time.[138] Here, the new (diversified) sectors, whether traditional or asset diversification oriented, are simply additional means of generating income. Unless diversification is construed in the 'displacement' sense, where new low-carbon sectors are developed to displace carbon intensive sectors, it does not qualify as 'transitional'.

Beyond the questions surrounding the effectiveness of diversification as a transition tool, are its justice implications. In his work on economic development in Kuwait and the UAE, Michael Herb emphasized that the countries' citizens do not benefit from the non-oil sectors (e.g., tourism) which are populated by expatriates and generate large profits for local capitalists.[139] Davidson also notes that diversification efforts in GCC countries "have precipitated the development of new economic sectors geared towards foreign investors, tourists, or simply an increased number of expatriates".[140] This raises the important question of 'gainers' and 'losers' in both a domestic diversified economy

[135] UNFCCC, "The Concept of Economic Diversification in the Context of Response Measures – Technical Paper" online: <https://unfccc.int/files/cooperation_support/response_measures/application/pdf/technical_paper_economic_diversification.pdf> 13.
[136] Muttitt, *supra* note 53.
[137] *Ibid*.
[138] In fact, according to the OECD, while Indonesia produced 44,947 ktoe of oil in 1971, its production had increased to about 54,476 ktoe in 2004. Hence, rather than a decline in production, there was an increase, although other commodities gained higher shares in the country's export mix. See OECD, *OECD Factbook: Economic, Environmental and Social Statistics 2015 – 2016* (Paris: OECD Publishing, 2016) 109.
[139] Michael Herb, *The Wages of Oil: Parliaments and Economic Development in Kuwait and the UAE* (Ithaca: Cornell University Press, 2014) 186.
[140] Christopher Davidson, *After the Sheikhs: The Coming Collapse of the Gulf Monarchies* (Oxford: Oxford University Press, 2012) 155.

and a global post-fossil economy. As far back as 1995, the IPCC highlighted the injustice of the costs of warming falling predominantly on one group or generation while the benefits accrue to another, thereby, creating the gainer – loser scenario.[141] The authors note that a cost-benefit analysis cannot conclude that the change, on balance, is good for society unless the gainers actually compensate the losers for their losses.[142] J.B. Ruhl makes a similar point as the IPCC, showing that "climate change will spur global, regional, national, and local economic transformations which, like any large-scale economic change process, are likely to produce vast numbers of winners and losers".[143] In a net carbon neutrality world where fossil fuel production would have to decrease very steeply in a short period of time, net exporters of fossil fuel (particularly developing FFDEs) will suffer loss, while countries which are generally (previous) net importers of fossil fuels (e.g., EU member states, China, India, Republic of Korea etc.) will enjoy gains by reason of their first-mover status in the new global low carbon transition (LCT) and knowledge-intensive economy.[144]

The debate of whether countries with currently profitable fossil fuel economies which are required to transition are deserving of compensation or some concessions in the new global LCT economy is highly contentious.[145] The disincentive that a relatively already dominated global LCT economy represents to FFDEs who are impelled to forfeit traditional areas of comparative advantage is, however, nevertheless comprehensible. Peszko et al, for example, note that the risk involved for FFDEs is higher than it is for more diversified countries with "comparative advantage in knowledge-intensive economic activities". I argue that while diversification must ideally be construed as having a displacement objective (high carbon intensive sectors displaced by LCT sectors), it will be unjust if it also simply displaces a set of economic hegemons for others. Simply replacing Toyota with Tesla, Mobil with Siemens, or Saudi Arabia with China might bear the

[141] James Bruce et al eds, *Climate Change 1995: Economic and Social Dimensions of Climate Change – Contribution of Working Group III to the Second Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 1996) 32.
[142] *Ibid.*
[143] J.B. Ruhl, "The Political Economy of Climate Change Winners" (2012) 97 Minnesota Law Review 206 at 226.
[144] Peszko et al make the point that EU countries and others "have invested in exploiting their first-mover advantage in low-carbon, knowledge-intensive technologies and products. What all these countries have in common is that they are net importers of fossil fuels and usually have already accumulated capital, skills, and capabilities in knowledge-intensive rather than energy-intensive economic activities". See Peszko et al, *supra* note 43 at 3.
[145] The IPCC summarized some of the arguments against compensating resource owners as including the fact that their wealth is not "a reward for productive activity"; that random allocations of wealth have already contributed to global inequality, and that the transition required is simply 'penance' and correction for a misdeed (exploration of fossil) which should have never happened. See Bruce et al, *supra* note 141.

optics of a sustainability aligned transition, but in reality, it slows down the desired speedy transition, and recreates and entrenches another era of inequality in a world already plagued by unconscionable inequality. The winner – loser consequence of the transition must not be taken as a *fait accompli.* This calls into question if the sole subject of the diversification discourse should be more economic diversification, without accompanying same with normative diversification. Would the global economic system continue to run on the normative fuel of zero-sum profit-first principles? Further, it is worth considering what a justice sensitive version of diversification would look like, which looking beyond States considers the impact of a diversified economy on real people. I will return to this later in this chapter.

iv. Divestment

Contrary to the additive notion of diversification, divestment focuses on the relinquishing of stakes and holdings in fossil fuel companies and projects by individuals, public and private institutions alike. A major distinction between divestment and other supply side initiatives considered here is the leading role played by organized and non-organized private entities and individuals in pressuring private and public investors to sell off shares owned in fossil fuel companies and projects.[146] Further, rather than focusing on fossil fuel companies, institutional investors are the strategic primary targets of divestment activists. In a 2019 report, Yossi Cadan et al show that over 1110 institutions with more than USD $11 trillion of assets under investment have pledged to divest from fossil fuels.[147] As of January 2021, the value of institutional commitments has ramped up to $14.50 trillion from 1308 institutions, while over 58,000 people have committed to divesting about $5.2 billion.[148] While the movement has targeted all types of fossil fuel, the campaign to divest from coal has arguably been the most effective and consequential. Bergman notes that while the direct effect of the divestment movement on oil and gas might have been limited, "coal might

[146] The divestment movement as a global social movement which was started students started in the 2011 and now has at its heart *350.org,* a global alliance of groups and activities. An important part of this alliance are student activists across the world. 350.org, through its *Go Fossil Free* campaign seeks to get "institutional leaders to immediately freeze any new investment in fossil fuel companies and divest from direct ownership and any comingled funds that include fossil fuel public equities and corporate bonds within 5 years". See Noam Bergman, "Impacts of the Fossil Fuel Divestment Movement: Effects on Finance, Policy and Public Discourse" (2018) 10:7 Sustainability 1 at 2.

[147] Yossi Cadan et al, "$11 Trillion and Counting" (2019) online: <https://631nj1ki9k11gbkhx39b3qpz-wpengine.netdna-ssl.com/divestment/wp-content/uploads/sites/52/2019/09/FF_11Trillion-WEB.pdf>, 2, 7.

[148] X Fossil Free: Divestment, "Overview" <https://gofossilfree.org/divestment/commitments/>.

already be suffering from divestment and perceived financial risk".[149] While one could question the extent to which divestment commitments have translated into actual divestments particularly in oil and gas, such emphasis (actual divestment) will be an inaccurate metric with which to adjudge the success of the divestment movement. Rather, the divestment movement has a more normative objective – the delegitimization of the fossil fuel industry.[150] This is, arguably, the greatest achievement of the movement.[151]

Like other climate change mitigation tools, the normative value and effectiveness of divestment are highly contested.[152] Ritchie and Dowlatabadi concluded that the three underpinning assumptions of the divestment movement – investor protection, keeping fossil fuels in the ground, and substitution of fossil fuel stocks with green energy stocks in the portfolios of institutional investors – as unfounded or with effects shown to be small.[153] They also highlight that banks and other financial institutions are the most likely recipients of divested funds, with the likelihood of some of these moneys finding their way back into fossil fuel investments albeit indirectly.[154] Although these identified weaknesses of the divestment movement are to varying degrees justifiable, a missing component is the explicit consideration of the cross-border effects of the movement and importantly, its tendency to induce injustice or exacerbate existing inequities. Divestment has generally been wielded as an equity-blind, justice-neutral sword, with little or no

[149] Bergman, *supra* note 147 at 6. Similarly, Goldman Sachs note that the number of institutions divesting coal investments was up five folds between 2014 and 2018. See Michele Vigna et al, *Re-Imaging Big Oils: How Energy Companies can Successfully Adapt to Climate Change* (New York: Goldman Sachs, 2018) 40.

[150] In his 2012 article which is considered as a major stimulant of the divestment movement, Bill McKibben argues that "enemies are what climate change has lacked" and that the fossil fuel industry must be looked at in a new light. "It has become a rogue industry, reckless like no other force on Earth. It is Public Enemy Number One to the survival of our planetary civilization". See Bill McKibben, "Global Warming's Terrifying New Math", *Rolling Stone* (19 July 2012) online: <https://www.rollingstone.com/politics/politics-news/global-warmings-terrifying-new-math-188550>.

[151] Bergman, *supra* note 146 at 10, 12.

[152] Braungardt et al summarized arguments for and against the divestment movement. Pro-views include how the stigmatization of the fossil fuel industry may diminish its power over policy, and how divestment can help address the emerging legal responsibility of investors to manage climate risks, lead to the reduction of the exploration capacity of fossil fuel companies and moderate the systemic financial risks of a 'climate bubble'. On the flip, the authors show that the largely symbolic nature of the divestment could lead to greenwashing, distract from more effective pathways, and that the arguments in favour neglect the systemic nature of emissions. See generally Sibylle Braungardt et al, "Fossil Fuel Divestment and Climate Change: Reviewing Contested Arguments" (2019) 50 Energy Researcha and Social Science 191 – 200. For counterviews to the Braungardt's arguments against, see Tom Sanzillo et al, *The Financial Case for Fossil Fuel Divestment* (Lakewood: Sightline Institute & IEEFA, 2018).

[153] Justin Richie and Hadi Dowlatabadi, *Fossil Fuel Divestment: Reviewing Arguments, Implications & Policy Opportunities* (Victoria: Pacific Institute for Climate Solutions, 2015) 4, 12 - 17.

[154] Richie and Dowlatabadi further argue that "divestment places money back into an economy that is structured around high emissions throughout the supply chain, even in the manufacture, transport and installation of wind turbines". *Ibid* at 12.

attention paid to persons impacted by divestments or how vulnerable persons can be protected. The lauded divestment of the Norwegian Government Pension Fund Global (Fund), the world's largest sovereign wealth fund, from fossil fuel companies is a useful case study.

Norway's divestment policy draws its legal authority from the Government Pension Fund Act (GPFA), the Management Mandate for the GPFG (Mandate), and the Guidelines for Observation and Exclusion from the GPFG (Guidelines).[155] The GPFA states the investment objective of the Fund as obtaining the highest possible return at an acceptable level of risk and requires that the Fund be managed responsibly.[156] It is the Mandate that specifies more clearly what responsible management under the GPFA means. The Mandate provides that the Fund's responsible investment principles "shall be based on environmental, social and corporate governance considerations in accordance with internationally recognized principles and standards …" and further requires Norway's Central Bank (Norges Bank) to establish environment-related investment mandates focusing on eco-friendly assets and technology.[157] More relevant to the issue of divestment is the Mandate's vesting of power in the Bank's Executive Board to make decisions on the "exclusion and observation" of companies from the GPFG.[158] Specifically, the Mandate permits the Bank to exclude equities issued by companies with International Classification Benchmark (ICB) 60101010 engaged in the exploration, production, and supply of crude oil on land and other equivalent equities.[159] The particular reference to land-based fossil resource is worthy of note, as it provides a lens to understanding how fossil fuel companies excluded or placed under observation are determined by the Norges Bank. This is interesting as such qualification invariably excludes offshore resources from which the GPFA is funded and integrated oil and gas companies which the country is also considerably invested in.

---

[155] *Government Pension Fund Act,* No. 123 of 21 December 2005 (As amended in 2019) online: <https://www.regjeringen.no/contentassets/9d68c55c272c41e99f0bf45d24397d8c/government-pension-fund-act-01.01.2020.pdf>; *Management Mandate for the GPFG* (as of 30 November 2019), online: <https://www.regjeringen.no/contentassets/9d68c55c272c41e99f0bf45d24397d8c/gpfg-management-mandate-30.11.2019.pdf>; *Guidelines for Observation and Exclusion from the Government Pension Fund Global* (As amended in 2019) online: <https://nettsteder.regjeringen.no/etikkradet3/files/2019/12/guidelines-for-observation-and-exclusion-from-the-gpfg-01.09.2019.pdf>.

[156] GPFA, *ibid* at s 2.

[157] Management Mandate, *ibid* at s 4-2 (3), s 4-4.

[158] *Ibid* at s 2-1(3), 4-5.

[159] *Ibid* at s 2-1(2)(f).

To appreciate the observation and exclusion regime more fulsomely, however, one needs to consult the Observation and Exclusion Guidelines. The Guidelines distinguish between product based and conduct based observation and exclusion. Products like the production of weapons that violate humanitarian principles through normal use, tobacco production and sale of military materials to states subject to investment restrictions are entirely banned, while observation or exclusion may be decided for mining or power companies deriving or basing considerable proportion of their income or operation (30% of income or operation) from thermal coal or extract or use thermal coal considerably (extract more than 20 million tonnes or have above 10,000 MW coal power capacity).[160] Conduct based observation and exclusion could be triggered if a company contributes to "unacceptable risk" or is responsible for serious or systematic human rights violation, severe environmental damage, acts or omissions leading to unacceptable GHG emissions, gross corruption, or other serious violations of fundamental ethical norms.[161] In determining whether a company should be excluded instead of being observed, the Bank is expected to consider factors like the probability of future norm violations, the severity of the violations, the connection between the violation and the company, the breadth of the company's operation, governance, and remedial actions.[162]

One hundred and sixty-seven companies are presently listed as either excluded or under observation by the Norges Bank.[163] Ninety-four of these companies are in the fossil fuel sector; with coal related entities dominating the list (90 of 94 companies). The only oil and gas companies on the list are Canadian companies involved in tar sands operations.[164] While all the tar sand companies are excluded for "unacceptable GHG emissions", about 17 of the 90 coal companies are placed under observation. It is unclear what constitutes 'unacceptable GHG emissions' although in its decision on Canadian Natural Resources Ltd (CNRL) the tonnage of emissions from CNRL's production was compared to and found to exceed both the European and global average.[165] All 17 coal companies are based in developed countries, with the United States being

[160] *Observation and Exclusion Guidelines*, *supra* note 155 at s 2(1)(2).
[161] *Ibid* at s 3.
[162] *Ibid* at s 6(2).
[163] Norges Bank, "Observation and Exclusion of Companies", (2020) online: <https://www.nbim.no/en/the-fund/responsible-investment/exclusion-of-companies/>.
[164] Canadian Natural Resources Ltd., Cenovus Energy Inc., Imperial Oil Ltd., and Suncor Energy Inc.
[165] Council on Ethics, "Recommendation to Exclude Canadian Natural Resources Ltd from Investment by the Government Pension Fund Global (GPFG)", (7 November 2019) online: <https://etikkradet.no/files/2020/05/Canadian-Natural-ENG.pdf>.

the home country of most (10 of 17 companies). On what basis then are companies like BHP Group Ltd/Plc (Australia) and Vistra Energy Corp (United States) put under observation, while companies like Sasol Ltd (South Africa), Tenaga Nasional Bhd (Malaysia) and Gujarat Mineral Development Corp Ltd (India) are excluded? In the one-page Executive Board's decision on BHP, Vistra, and Sasol, the Board referenced the criteria under the Observation and Exclusion Guidelines,[166] but failed to explain what plans BHP and Vistra have put in place to escape exclusion. A more important issue is whether entities like BHP and Vistra should be assessed with the same criteria as Sasol, Tenaga, and Gujarat without regard to historical antecedents or their social and beyond-profit public functions.[167]

Further, although the Guidelines recognize that "positive contribution to those who are or have been affected by the company's conduct" could be a ground for the non-exclusion of a company (although it could be placed under observation), none of the reviewed Board decisions includes this arguably justice-compliant consideration. Rather, emphasis has been laid on "forward looking assessments" which includes plans to reduce income ratio or business share in coal and/or reinvestment in renewable energy sources.[168] Reinvestment is the reverse emphasis of divestment advocates.[169] The beneficiaries of such reinvestment, new hegemony resulting thereby, and the inequality that it entrenches are, however, rarely considered.[170] Kate Neville argues that although the divestment movement addresses a crucial immediate problem (climate change), failing to

[166] Norges Bank, "Grounds for Decision: Product-based Coal Criterion (the Executive Board's Decision 20.11.2019)", (13 May 2020) online: <https://www.nbim.no/contentassets/d7b3ae86514d4917a3078653cc2bff87/grounds-for-decision.pdf>.

[167] For example, while BHP started operating in 1885, Tenaga, Sasol and Gujarat were only established in 1949, 1950 and 1963 respectively. Further, Gujarat supplies power from its thermal plants to different villages in Gujarat, India. See Gujarat Mineral Development Corporation Ltd., "Thermal Power", online: <https://www.gmdcltd.com/en/thermal-power>. Similarly, Tenaga is the only electric utility company in Peninsular Malaysia and the largest publicly listed power company in Southeast Asia.

[168] See Norges Bank, *supra* note 167. Also see, Norges Bank, "Grounds for Decision – product Based Coal Exclusions" (14 April 2016) online: <https://www.nbim.no/contentassets/d99e60bdb5794272ae0df58d79da0d65/20160414-grounds-for-decision---product-based-coal-exclusions.pdf> 3.

[169] Cadan et al, for example, argue that "it's time to scale-up the "reinvestment" movement. Solutions to the climate crisis are all around us, but they need to be capitalized … Investors should commit at least 5% of their portfolios to climate solutions that help rapidly scale to 100% renewable energy and universal energy access". See Cadan et al, *supra* note 147 at 11.

[170] Exceptions, however, exist. Lenferna refers to the work of Hip Hop Caucus in redirecting funds to revitalize vulnerable communities and the City of Portland's divestment from corporations and reinvestment in community projects. See Georges Alexandre Lenferna, "Divestment as Climate Justice: Weighing the Power of the Fossil Fuel Divestment Movement" in Stefan Jacobsen ed, *Climate Justice and the Economy* (Abingdon: Routledge, 2018) 84 at 91. While these are exceptions, they are also wholly at the domestic level whereas the impacts of divestment from the fossil fuel industry are rarely solely domestic.

situate it in its broader environmental justice context risks reinforcing "the same systems of environmental and social damage they aim to dismantle".[171] Divestment's offer of a growth-oriented solution to climate change, Neville argues, exposes its tendency to expand the power of the current economic order and its vulnerability to be coopted by powerholders.[172] She concludes that while divestment has the potential to disrupt the dominance of the fossil fuel industry, it falls short of the essential mandate of unsettling the power of economic elites and catalyzing more equitable global arrangements.[173] Although at times pitched as a panacea to fossil fuel assets becoming stranded,[174] stranded assets is one of the inevitable consequences of divestment. The idea is that when investors pull their funds out of fossil fuel companies, they would have less capital to put in projects thereby making them less profitable and competitive.[175] In such case, companies would have to draw down on current and/or future projects, but where would such drawdown occur, how do companies determine this, and who are the most affected? The point here is not that divestment from fossil fuels is not an important mitigation tool, but that it should not be construed as justice-blind or equity-neutral, lest as Kate Neville warns it contributes to the entrenchment of global inequality.

v. Technological Solutions – Carbon Capture, Utilization and Storage

CCUS has been highlighted here given its popularity with FFDEs, the fossil fuel industries and allied institutions. It is different from the other measures considered above as it directly fosters the continued relevance of fossil fuel in a low carbon world.[176] For example, OPEC claimed that "big reductions in carbon dioxide emissions are possible with the continued use of petroleum through

[171] Kate Neville, "Shadows of Divestment: The Complications of Diverting Fossil Fuel Finance" (2020) 20:2 Global Environmental Politics 3 at 4.
[172] *Ibid* at 4 – 5.
[173] *Ibid* at 8.
[174] Richard Baron and David Fischer, "Divestment and Stranded Assets in the Low-Carbon Transition" Background Paper for the 32nd Round Table on Sustainable Development, 28 October 2015, OECD Headquarters, Paris, 3. Baron and Fisher, however, further note that "stranded assets are an inevitable effect of effective climate policy".
[175] Paun et al note that, theoretically, in a divestment scenario "less demand for shares and bonds ultimately increases the cost of capital and limits the ability to finance expensive projects, which is particularly damaging in a sector where projects are inherently long term". See Ashim Paun et al, *Stranded Assets: What Next?* (London: HSBC Global Research, 2015) 19.
[176] Gunderson et al note that CCUS's clearest potential for the fossil fuel industry is that "CCS "provides a vision" of a "carbon-constrained future" that still allows for fossil use, or "CCS changed the way the fossil fuel industry envisioned their future challenges"" See Ryan Gunderson et al, "The Fossil Fuel Industry's Framing of Carbon Capture and Storage: Faith in Innovation, Value Instrumentalization, and Status Quo Maintenance" (2020) 252 Journal of Cleaner Production 1 at 2.

the application of a technology that is being developed today, CO2 capture and sequestration".[177] OPEC has equated wellhead technologies like CCUS to renewables in respect of their potential in mitigating climate change, and the technology has also been pitched as one of the few technologies capable of displacing CO_2 from coal and gas-fired stations and the only technology capable of reducing large-scale emissions from industrial sources.[178] In 2020, the Global CCS Institute listed 164 carbon capture and storage facilities in its database, with 113 of them operational, 55 in construction, 10 in early development, and 24 in advanced development.[179] Operational facilities currently capture about 40 Mt of CO_2 every year, with a projection of about 130 Mt when planned projects come online.[180] CCUS capacity must however be upped by more than a hundredfold to around 5.6 Gt by 2050 if the IEA's Sustainable Development Scenario were to be actualized.[181] CCUS has also been represented as crucial for reducing the carbon footprint of 'low' carbon fuels like natural gas, hydrogen, and biofuel.[182] Making a direct connection between the carbon capture technology and the just transition, the CCS Institute argued that "CCS facilitates a just transition by allowing industries to make sustained contributions to local economies while moving toward net-zero".[183]

Contrary to the glossy picture painted by FFDEs, fossil fuel industries, and the CCS Institute about carbon capture, it has been opposed in other quarters for its high failure rates, high capital and operating cost making it not commercially viable, lengthy timeframe for project development, and perceived competition with renewable technologies.[184] For example, although the United States leads the world in CCUS installations, its only commercially operational coal-fired CCUS facility

[177] OPEC, "Carbon Capture and Storage, CO2 for Enhanced Oil Recovery, and Gas Flaring Reduction" (Official Report of the Joint Workshop Held by OPEC and the World Petroleum Congress at the OPEC Secretariat in Vienna, Austria, on 8 – 9 June 2004), online: <https://www.opec.org/opec_web/en/press_room/905.htm>.
[178] Mohammed Sanusi Barkindo, "Keynote Address by OPEC Secretary General" (Delivered at the International Carbon Capture Utilization and Storage Conference, 26 February 2020, Riyadh, Saudi Arabia) online: <https://www.opec.org/opec_web/en/press_room/5854.htm>.
[179] Data used here were as of 12 January 2021. 49 other CCS facilities are classified as 'completed', while operation in another 2 is suspended. The facilities are further classified as commercial CCS facilities, CCS Hubs, and pilot and demonstration CCS. See Global CCS Institute, "CO_2RE Facilities Database" <https://co2re.co/FacilityData>.
[180] Global CCS Institute, *Global Status of CCS 2020* (Melbourne: Global CCS Institute, 2020) 19; IEA, *Energy Technology Perspectives 2020: Special Report on Carbon Capture Utilisation and Storage – CCUS in Clean Energy Transitions* (Paris: IEA, 2020) 29.
[181] Global CSS Institute, *ibid* at 13; IEA, *ibid* at 13.
[182] *Ibid* at 58 – 65.
[183] *Ibid* at 13.
[184] See Juho Lipponen et al, "The Politics of Large-scale CCS Development" (2017) 114 Energy Procedia 7581 at 7586 – 7587.

(Petra Nova) was (temporally) shuttered in 2020 to be reopened "when economics improve".[185] Other CCUS projects have suffered similar setbacks relating to astronomically high cost and underperformance like Petra Nova leading to Francesco Starace's verdict that "CCS has not been successful. It doesn't work … it is simply too expensive, too cumbersome, the technology didn't fly".[186] There is also the question of the current mitigation significance and coverage (e.g., it applies only to stationary sources, leaving out non-stationery sources like transportation) of CCUS vis-à-vis other more commercially viable demand side technologies or energy efficiency.[187] It has also been argued that CCUS develops too slowly to proffer meaningful solutions to the climate challenge, constitutes a potential ecological danger, deflects attention from more consequential mitigation measures, wastes energy and other resources (e.g., water), and comes with serious liability risks.[188]

While the arguments for and against CCUS and similar technologies will continue, its mainstream acceptance as one of the key technological responses to climate change seems established.[189]

---

[185] It was estimated that the facility captured a metric ton of carbon at about $60, whereas the cost needed to come down by 50% ($30 per ton) to be considered commercially viable. See Dennis Wamsted and David Schlissel, "Petra Nova Mothballing Post-Mortem: Closure of Texas Carbon Capture Plant is a Warning Sign", *Institute for Energy Economics and Financial Analysis* (August 2020) online: <https://ieefa.org/wp-content/uploads/2020/08/Petra-Nova-Mothballing-Post-Mortem_August-2020.pdf> 1, 4.

[186] Frédéric Simon, "'Game Over' for CCS, Driven out by Cheap Renewables", *Eurativ* (4 December 2017) online: <https://www.euractiv.com/section/climate-environment/news/game-over-for-ccs-driven-out-by-cheap-renewables/>. See also Tom Baxter, "It's Time to Accept Carbon Capture Has Failed – Here's What We Should Do Instead", *The Conversation* (23 August 2017) online: <https://theconversation.com/its-time-to-accept-carbon-capture-has-failed-heres-what-we-should-do-instead-82929>.

[187] For example, while CCS, so far, sequesters only about 40 million tonnes of CO_2 per annum, industry is responsible for 8 billion tonnes CO_2 annually, with the cement, iron and steel and chemical industries responsible for about 70% of industry emissions. See Global CCS Institute, *supra* note 180 at 56. See also Muttitt, *supra* note 53 at 341 – 342. Baxter shows that just by putting the quantity of water needed to make tea and coffee, instead of filling the kettle, Britons could use 335MW less power. He compares this to the 340 MW that CCS would have saved from the Peterhead CCS project in northeast Scotland. Just by not overfilling kettles, the same amount of CO_2 could have been removed, at no cost, with lower electricity bills and with air pollutants removed. See Baxter, *Ibid.*

[188] See generally Greenpeace, *Carbon Capture Scam (CCS): How a False Climate Solution Bolsters Big Oil* (Washington, DC: Greenpeace USA, 2015); Gunderson et al, *supra* note 176 at 1.

[189] The UNFCCC, for example, describes CCUS as "a key technology for the decarbonization of the energy sector in the long term. CCUS is an important option in most of the emission scenarios to reach the 2 degrees goal". UNFCCC, "Carbon Capture, Use and Storage" <https://unfccc.int/resource/climateaction2020/tep/thematic-areas/carbon-capture/index.html>. Three of the four pathways considered by the IPCC in its special 1.5°C report. Particularly, Pathway 3 (middle of the road scenario) requires an active and expansive use of CCS and Bioenergy with CCS (BCCS), while pathway 4 is mainly achieved through a broad use of carbon capture and storage technologies. See Valerie Masson-Delmotte et al, *Global Warming of 1.5°C: Special Report* (IPCC, 2019) 95 – 162. Leading climate change voices have also come out in support of CCUS. Lord Nicholas Stern described in the Global CCS Institute 2020 report as CCS Ambassador stated that "… CCUS will be an essential technology for emissions reduction; its deployment across a wide range of sectors of the economy must now be accelerated. Low-carbon technologies, including renewables and CCUS, point toward a viable pathway for achieving net-zero GHG emissions by 2050, even

According to the IEA, there is growing momentum in the deployment of CCUS after years of decline in investment, with more than 30 new integrated CCUS facilities announced between 2017 and 2020.[190] Of consequence is the geographical distribution of these facilities and the potential of allowable preferential treatment of commodities (whether fossil fuel or other derived products) produced through systems with CCUS installations. While this has considerable implications for the global just transition discourse, existing commentaries on CCS and just transition have, so far, only focused on the domestic impacts of CCUS installations on companies, workers and host communities.[191] More than 60% of the global CCUS capacity and half of the planned facilities are in the United States.[192] European countries, Canada, China, and a few South America, Asia Pacific, and GCC countries also boast of CCUS facilities of varying capacities at different levels of development and/or operation.[193] The limited spread of these facilities and their concentration in high income countries can be primarily attributed to the exorbitant cost of the CCUS technology.[194]

The justice implication of the above trend becomes even more evident when the use of technologies like CCUS in production processes becomes a consideration in climate policies like carbon border tax adjustment (BTAs). While I do not join ongoing arguments on the legality of BTAs under the WTO General Agreement on Trade and Tariffs (GATTs) here, it is sufficient to note that the environmental exception in Article XX of the GATT has often been referenced as a

in sectors that were considered "too difficult" to decarbonize". See Global CSS Institute, *supra* note 180 at 6. The Resolution on the Provisional Application of the 2009 Amendment providing an exception to Article 6 of the London Protocol (prohibiting the export of wastes (e.g., CO_2) to other countries for dumping at sea) provides a seemingly balanced narrative on the importance of CCUS. It notes that the technology should not be considered as a substitute to other mitigation measures, but as "one of a portfolio of options to reduce levels of atmospheric carbon dioxide and as an important interim solution". See *Resolution LP.5(14) on the Provisional Application of the 2009 Amendment to Article 6 of the London Protocol* (Adopted on 11 October 2019), preamble.

[190] IEA, *supra* note 180 at 28.

[191] See Floris Swennenhuis et al, "What Role for CCS in Delivering Just Transitions? An Evaluation in the North Sea Region" (2020) 94 Intl Journal of Greenhouse Gas Control 1 – 10; Gareth Edwards, "Coal and Climate Change" (2019) 10 WIREs Climate Change 1 – 16; Global CCS Institute, *supra* note 180 at 13.

[192] IEA, *supra* note 180 at 125.

[193] Global CCS Institute, *supra* note 180 at 33 – 53.

[194] The Boundary Dam Power Station Unit 3 CCUS project in Saskatchewan, Canada as of 2016 cost $1.5 Billion. See MIT, "Carbon Capture & Sequestration Technologies" (2016). For context, the total education capital expenditure in Nigeria's 2021 budget was about $325 Million (N127.36 Billion). See Budgit, "2021 Proposed Budget: A Quick Review" online: <https://yourbudgit.com/wp-content/uploads/2020/12/2021-Budget-Analysis-Proposed.pdf>, 13. It is, therefore, not surprising that with the exception of emerging economies like China, India, and Brazil, most CCUS facilities are located in developed countries. Africa, for example, has no operational commercial CCUS facility. South Africa, however, has a pilot and demonstration project at an advanced development stage.

justifiable ground for border adjustment mechanisms.[195] A few scholars have emphasised the existence of domestic carbon tax regimes and the consequential imposition of same on products (rather than processes and production methods) as the valid legal basis for the existence of a BTA regime.[196] Several others have, however, argued that there is no justification that BTA only applies to products and that processes are also covered under the GATT.[197] This latter view seems to be more popularly endorsed by pro- market mechanism countries. It is under this view that the use of CCUS in a production process (e.g., coal, cement, or steel) could be a basis for the application of BTA. In other words, countries with CCUS technologies can make a case for the non-application of BTAs to their CCUS-connected products when exporting same to countries with carbon pricing and BTA mechanism.

The proposed EU Carbon Border Adjustment Mechanism (CBAM) and a proposed US Upstream GHG Tax provide apt examples. The EU Mechanism, under review, is to address the risk of carbon leakage by "putting a carbon price on imports of certain goods from outside the EU".[198] Within the EU, border adjustment is "designed to equalise the tax burden borne, irrespective of the jurisdiction of production".[199] The first phase of the CBAM focuses on steel, aluminium, cement, fertilizers and electricity.[200] Although the issue of process based BTAs has not been expressly addressed in existing accessible documents, the Inception Impact Assessment suggests that the CBAM would also be process-based. It notes that to apply the CBAM, "traders and authorities may need to determine the greenhouse gas emissions associated with the production of an imported

[195] See Christine Kaufmann and Rolf Weber, "Carbon-related border Tax Adjustment: mitigating Climate Change or Restricting International Trade?" (2011) 10:4 World Trade Review 497 – 525; Charles McLure, "A Primer on the Legality of Border Adjustments for Carbon Prices: Through a GATT Darkly" (2011) 4 Climate Change Law Review 456 – 465; Sebastiano Garufi, "Border Tax Adjustments and Environmental Protection: The Role of Taxes and GATT Limits" (2013) Bocconi Legal Studies Research Paper No 2360226, 24 – 28; Edward Balistreli et al, "Optimal Environmental Border Adjustments Under the General Agreement on Tariffs and Trade" (2019) 74 Environmental and Resources Economics 1037 – 1075.

[196] See Kaufman and Weber, *ibid* at 503.

[197] Bullock argues that "there is no reason … to preclude the application of an adjustment referable to energy used in the manufacture of an imported product". See David Bullock, "Combatting Climate Recalcitrance: Carbon-Related Border Tax Adjustments in a New Era of Global Climate Governance" (2017) 27:3 Washington Intl Law Journal 609 at 629 – 630. See also Garufi, *supra* note 195 at 15.

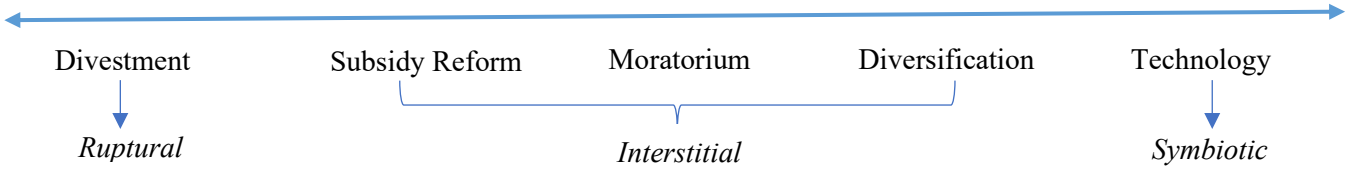
[198] European Commission, "EU Green Deal (Carbon Border Adjustment Mechanism) – About this Initiative" (2020) online: <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12228-Carbon-Border-Adjustment-Mechanism>.

[199] European Parliament, "Briefing - Carbon Emissions Pricing: Some Points of Reference" (2020) online: <https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/649352/EPRS_BRI(2020)649352_EN.pdf> 9.

[200] Kate Abnett, "EU Eying Carbon Border Fees Plan for Steel, Cement and Power: Senior Official", *Reuters* (13 October 2020) online: <https://www.reuters.com/article/us-climate-change-eu-carbon/eu-eying-carbon-border-fees-plan-for-steel-cement-and-power-senior-official-idUSKBN26Y2MX>

product".[201] Identifying the issues with the CBAM, Kerstine Appunn notes that if joined by other large economies (as already suggested by the Biden administration), there would be high barriers between the western trade bloc and the rest of the world, shutting out emerging and developing economies, thereby contradicting the CBDR principle underpinning the international climate regime.[202] Further, she points out that "just complying with the new EU rules and standards … could lead to discrimination of producers from less developed countries".[203] The injustice foisted by a 'justice-blind' undifferentiated system like the CBAM becomes even more manifest if technologies like CCUS are used in appraising the carbon content of the process of a product, and conferring on them acceptability as against products from other countries not as financially capable of investing in such technologies. While the extent to which the CBAM will capture process-based emissions is still unclear, the Framework Proposal by Resources for the Future for a US Upstream GHG Tax is more explicit. The authors argue for the inclusion of process emissions from upstream operations to produce coal, oil and natural gas during extraction and initial procession in the GHG tax.[204] They, however, recommend that an "offset fee, paid at the same rate as the GHG tax, should be available to US domestic manufacturers who capture CO_2 emissions from purchased fossil fuels and permanently store them as part of carbon capture and storage (CCS) operations", and that "similar considerations … should also apply to evaluate net emissions for imported products.[205]

Figure 3 - Supply Side Mitigation Approaches: Contribution to Sustainability Transition



The supply-side mitigation approaches (*figure 3*) reviewed in this chapter are by no means exhaustive, neither are the analyses extensive enough to reach a conclusive verdict one way or the

[201] European Commission, "Inception Impact Assessment" Ref. Ares(2020) 1350037, 3.
[202] Kerstine Appunn, "Emission Reduction Panacea or Recipe for Trade War: The EU's Carbon Border Tax Debate", *Clean Energy Wire* (30 November 2020) online: <https://www.cleanenergywire.org/factsheets/emission-reduction-panacea-or-recipe-trade-war-eus-carbon-border-tax-debate>.
[203] *Ibid.* See also Arvind Ravikumar, "Carbon Border Taxes are Unjust", *MIT Technology Review* (27 July 2020) online: <https://www.technologyreview.com/2020/07/27/1005641/carbon-border-taxes-eu-climate-change-opinion/>.
[204] Brian Flannery et al, *Framework Proposal for a US Upstream GHG Tax with WTO-Compliant Border Adjustments: 2020 Update* (Washington, DC: Resources for the Future, 2020) 14.
[205] *Ibid.*

other on their effectiveness. While worthwhile, reaching such a conclusive verdict was not my objective. Rather, I sought to show two things: (1) the global nature and impact of mitigation approaches which are primarily considered in the domestic context; (2) the justice implications of mitigation approaches which are commonly promoted and implemented without recourse to the imperatives of an international climate regime which is expected to be underpinned by notions of equity, justice, and real-life consequences of decarbonization pathways on people.[206] I have adopted Wright's pathways of transformation discussed in chapter 1 to capture the relevance of each of these approaches in *figure 3*. While the divestment movement argues for a sharp break from the *status quo* (ruptural), approaches like subsidy reform, moratorium and diversification while not combatting the fossil complex as directly as divestment, 'attacks' specific support structures or reinforcing logics of the fossil fuel complex (interstitial). On the other end of the extreme and at times considered system-facilitating, are symbiotic approaches as represented by the CCS technology which while purporting to facilitate the transition also entrenches the fossil industry. Like Sally Engle Merry notes in respect of her forms of resistance to the law, these different approaches "contribute to the reconstitution of the sociocultural world in some emancipatory ways".[207] The question is how do we define those roles? On what basis should a country opt to employ a technological fix instead of divesting outrightly? Further, does 'justice' have a role in attributing transitional roles to fossil fuels? I argue here that justice considerations on a global scale should inform the form and scope of supply side mitigation approaches that are employed by FFDEs. Inherent in this argument is the presumption that all countries regardless of developmental status must decarbonize. The question is how and at what pace. It is near impossible to answer the above questions without turning more specifically to the subject of carbon budget and how to distribute same justly. I consider and critique a cross-section of carbon budget distribution proposals in the literature in the next section. After which I make a case for a global just transition approach based on the principles of equity and differentiation under the international climate change approach in part four.

[206] The Paris Agreement takes into account the imperatives of a just transition, and acknowledges that Parties should, when taking action to address climate change, consider their obligations on human rights, local communities, people in vulnerable situations and the right to development, gender equality, empowerment of women, and intergenerational equity. Parties should also note "the importance of some of the concept of "climate justice", when taking action to address climate change". See Paris Agreement, preamble.
[207] Sally Engle Merry, "Resistance and the Cultural Power of Law" (1995) 29:1 Law & Society Review 11 at 16.

3.3 The Global Carbon Budget and Principles of Distribution

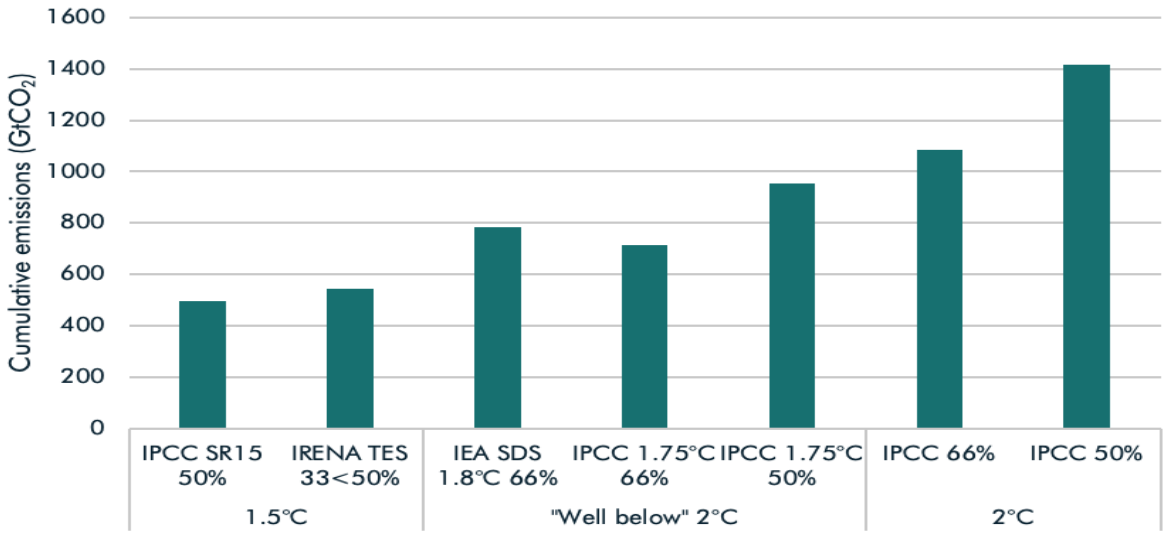
Global carbon budget refers to the level of emissions that cannot be exceeded to keep global temperature below target thresholds. The Paris Agreement sets the global temperature thresholds at holding temperature increase to "well below 2ºC" and pursuing efforts to limit increase to "1.5ºC" above pre-industrial levels.[208] The meaning of 'well below 2ºC' is quantitatively uncertain. The IPCC appears to have represented this with 1.75ºC, while the IEA uses 1.8ºC.[209] Given the framing of the long-term goal under the Paris Agreement as "well below 2ºC" and not just "2ºC", it seems more appropriate to adopt 1.75ºC - 1.8ºC as the lower threshold, while 1.5ºC remains the higher threshold. The Paris Agreement, however, also contains mid-term and short-term goals which are also relevant in determining the global carbon budget. Short-term, Parties aim to reach global peaking of GHG emissions "as soon as possible", while a balance between emissions by sources and removals by sinks (net neutrality) will be achieved "in the second half of this century" (mid-term).[210] The short- and mid-term goals are key to achieving the long-term goal. The mid- and short-term goals can also be construed as 'qualitative' carbon budgets (short-term global peaking, mid-term neutrality) which if exceeded, makes it more likely to exceed the long-term goal. For example, in its 1.5ºC special report, the IPCC notes that to stay within the bounds of 1.5ºC, global net anthropogenic CO_2 emissions must decline by about 45% from 2010 levels by 2030, reaching net zero around 2050.[211]

Others have, however, framed the carbon budget more quantitatively. The Carbon Tracker Initiative (CTI) synthesizing different scenarios from the IPCC, IEA and the International Renewable Energy Agency (IRENA) shows the total emissions available for 1.5ºC, 1.75 – 1.8ºC, and 2ºC temperature outcomes (*figure 3*). The stark difference between available emissions for 2ºC (1400GtCO_2) and 1.5ºC (495 GtCO_2) instructs that to meet the higher mark of 1.5ºC, emission reduction must be steeper. Given the dire consequences of an above 1.5ºC scenario as spelt out in the IPCC special 1.5ºC report and consistent with the precautionary principle, the analysis here takes the IPCC's budget of 495 GtCO_2 for 1.5ºC as emissions that must not be exceeded as of

[208] Paris Agreement, art 2(1)(a).
[209] Axel Dalman, "Carbon Budgets: Where Are We Now?", *Carbon Tracker Initiative* (11 May 2020) online: <https://carbontracker.org/carbon-budgets-where-are-we-now/>.
[210] Paris Agreement, art 4(2).
[211] Valerie Masson-Delmotte et al, "Summary for Policymakers" in *Global Warming of 1.5ºC* (Geneva, IPCC: 2018) 12.

2050. One must emphasize, however, 495 $GtCO_2$ only gives a 50% chance of not exceeding 1.5°C. It is, therefore, worth arguing if standing a higher chance does not require an even steeper reduction in projected cumulative emissions. As of the start of 2020, about 15% of the 495$GTCO_2$ had been used up (representing emissions in 2018 and 2019).[212]

Figure 4 – Carbon Budget Scenarios[213]



While there are different estimates,[214] McGlade and Ekins, in 2015, put the emission potential of the total global fossil fuel reserves (with reserves defined as recoverable resources under current economic conditions and has a probability of being produced) at 2900$GtCO_2$.[215] The emission potential of proven reserves is therefore about six times the total of the allowable emission level for a 1.5°C outcome. Hence, to stay within the carbon budget, only about 20% of the total fossil

[212] Nauels et al, however, put the carbon budget for 1.5°C at 395 $GtCO_2$ (50% probability). See Alexander Nauels et al, "Zero in on the Remaining Carbon Budget and Decadal Warming Rates", *The CONSTRAIN Project Annual Report* (2019) online: <https://constrain-eu.org/wp-content/uploads/2020/02/CONSTRAIN-Zero-In-On-The-Remaining-Carbon-Budget-Decadal-Warming-Rates.pdf>.
[213] Dalman, *supra* note 209.
[214] For example, in its 2011 report, the Carbon Tracker Initiative puts the emission potential of known fossil fuel reserves at 2795$GtCO_2$, while fossil fuel reserves held by the top 100 listed coal companies and the top 100 listed oil and gas companies represent potential emissions of 745 $GtCO_2$. See Carbon Tracker Initiative, "Unburnable Carbon – Are the World's Financial Markets Carrying a Carbon Bubble?" (2011) online: <https://carbontracker.org/reports/carbon-bubble> 6. Elsewhere, Russel estimates the world's largest 200 public fossil fuel companies to hold reserves with an estimated carbon potential of 1541$GtCO_2$. See Stephen Russel, "A Recommended Methodology for Estimating and Reporting the Potential GHG Emissions from Fossil Fuel Reserves" (2016) World Resources Institute Working Paper, 1.
[215] Christophe McGlade and Paul Ekins, "The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2°C" (8 January 2015) 517 Nature 187.

fuel reserves can be exploited over the next three decades (2020 - 2050).[216] Short term, SEI et al estimate that a 1.5ºC pathway requires that fossil fuel production decreases by about 6% every year between 2020 and 2030 (11%, 4%, and 3% less coal, oil and gas respectively).[217] Assuming that the foregoing figures are correct, we can now turn to the question of how should the allowable explorable reserves (20%) be distributed. Framed differently, should the necessity to decrease production by 6% every year apply equally to all FFDEs? If not, on what basis should differentiation occur?

I argue that 'justice' is central to determining how the carbon budget is distributed.[218] In their work on how to equitably manage a rapid drawdown on fossil fuel extraction, Muttitt and Kartha considered three allocation approaches – economic efficiency, meeting development needs, and effort sharing.[219] Economic efficiency emphasizes leaving the carbon budget to a liberalized market which more often than not translates into the extraction of the cheapest or most profitable resources (e.g., preferring a more easily recoverable U.S. Shale over exploring Nigeria's Agbami deep water oilfield).[220] Contrarily, development-need allocation proponents argue that preference should be given to the poorest countries.[221] Rather than focusing on the allocation of the budget itself, effort sharing promotes the fair distribution of the required global effort to mitigate emissions.[222] While each approach has its claim to equity, the economic efficiency approach has been criticized for failing to consider necessary fossil fuel supply policy restriction and disregard

[216] This is consistent with Leaton et al's conclusion that "a precautionary approach means only 20% of total fossil fuel reserves can be burnt to 2050". See James Leaton et al, "Unburnable Carbon 2013: Wasted Capital and Stranded Assets" (CTI and Grantham Research Institute of Climate Change and the Environment, 2013) 4.
[217] The Production Report, however, notes that countries aim to increase production of fossil fuel at 2% per annum, translating into 120% more fossil fuel than is consistent with limiting global temperature to 1.5ºC. See SEI et al, *supra* note 1 at 14 – 18.
[218] Nauels et al note that to "apply the remaining carbon budget concept to a national context, each individual country needs to be assigned a specific portion of the remaining global carbon budget". Nauels et al, *supra* note 212 at 7.
[219] Greg Muttitt and Sivan Kartha, "Equity, Climate Justice and Fossil Fuel Extraction: Principles for a Managed Phase Out" (2020) 20:8 Climate Policy 1024 at 1028 – 1030.
[220] McGlade and Ekins, for example, describe their distribution proposals as being "a product of the economically-optimal solution", although such "would have a lower social welfare". See McGlade and Ekins, *supra* note 215 at 188. Kartha et al have also noted that "leaving the allocation of "who may extract?" to market forces risks placing the greatest burden of transition on those least able to carry it". See Kartha et al, *supra* note 24 at 119.
[221] For example, see James Morrissey, "Who Should Sell the Last of the Fossil Fuels: Stranded Assets, Equity and Climate Change", *OXFAM* (9 May 2016) online: <https://politicsofpoverty.oxfamamerica.org/who-should-sell-the-last-of-the-fossil-fuels-stranded-assets-equity-and-climate-change/>.
[222] This is largely the approach under the climate regime from the UNFCCC and Kyoto Protocol hard differentiation to the self-differentiation under the Paris Agreement. The emphasis of all these instruments is that countries should contribute to the global emission stabilization objective (UNFCCC, art 2) in a manner consistent with their differentiated responsibility, capability and circumstance (Paris Agreement, art 2(1)(2)).

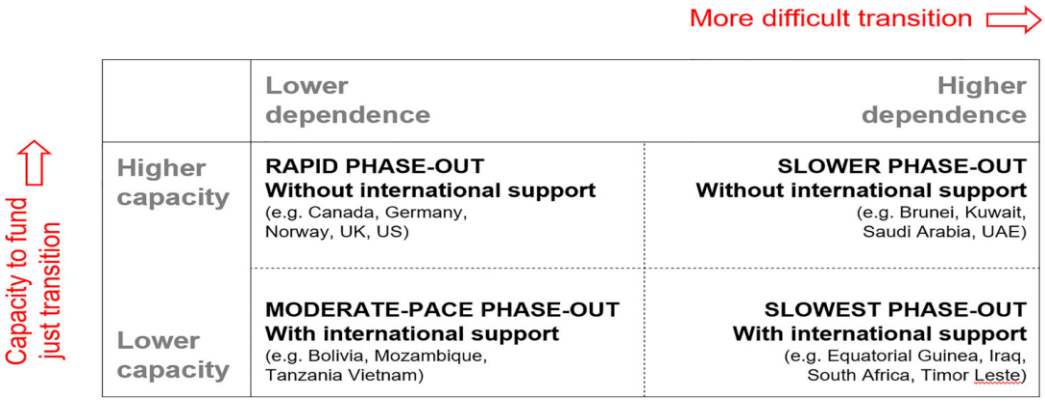
for externalities,[223] while the development-needs approach fails to factor in the dissonance between extraction rights and social benefits and the insufficiency of existing carbon budget to cater to the needs of potentially eligible (developing) FFDEs.[224] The fair share allocation approach has also been criticized for using criteria (e.g., capability and historical emissions) which do not easily apply to the complexities of extractions.[225] Muttitt and Kartha conclude by proposing the following principles of equity in transition: phasing down global extraction at a 1.5°C consistent pace; just transition for workers and communities; curbing extraction in a manner consistent with environmental justice; reducing extraction fastest in countries with the highest capacity and lowest dependence on fossil fuel; and sharing transition costs fairly according to the ability to bear costs.[226]

Given the importance of the historical responsibility argument in the global climate discourse, it is surprising that Muttitt and Kartha only made a fleeting reference to the issue, and it was not factored into their equity principles.[227] This is one of the key differences between Muttitt and Kartha's work and Caney's proposed principles. Caney considered six principles to be used in determining which fossil fuel assets should be stranded: level of development, historical responsibility, capacity, economy's carbon intensity, climate vulnerability, and governance structures.[228] While posturing the first three principles as essential in determining which assets to equitably strand, Caney considered the latter three as important but not crucial.[229] Carbon intensity, climate vulnerability, and governance structures are, also, missing from Muttitt and Kartha's principles. Developmental needs (often measured by dependence of a country on the fossil economy) and capacity are, however, emphasized in both sets of principles. This emphasis is an emerging theme in just transition and carbon budget literature. Muttitt and Kartha's Dependence

[223] Muttitt and Kartha, *supra* note 219 at 1028.
[224] *Ibid* at 1029 – 1030.
[225] *Ibid* at 1030.
[226] *Ibid* at 1033.
[227] Muttitt and Kartha, however, note concerning historical responsibility that although there are conceptual challenges, being able to distinguish between a country who restricts extraction and a free rider that continues regardless is a 'strong' argument for maintaining the historical responsibility notion. They conclude that "the complex questions around historic responsibility also deserve further research". *Ibid* at 1033, 1036.
[228] Simon Caney, "Climate Change, Equity, and Stranded Assets" (2013) OXFAM America Research Backgrounder 27.
[229] Caney argues that "the key considerations from a point of view of equity are (a) the level of development, (b) the historical record of extraction and benefits from past extraction, and (c) the availability of other resources. The three other considerations analyzed, while important in their own right, do not necessarily directly bear on the specific question of the equitable response to stranding fossil fuel assets". *Ibid* at 41.

– Capacity framework (see *figure 5*) is, for example, adopted in the 2020 Production Gap Report by international institutions, including the SEI, UNEP, IISD, and E3G.[230] While dependence pertains to how coupled a country's economy (export revenues, domestic energy supply, jobs) is to the production of fossil fuel, capacity relates to the ability to manage the social costs of the transition.[231] The World Bank has, similarly although using different terms, proposed a "structure of index of preparedness for climate response measure" which uses an exposure – resilience scheme.[232]

Figure 5 – Countries' Differing Roles in an Equitable Global Phaseout of Fossil Fuel Extraction[233]



In the World Bank scheme, exposure is synonymous with dependence, while resilience covers similar issues as capability. For ease of reference and considering that the international climate regime is more conversant with the dependence – capacity language, I have adopted this language (instead of exposure - resilience) in this analysis. While there are superficial differences in the classification of countries under the capacity - dependence and exposure – resilience frameworks (see *figures 6a and 6b*[234]), the key assumptions are largely the same.

[230] According to the SEI et al, how dependent a country is on fossil fuel production and its capacity to avert and manage disruptive impacts and absorb the costs of a transition are "overwhelmingly important" in determining how fossil fuel production should be wound down in line with Paris goals. See SEI et al, *supra* note 1 at 31.
[231] While highlighting the multidimensionality of the notion of capacity (including economic, technical, institutional and governance potential), SEI et al argue that they are all "correlated with a country's income" and that "income is a useful proxy for comparing various countries' potential to devote their capacities to a transition, and for indicating whether it is even possible without financial support". See *Ibid.*
[232] Peszko et al, *supra* note 43 at 79 – 95.
[233] Muttitt and Kartha, *supra* note 219 at 1035.
[234] See SEI et al, *supra* note 1 at 32; Peszko et al, *supra* note 43 at 81.

Figure 6a – Capacity – Dependence

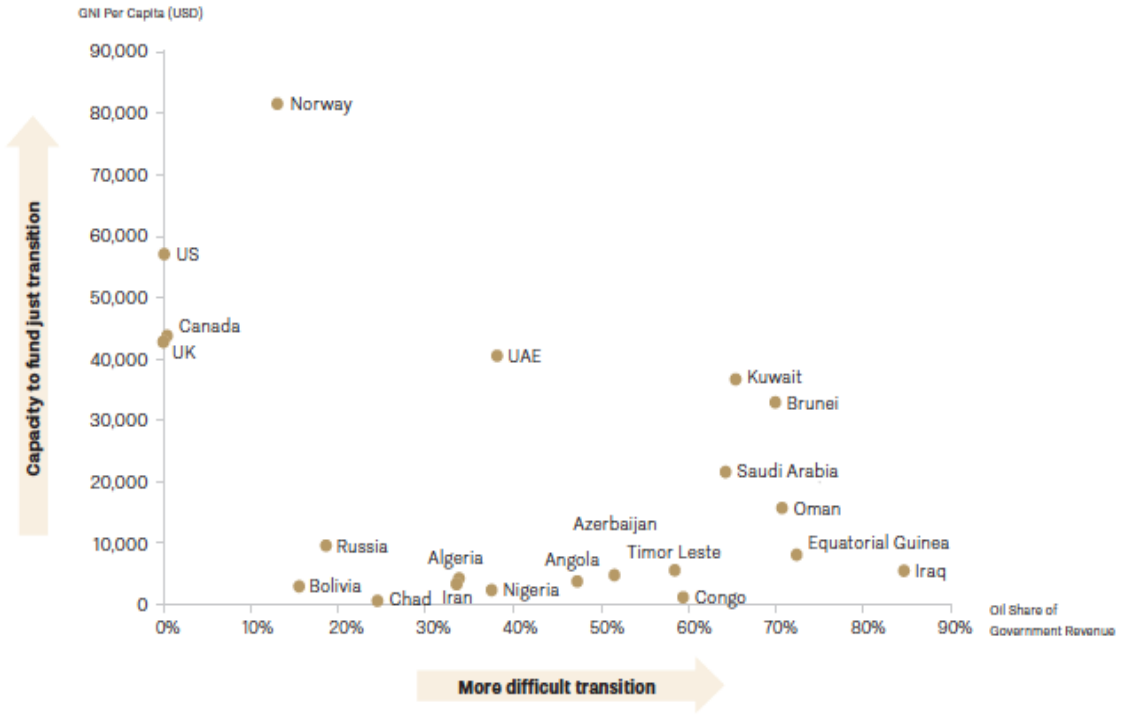
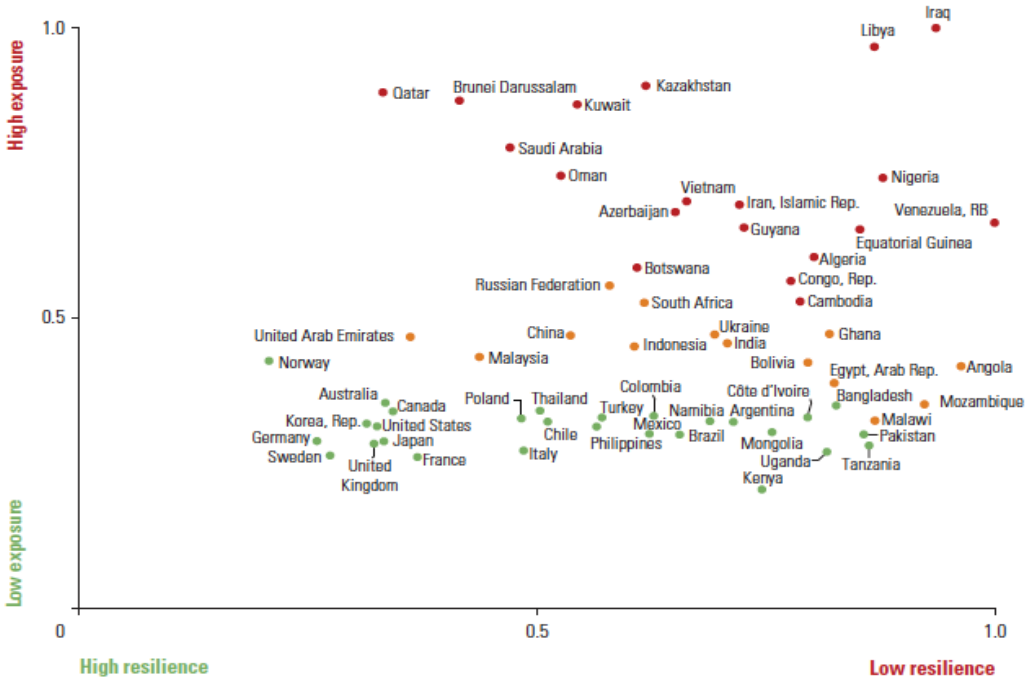


Figure 6b – Exposure - Resilience



It is important to note that all the frameworks considered, to varying degrees, recognize the need for all FFDEs to phase-out fossil fuel production. The difference is in the pace of the phase-out

and whether 'international support' will be needed. Countries with lower dependence and higher capacity are required to phase out rapidly without international support, while countries with higher dependence and lower capacity are expected to phase out most slowly with international support.[235] Again, all the frameworks agree that the hard divide between developing and developed countries is not helpful in answering the question of just distribution of the carbon budget amongst FFDEs. Hence, while Saudi Arabia deems itself a developing State and has been at the forefront of the response measures debate over the years, the above models (see for example *figure 5*) consider it undeserving of 'international support' considering its capacity. Saudi Arabia could phase out more slowly than countries with lower dependence and higher capacity, given the dependence of its economy on fossil fuel. A major problem with the dependence – capacity framework is that important terms are not defined. For example, it is unclear how to define the various degrees of 'phase-out pace' – rapid, moderate, slower, and slowest (see *table 4*). Again, there is no clarity as to what 'international support' entails. Helpfully, SEI et al describe international support as including changes to international institutions, technological partnerships, increased development assistance, support for migrant workers, collaborative carbon pricing mechanisms by fossil fuel exporters and importers, and debt for carbon swaps.[236] What is, however, unclear is who is expected to provide international support as the usual 'suspects' are now required to phase-out rapidly, which would arguably be at considerable cost. Ecuador's Yasuní-ITT initiative shows there is very minimal appetite for an international support structure for the incentivization of developing FFDEs to keep fossil fuel under the ground.[237] There is also the question of who should be receiving the 'international support'. The nature of the described supports by SEI et al is largely state-centric, has doubtful transformative value, and will possibly foster the corrupt elitism which has fuelled the resource curse in developing FFDEs. The point

[235] Similarly, the Lofoten Declaration makes the case that "it is the urgent responsibility and moral obligation of wealthy fossil fuel producers to lead in putting an end to fossil fuel development and to manage the decline of existing production … This task should be first addressed by countries, regions, and corporate actors who are best positioned in terms of wealth and capacity to undergo an ambitious just transition away from fossil fuel production". See *The Lofoten Declaration: Climate Leadership Requires a Managed Decline of Fossil Fuel Production,* online: <http://www.lofotendeclaration.org/#read>.

[236] SEI et al, *supra* note 1 at 41.

[237] The Yasuní-ITT initiative was proposed by Ecuador in 2007 to leave over one billion barrels of crude oil underground in one of the world's most diverse nature reserves in exchange for half the value of the stranded reserves - $3.6 Billion, which it invited countries (particularly developed countries) to contribute to. As at when the initiative was ended in 2013, it only raised $13 Million. For further analysis on the Yasuní-ITT initiative see, Benjamin Sovacool and Joseph Scarpaci, "Energy Justice and the Contested Petroleum Politics of Stranded Assets: Policy Insights from the Yasuní-ITT Initiative in Ecuador" (2016) 95 Energy Policy 158 – 171.

here is not that 'phase-out pace' and international support are not important but that they must be properly defined to achieve both effective and equitable sustainability transition. I will return to this in the next section.

As represented in *figures 5a and 5b*, the 'State' is the focus of the above frameworks. This focus informs the parameters deployed in defining which country is more dependent or exposed or has more capacity or resilience. In *figure 5a*, for example, capacity is informed by GNI (Gross National Income) per capita, while dependence is determined using 'oil share of government revenue'. Similarly, Peszko et al in *figure 5b* narrowly construe resilience as 'economic resilience' and exposure as asset based.[238] Using these metrics, Namibia is adjudged more resilient and less exposed than Algeria, and South Africa is assessed as less exposed and more resilient than the Islamic Republic of Iran (see *figure 5b*). Contrary to the macroeconomic bases for these assessments, Simon Caney adopts the Human Development Index (HDI) to operationalize the 'development needs' component of his equity and stranded assets criteria.[239] The HDI is underpinned by Amartya Sen's capability approach. According to Elizabeth Stanton, the HDI embodies and instrumentalizes key capabilities through "the inclusion of proxies for three important ends of development: access to health, education, and goods".[240]

Although the HDI has been critiqued for the insufficiency of data, inaptness of indicators, exclusion of key indicators (e.g., civil and political liberties, distribution of income, environmental impacts etc.) and arbitrary specification and formula for arriving at the index,[241] its shift in emphasis from means-based approaches as primarily employed in *figures 5a* and *5b* to end-based

---

[238] Peszko et al explain that a country can be exposed either because of its reliance on fossil fuel resources in the ground or its significant reliance on carbon intensive infrastructure. According to them, the indicators for determining exposure are reliance on fossil fuel-export revenues as percentage of GDP, future reliance on resource rent as percentage of current GNI, current and future carbon intensity of manufactured exports and built capital. They identify built, human and institutional assets; macroeconomic and financial flexibility, economic performance and complexity, business environment, and position on global supply curve as the 'dimensions of resilience'. See Peszko et al, *supra* note 43 at 83 – 84, 88.

[239] Caney, *supra* note 228 at 29.

[240] Elizabeth Stanton, "The Human Development Index: A History" (2007) 127 Political Economy Research Institute Working Paper Series, 3, 15.

[241] *Ibid* at 16 – 27. The HDI is however an evolving instrument which has overtime adapted in response to criticisms and new realities. more recently, attention has been turned to adapting the metrics to the needs of the Anthropocene, particularly in the light of climate change. A new dashboard on human development and the Anthropocene (Planetary Pressures-adjusted HDI (PHDI)) including – the status of human development (people/planet), material cycles (pressure/response), transforming our future (equity/innovation/stewardship), and energy systems (pressure/response). See Pedro Conceição, "Towards a new Generation of Human Development Metrics for the Anthropocene" in *Human Development Report 2020: The Next Frontier – Human Development and the Anthropocene* (New York: UNDP, 2020) 223 – 265.

indicators makes it a comparatively preferred tool here.[242] *Figure 5b* would have been ordered differently if HDI had been used. Using the 2019 HDI Ranking, Namibia and South Africa are less resilient than Algeria and the Islamic Republic of Iran, respectively.[243] However, as noted in the 2020 HDI Report, relying on composite indices, while a simple and useful political signalling device, can be misleading.[244] For one, the State-centric aggregate approach of the HDI risks overlooking constituent vulnerabilities and inequities. For example, while Iran could be adjudged as more resilient than South Africa, there are groups of people in Iran who could be more vulnerable. There is also the question of other capabilities not considered in the HDI, e.g., political participation and gender inequality,[245] on which bases one could argue that Iran is comparatively less resilient. Hence, while the HDI provides a different framework to the approach in arriving at *figures 5a* and *5b*, more is required to arrive at a more just approach.[246]

Another issue with the dependence – capability framework is its exclusion of vulnerable people outside the FFDE context. In response to whether vulnerability should be a factor in allocating the carbon budget and determining which asset to strand, Caney argues that "this is a matter for "adaptation" to climate change, and it is thus not clear why it should bear on a country's "mitigation" responsibilities".[247] The linkage between mitigation and adaptation (including loss and damage) is well established. Expressed simply, the degree to which climate change is mitigated determines how much adaptation would be needed; arguably, the former is a primary causal factor of the latter.[248] As already shown, emissions from the production and consumption of fossil fuel are the primary source of climate change, which inevitably causes or exacerbates the

[242] According to Amartya Sen: "The simple HDI never tried to represent all that we wanted to capture in the indicator system, but it had much more to say about the quality of life than GDP. It pointed to the possibility of thinking about more significant things regarding human life than just the market value of commodities bought and sold". See Amartya Sen, "Human Development and Mahbub ul Haq" in Conceição, *ibid* at xi.
[243] Namibia and South Africa are ranked 130th and 114th respectively compared to Algeria's 91st and Iran's 70th positions. See UNDP, "Human Development Index (HDI) Ranking (from the 2020 Human Development Report)" online: <http://hdr.undp.org/en/data>.
[244] Conceição, *supra* note 241 at 228.
[245] The UNDP has, however, designed other subject specific indexes like the Gender Social Norms Index (http://hdr.undp.org/en/gsni) and the Global Multidimensional Poverty Index (http://hdr.undp.org/en/2020-MPI) to cater to capabilities not covered under the HDI.
[246] For example, Pye et al argue that "the case for an HDI-based equitable distribution may be overstated and could disadvantage LMHD (low-medium human development) countries that are export dependent". See Steve Pye et al, "An Equitable Redistribution of Unburnable Carbon" (2020) 11:3968 Nature Communications 1, 3.
[247] Caney, *supra* note 230 at 38.
[248] Parties to the Paris Agreement "recognize that the current need for adaptation is significant and that greater levels of mitigation can reduce the need for adaptation efforts …" See Paris Agreement, art 7(4).

vulnerability of communities and people. It is, therefore, counter-intuitive to argue in one breath in favour of historical responsibility, while failing to account for the effects of ongoing emissions. The validity of the inequity of past emissions does not make irrelevant the potential inequity which might arise by reason of current and future emissions. The Paris Agreement has now gone beyond the hard distinction between mitigation and adaptation by recognizing the co-benefits of both mitigation and adaptation.[249] The relevant question, therefore, is how climate vulnerability should be accounted for in the allocation of the carbon budget and whether it should be given the same attention in FFDE and non-FFDE countries in the context of the carbon budget and the stranding of fossil resources. The global just transition approach below also considers this issue.

Another category of literature has engaged the question of the management of the carbon budget vis-à-vis fossil fuel supply from an international cooperation perspective. Peszko et al, for example, argue that, unlike the noncooperative scenarios where countries take unilateral actions, FFDEs can hedge low carbon transition risks, and avoid abrupt shocks to income, consumption and asset values by adopting strategies for international cooperation.[250] They propose cooperative wellhead carbon taxes under the cooperative measures encouraged by article 6(1) of the Paris Agreement between fossil fuel exporters and importers as a preferred mode of cooperation.[251] Verkuijl et al have also proposed that FFDEs can communicate plans to phase-out fossil fuel supply through their NDCs, which would allow for comparison on the bases of fairness and ambitiousness.[252] The effectiveness of the phase-down plans could be tracked during the global stock take, and support to developing countries can also be monitored through the transparency structure of the Paris Agreement.[253] Including a phase-down of fossil fuels in long-term low greenhouse gas emission development under article 4(19), using the response measures track under article 4(15), and designing an extraction-based emissions accounting framework under article 4(13) of the Paris Agreement have also been suggested as ways global fossil fuel supply can be managed under the UNFCCC regime.[254]

---

[249] *Ibid* at art 4(7).
[250] Peszko et al, *supra* note 43 at 114.
[251] *Ibid* at 114 – 115.
[252] Cleo Verkuijl et al, "Aligning Fossil Fuel Production with the Paris Agreement: insights for the Talanoa Dialogue" (2018) Stockholm Environment Institute <https://www.sei.org/wp-content/uploads/2018/03/verkuijl-fossil-fuels-paris-pb.pdf> 4. See also Georgia Piggot et al, "Swimming Upstream: Addressing Fossil Fuel Supply under the UNFCCC" (2018) 18:9 Climate Policy 1189 at 1191 - 1192.
[253] Verkuijl et al, *ibid* at 5.
[254] See Piggot et al, *supra* note 252 at 1193 – 1194.

Others have, however, proposed distinct instruments other than existing international climate agreements. Asheim et al, for example, argued for a supply-side climate treaty, while Newell and Simms similarly made a case for a Fossil Fuel Non-proliferation Treaty.[255] The need for a safety net other than the Paris Agreement and the potential for easier monitoring and enforcement as there are fewer major fossil fuel producers and suppliers are some of the arguments for a separate supply side instrument.[256] Proposals on a supply-side cooperative approach, however, rarely deal head-on with the issues of justice and the carbon budget. Newell and Simms are, however, an exception. Drawing from the nuclear non-proliferation treaty analogy, they propose incorporating burden sharing principles and sequencing based on criteria, including costs of action being borne by parties with the ability to pay, the highest emitters acting first, and cumulative emissions being assessed to account for historical responsibility and the use of fossil fuels to date.[257] They also propose the establishment of a Global Transition Fund which focuses on financing low carbon energy needs instead of compensating for projected lost revenues.[258] An energy focused fund, however, neglects the fact that while FFDEs (particularly developing FFDEs) rely on fossil fuels to meet energy needs, more importantly, public spending and future developmental plans are often anchored on returns from exploration and exportation. And while I agree that the possibility of a broadly applied compensation scheme for unextracted fossil fuels as expected in the Yasuní-ITT case is unlikely to take-off,[259] the need to attend to the developmental needs of FFDEs, particularly the needs of the most vulnerable in those countries, remains.

In this section, I have reviewed proposals on the equitable management and/or distribution of the carbon budget vis-à-vis fossil fuel production and supply. To varying degrees, these proposals have their strengths and flaws. Some common trends have, however, emerged: (1) A global

[255] See G.B. Asheim et al, "The Case for a Supply-side Climate Treaty" (2019) 365:6451 Science 325 – 327; Peter Newell and Andrew Simms, "Towards a Fossil Fuel Non-Proliferation Treaty" (2020) 20:8 Climate Policy 1043 – 1054.
[256] Asheim et al, *ibid* at 326, 327.
[257] Newell and Simms, *supra* note 255 at 1047 - 1049
[258] *Ibid* at 1049 – 1050.
[259] Showing the difficulty of defending a compensation for non-extraction argument, Armstrong makes three points: (1) Compensation should be informed by 'encouraged' legitimate expectation and the legitimacy of certain extraction claims is doubtful; (2) Given that expectations must be compatible with justice to have moral weight, the compatibility of fossil fuel extraction with justice is questionable given its adverse impact on ecology and present and future generations. FFDEs should not be "compensated for desisting from doing the impermissible; (3) There are no clear benchmarks for determining compensation (what should FFDEs be compensated for - stranded volumes, capital, or value; known (proven), probable or possible reserves?). See Chris Armstrong, "Decarbonization and World Poverty: A Just Transition for Fossil Fuel Exporting Countries" (2020) 68:3 Political Studies 671 at 674 – 678.

approach to fossil fuel supply is needed for an equitable management of a 1.5°C consistent carbon budget; (2) the varying capacities and vulnerabilities of FFDEs must be taken into consideration in allocating responsibilities and privileges within such global framework; (3) historical responsibility and traditional developing – developed countries differentiation should be construed fluidly and as nuanced notions within such framework; and (4) an emphasis on compensation for non-extraction undermines the otherwise defensible case for the just management of the carbon budget. I consolidate and advance these points in section 3.4, taking the concepts of differentiation and equity under the international climate regime (as represented by the UNFCCC and the Paris Agreement) as the starting points of my analysis. Importantly, I address issues generally not considered in the existing frameworks including non-FFDE vulnerabilities, a capability approach centric global just transition framework, and how the supply-side mitigation approaches considered in section 3.2 could be a more useful set of tools for allocating responsibilities instead of the vague timeframe classification (rapid, moderate, slower, slowest) proposed in *figure 4*.

3.4 Repurposing Differentiation and Equity for a Global Just Transition

The international climate regime is undergirded by the principle of common but differentiated responsibilities and respective capabilities (in the light of different national circumstances) (CBDR).[260] This principle informs the differentiation of States' responsibilities and privileges in the global effort to address climate change. While legitimate debates can be had on the justifications for the CBDR principle (history, capacity, and/or national circumstances) and although it has evolved, differentiation remains one of the most consequential principles in major international climate instruments, particularly, the 1992 UNFCCC and the 2015 Paris Agreement.[261] The earlier iteration of the CBDR entailed what others have referred to as a

[260] Rajamani notes that the CBDR Principle has "from the inception of the climate dialogue, underpinned the efforts of the international community to address climate change. At the Second World Climate Conference in 1990, countries recognized that the "principle of equity and common but differentiated responsibility of countries should be the basis of any global response to climate change."" See Lavanya Rajamani, "Differentiation in the Emerging Climate Regime" (2013) 14 Theoretical Inquiries in Law 151 at 153. Elsewhere, Winkler and Rajamani note that CBDR is arguably "the overarching principle guiding the future development of the (climate) regime". See Harald Winkler and Lavanya Rajamani, "CBDR&RC in a Regime Applicable to all" (2014) 14:1 Climate Policy 102 at 107. The phrase 'in the light of national circumstances' has been put in parenthesis as it was only included in the Paris Agreement variant of the CBDR principle. Prior to the years leading to the Paris Agreement, however, the CBDR was primarily understood as entailing a 'common' objective and differentiated responsibilities and capabilities.

[261] Both the 1992 UNFCCC and the 2015 Paris Agreement emphasize CBDR as one of their central guiding principles. The UNFCCC requires that Parties protect the climate system for the benefit of present and future generations of humankind, "on the basis of equity and in accordance with their common but differentiated responsibilities and

bifurcation between Parties in the 1992 UNFCCC and 1997 Kyoto Protocol.[262] While the description 'binary' could be correct when describing the differentiated mitigation responsibilities under the UNFCCC, it is less accurate if what is meant is the entire differentiation regime. Under the UNFCCC, while some obligations are meant for "all Parties", other obligations are specifically for Annex I and Annex II countries.[263] Annex I countries had a binding obligation to adopt domestic mitigation policies and measures to "demonstrate that developed countries are taking the lead in modifying longer-terms in anthropogenic emissions".[264] It is worth noting that the make-up of Annex I is technically not restricted to 'developed' countries under the UNFCCC; it included both "developed country Parties and other Parties included in Annex I".[265] The phrase "other Parties included in Annex I" indicates that the Annex I list is not final or rigid, and could be amended through the removal or inclusion of other Parties (not just country Parties). Indeed, the initial list was amended pursuant to Decision 4/CP.3 adopted in 1997 to include emerging economies (Croatia, Czech Republic, Liechtenstein, Monaco, Slovakia, and Slovenia).[266] Similarly, Annex II Parties include already listed "developed country Parties and other developed Parties included".[267] Annex II Parties have the obligation of providing support (financial resources, technology transfer etc.) for developing country Parties to meet their general and reporting obligations under the Convention, while "developing country Parties that are particularly vulnerable to the adverse effects of climate change" are to be provided adaptation support.[268] Again, the Annex II list is not a permanent or immutable list; countries can be added or removed as Turkey was in 2002.

The UNFCCC, therefore, contains different layers of differentiation which can be generally categorized into mitigation based and support-based differentiation. There was a beyond-binary

---

respective capabilities." See UNFCCC, art 3(1). Similarly, the Paris Agreement requires that the "Agreement will be implemented to reflect equity and … [CBDR] in the light of different national circumstances". See Paris Agreement, art 2(2).

[262] See Winkler and Rajamani, *supra* note 260 at 107 – 108; Christina Voigt and Felipe Ferreira, "'Dynamic Differentiation': The Principles of CBDR-RC, Progression and Highest Possible Ambition in the Paris Agreement" (2016) 5:2 Transnational Environmental Law 283 at 290 – 291.

[263] The UNFCCC lists 41 Parties (developed countries and economies in transition) (primarily former USSR countries) under Annex I, and 24 Parties (primarily developed countries) under Annex II.

[264] UNFCCC, art 4(2)(a).

[265] *Ibid* at art 4(2).

[266] *Decision 4/CP.3, Amendments to the List in Annex I to the Convention under Article 4.2(f) of the Convention*, FCCC/CP/1997/Add/1.

[267] UNFCCC, art 4(3).

[268] *Ibid* at art 4(4).

differentiation amongst member Parties. Neither developed nor developing Parties were monolithic assemblages. While countries with advanced and emerging economies had emission limitation obligations, only the more advanced had the responsibility to provide support. Similarly, while developing countries are to be supported by developed Parties to meet their general and reporting obligations, the most vulnerable are to be given support to meet the costs of adaptation. In this sense, the CBDR notion has always been nuanced. The Kyoto Protocol, however, reinforced the seeming rigid dichotomy between developed – developing Parties by prescribing quantified emission limitation and reduction commitments (QELRC) for Annex I parties.[269] But even under the Kyoto Protocol, responsibilities are differentiated. For example, economies in transition are allowed to use a different base year from 1990, which the more developed Parties are required to use, for the implementation of their QELRC.[270]

Although the Paris Agreement has now transitioned from the annex-based operationalization of the CBDR principle, the evolution of the principle appears to be less radical than it has been portrayed. The requirement that "all Parties" to the Agreement "prepare, communicate and maintain successive nationally determined contributions" is arguably the most consequential distinction between the UNFCCC/Kyoto Protocol and the Paris Agreement.[271] While applicable to all Parties, normative expectations like NDCs representing "progression", "highest possible ambition", and CBDR (differentiated responsibilities, respective capabilities, and different national circumstances) are instruments of self-differentiation among the Parties.[272] Developed countries are expected to "continue taking the lead by undertaking economy-wide absolute emission reduction targets", while developing countries are only admonished to "continue enhancing their mitigation efforts, and are encouraged to move over time towards economy-wide emission reduction".[273] Further differentiating, while all Parties are expected to reach global peaking of GHG emissions "as soon as possible", it will take longer for developing country Parties to peak.[274] Although described as novel given the seeming equalization in the obligation of conduct required of both developed and developing States, the requirement that "all parties … formulate,

[269] Kyoto Protocol, art 2(1).
[270] *Ibid* at art 3(5).
[271] Paris Agreement, art 3.
[272] Lavanya Rajamani, "Ambition and Differentiation in the 2015 Paris Agreement: Interpretative Possibilities and Underlying Politics" (2016) 65:2 Intl and Comparative Law Quarterly 493 at 510 – 511.
[273] Paris Agreement, art 4(4).
[274] *Ibid* at art 4(1).

implement, publish and regularly update national … programmes containing measures to mitigate climate change" was part of the 1992 UNFCCC.[275] And while developed countries under Kyoto had quantified mitigation target obligations, the mitigation 'obligation' of developing countries under the UNFCCC was brought to life by the expectation that developing States will take Nationally Appropriate Mitigation Actions (NAMA) under the 2007 Bali Action Plan.[276] Like the UNFCCC, the Paris Agreement did not put all 'developing countries' in one basket, special mention was made of the unique circumstances and needs of more vulnerable developing States like the least developed countries (LDCs) and small island developing states (SIDS).[277] A less known type of differentiation in the UNFCCC and Paris Agreement is the distinction between economies which are vulnerable to or most affected by the impacts of response measures (of which FFDEs are a key part) and other countries.[278] The 'affected economies' here include both developed and developing country Parties, although more particular attention is expected to be given to developing country Parties.[279]

I have briefly compared the differentiation regime under the two extant international climate-focused treaties to show some enduring key features of differentiation which States, advertently or inadvertently, have affirmed regardless the seemingly different cloaks in which differentiation has been dressed. Differentiation in the climate regime has always been a multiplex rather than a binary concept. The developed – developing States dichotomy has been more illusory than actual. The descriptors 'developed' and 'developing' are not meant to be rigid delineations under any of the instruments but rather a dynamic framework to give effect to the notion of equity. The UNFCCC and Paris Agreement, recognizing the multiplex nature of 'developing' and 'developed' States, employed 'vulnerability' as an intra-differentiation concept.[280] Arguably, therefore, 'vulnerability'

[275] UNFCCC, art 4(1)(b).
[276] *Decision 1/CP.13, Bali Action Plan,* FCCC/CP/2007/6/Add.1, para. 1(b)(ii).
[277] For example, art 4(6) of the Paris Agreement allows LDCs and SIDs to "prepare and communicate strategies, plans and actions for low greenhouse gas emissions development reflecting their special circumstances". See also Paris Agreement, art 9(4)(9), 11(1).
[278] UNFCCC, art 4(10); Paris Agreement, art 4(15). The UNFCCC further noted this special consideration of vulnerable economies "applies notably to Parties with economies that are highly dependent on income generated from the production, processing and export … of fossil fuels …". No such explicit mention of FFDEs was, however, made in the Paris agreement
[279] *Ibid.*
[280] Taking cognizance of the "specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change …" is one of the recognized principles (alongside CBDR, precautionary principle, sustainable development, and supportive and open international economic

is one of the fundamentals of differentiation under the international climate regime alongside the more specifically mentioned components – historical responsibility, capability, and national circumstances. In fact, the need to take cognizance of "particularly vulnerable" developing countries appears almost twice as much as the mention of the CBDR principle in the body of the Paris Agreement.[281]

Taking the argument further, it is through this notion of vulnerability that the broader 'equity' objective of the international climate regime can be met. Hence, while CBDR focuses primarily on inter-State equity (e.g., developed and developing States), vulnerability turns the searchlight of equity beyond State boundaries and mandates the consideration of circumstances of persons that would otherwise be neglected when CBDR is the primary operationalizing tool of equity-focused differentiation. This argument has ample support in the Paris Agreement which acknowledges the need to consider "human rights, the right to health, the rights of Indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations … as well as gender equality, empowerment of women and intergenerational equity" when taking action to address climate change.[282] Adaptation actions are also expected to take into consideration vulnerable groups, communities and ecosystems.[283] This unique intra-state potential of 'vulnerability' makes it not just a stand-alone consideration, but a factor that is relevant when other differentiation tools are used. For example, while historical responsibility could distinguish Nigeria and Canada, with Canada deemed more historically responsible for anthropogenic emissions, it is further necessary to conduct a vulnerability analysis in both Nigeria and Canada to determine persons most vulnerable both to the effect of climate change by reason of emissions from fossil fuel combustion and the socio-economic impacts of the transition.

From the foregoing, the notions of historical responsibility, capability, national circumstances, and vulnerability are established principles of differentiation under the international climate regime. There is, therefore, an arguable case that these principles are better positioned to serve as the guiding principles of the equitable management of a 1.5ºC consistent carbon budget. In other

system) to guide the implementation of the UNFCCC. See UNFCCC, art 3(2). This provision was restated in the preamble to the Paris Agreement and was further reiterated under different provisions in the body of the agreement. See Paris Agreement, art 6(6), 7(2)(6), 9(4).

[281] In the substantive provisions of the Paris Agreement, the phrase "particularly vulnerable" (developing countries) appear 5 times, while the CBDR only featured 3 times.

[282] Paris Agreement, *preamble.*

[283] *Ibid* at art 7(5).

words, the current climate regime provides, at least, a minimum framework for the equitable management of the global carbon budget, without the need to embark on the potentially divisive negotiation of a separate instrument or international institution as contained in the proposals considered above. Below, I show what the adoption of the principles of differentiation means for the just management of the carbon budget vis-à-vis the phasing down of global fossil fuel exploration and production. These principles are reflective of current positions enshrined in international instruments which could aid their acceptance by state Parties, and they have the potential to ensure a global transition which is both just and effective in meeting global climate goals.

i. Common (not Equal) Responsibility

As shown above, every country Party to the international climate regime has had varying mitigation obligations under the international climate regime since the 1992 UNFCCC. The obligation that all Parties should contribute to global mitigation efforts is even more evident under the Paris Agreement with the requirement that all Parties submit NDCs reflecting their highest possible ambition. Arguably, given the role of fossil fuels as the highest sources of climate change inducing emissions, phasing out fossil fuel exploration and production constitutes part of the "highest possible ambition" which should be reflected in FFDEs' NDCs.[284] In their analysis of 57 NDCs and eight long-term low GHG emissions development strategies (LEDs) submitted by FFDEs, Verkuijl et al find that fossil fuel production was mentioned, in different contexts, in 38 NDCs and six LEDs.[285] The Paris Agreement further expects countries' emissions to peak as soon as possible with the recognition that it will take longer for developing countries to peak.[286] However, upon peaking, countries are to undertake rapid reductions to achieve net zero emissions in the second half of the century (now commonly pegged at 2050).[287] It is worth noting that while developing countries are allowed to peak at a slower time rate, the expectations of rapid post-peaking emission reductions and achieving net zero emissions apply to all countries. While the net

[284] Verkuiji et al argue that to meet the goals of the Paris Agreement, a rapid decline in global fossil fuel production and related investment is required and given their status as "international documents", NDCs and LEDS have "significant potential to be used by countries to communicate plans to phase out or restrict fossil fuel production". See Verkuijl et al, *supra* note 84 at 17.
[285] 21 of the NDCs contain reference to interventions to reduce production-related emissions, 6 contain reference to just transition and economic diversification, while 2 (India and Nigeria) refer to policy measures to manage a wind-down of fossil fuel production. *Ibid* at 11 – 14.
[286] Paris Agreement, art 3.
[287] *Ibid.*

zero goal could be read to be a collective objective rather than an expected landmark for individual States, countries have, in practice, made individual net zero commitments.[288] This includes developing (e.g., South Africa and Angola) and developed (e.g., United Kingdom, Norway, Canada) FFDEs. Here, I equate FFDEs' emission reduction obligation to an obligation to reduce fossil fuel production. I argue that both the targets and timeline (peak emissions - as soon as possible; reduce emissions - rapidly thereafter; net neutrality - second half of the century) not only demand a wind-down of the exploration and production of fossil fuel in FFDEs but also provide the sequence for doing this. However, these targets are expected to be given effect to "on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty".[289]

The above argument is consistent with Muttitt and Kartha's conclusion that considering the limited remaining carbon budgets and while there might be differences as to the speed of phase out, all countries must begin a managed phase out of fossil fuel extraction.[290] As shown above, this position is also consistent with the provisions of the Paris Agreement. Instead of the vague graduation of phase out pace proposed by Muttitt and Kartha, Article 4(1) of the Paris Agreement provides a less ambiguous (although not entirely unambiguous) timeframe. Emissions and, invariably, fossil fuel production in developed FFDEs must peak "as soon as possible" and reduce rapidly thereafter. The qualifier "as soon as possible" is problematic, except that most developed countries have already reached peak emissions.[291] If one were to proceed with the assumption that

[288] As of February 2, 2021, 127 countries have some form of net zero commitments ranging from countries like Suriname and Bhutan which have already achieved net zero to China that fixed 2060 as its target year. With the exception of Uruguay (2030), Finland (2035), Austria and Iceland (2040), Sweden (2045), and China (2060), 2050 was used by States with net zero commitments as their target year. Of the existing commitments, 6 countries have codified their commitment in law, 5 countries and the European Union has proposed legislations, while others either have their commitments in policy document (14) or currently being considered. See Energy & Climate Intelligence Unit, "Net Zero Emissions Race: 2020 Scorecard" online: <https://eciu.net/netzerotracker>.

[289] Paris Agreement, art 4(1).

[290] Muttitt and Kartha, *supra* note 219 at 1035 – 1036.

[291] Levin and Rich find that as of 2010, 49 countries have reached peak emissions and that the number would increase to 53 in 2020, and 57 in 2030, covering 60% of global emissions. They note that as of 2010, 39 of the 43 Annex 1 countries (developed countries) had peaked, with the number increasing to 42 in 2020. See Kelly Levin and David Rich, "Turning Points: Trends in Countries' Reaching Peak Greenhouse Gas Emissions Over Time" (2017) World Resources Institute Working Paper, 15. However, it might be less defensible that emissions in developed FFDEs have peaked if scope 3 emissions (emissions from the downstream use of fossil fuel) from fossil fuel extracted in these countries were to be included. Fossil fuel companies (and by extension FFDEs) have traditionally focused on reporting on scopes 1 (direct emissions from owned or controlled sources) and 2 (indirect emissions from the generation of purchased energy), leaving out scope 3 emissions. Scope 3 emissions, however, represent 70 – 90% of the lifecycle emissions from oil and 60 – 85% of emissions from natural gas. More recently, however, fossil fuel companies are beginning to account for scope 3 emissions. See generally Simon Dietz et al, "Carbon Performance of European Integrated Oil and Gas Companies: Briefing Paper", *Transition Pathway Initiative* (May 2020) online: <https://www.transitionpathwayinitiative.org/publications/58.pdf?type=Publication>.

most developed FFDEs have peaked, then the argument can be made that they have the immediate responsibility to proceed to the "rapid reduction" phase. Again, it is difficult to define what qualifies as 'rapid reduction' here. The Paris Agreement, however, states that such rapid reduction must be "in accordance with best available science".[292] There are different ways to interpret this. One is that rapid reduction must be informed by the state of science on the state of the global climate; another is that rapid reduction should be informed by the state of technological development. On the science on the state of the climate, the IPCC has found that to reduce transition challenges and identified trade-offs (to stand a narrow chance of meeting the 1.5°C goal), global emissions must peak before 2030 and "marked emissions reduction compared to today" (45% decline in emissions by 2030 relative to 2010 levels) must be achieved by 2030.[293] There are also technologies and policy pathways available to facilitate such rapid emission reduction. While it is unlikely that 'developing' FFDEs would commit to a 45% decline by 2030 (relative to 2010) since such 'reduction' is dependent on when they peak, they nevertheless have a responsibility to reduce emissions, at the minimum, relative to a business-as-usual scenario.[294]

Table 7 contains the policy implications of the arguments above for the distribution of the carbon budget. The table suggests that given the recognition of the obligation of every country to contribute to the global mitigation effort under the Paris Agreement, the relevant question is perhaps not "whose carbon is burnable?" but rather what should be the contribution of every FFDE to the phasing-out of the global fossil industry?

Table 7 - FFDEs and Production Reduction Targets

FFDEs	**Policy Implications of Production Reduction Targets and Timeline**
Developed FFDEs	I. Immediate permanent moratorium should be put on new conventional and non-conventional fossil fuel exploration and/or production.

[292] Paris Agreement, Art 4(1).
[293] Valerie Masson-Delmotte et al, *supra* note 211 at 95.
[294] Distinguishing between the expectation that developed countries undertake economy-wide absolute emission reduction targets (EAERTs) while developing states are to enhance mitigation efforts and move over time towards economy wide emission reduction or limitation targets (EERLTs), Winkler stated that the key difference is the reference to "absolute emissions" in the case of developed countries. This is understood to mean that developed countries are to reduce emissions relative to an historical base year (e.g., 2010). Developing states are only expected to reduce or limit emissions (e.g., relative to what it could have been in a future year if no mitigation actions were taken (business as usual)). See Harald Winkler, "Mitigation (Article 4)" in Daniel Klein et al eds, *The Paris Agreement on Climate Change: Analysis and Commentary* (Oxford: Oxford University Press, 2017) 141 at 151.

	II. Existing production should be at least 45% lower than 2010 production level by 2030, with a complete phase out of upstream operation in 2050. III. Financial institutions should divest from existing projects and not provide additional support for any new project. IV. Fossil fuel subsidy reform should be robust including both pre- and post-tax subsidy regimes including ensuring that cost of fossil fuel from existing projects reflect the social cost of carbon.
Developing FFDEs (and Emerging Economies)	I. Immediate permanent moratorium should be put on new non-conventional fossil fuel exploration and/or production. II. Existing production should be lower than business as usual production projection and plan for 2030, with a net zero emissions goal by 2050. III. Financial institutions could provide financial support subject to (I) and (II) and depending on the capability of the developing FFDEs and the extent to which such investments would impact positively on the most vulnerable. IV. Supply-side fossil fuel subsidy reform is essential, particularly pre-tax subsidy reform. V. Economy should be diversified by substituting fossil fuel dependency with other low carbon sectors. VI. Deploy technologies like carbon capture and sequestration to reduce emissions from ongoing operation and achieve net zero by 2050.
Least Developed FFDEs	I. The non-exploration of unexplored reserves by least developed FFDEs should be incentivized. II. For those already producing, immediate permanent moratorium should be put on new non-conventional fossil fuel exploration and/or production. III. Further to II, financial institutions should provide financial support and government could provide subsidies to support net zero exploration by 2050. IV. Economy should be diversified by substituting fossil fuel dependency with other low carbon sectors. V. Support would be dependent on the extent to which fossil fuel exploration or the incentivization of non-exploration enhances wellbeing.

Consistent with the Paris Agreement and IPCC's projection, while developed FFDEs should aim for complete phase-out of their upstream fossil fuel industry by 2050, both developing and least

developed FFDEs are expected to reach net zero by the same year. Here, I take the net-zero emissions expectation in the Paris Agreement as a minimum benchmark which all parties must meet but developed FFDEs should strive to surpass. Further, while developed FFDEs must put a permanent ban on new conventional or non-conventional fossil fuel projects immediately, both developing and least developed FFDEs are required to also declare an immediate permanent ban on new unconventional fossil fuel. In this case, Russia is required to ban arctic exploration, while African countries should leave their shale oil and gas under the ground. Also consistent with the Paris Agreement's expectation that the peaking, rapid reduction, and net zero emission goals should be pursued based on equity and in the context of sustainable development and efforts to eradicate poverty, only the least developed FFDEs with unexplored reserves should be incentivized not to explore such reserves. While this bears a resemblance to Ecuador's Yasuní-ITT initiative, it addresses the issue of scalability and the potential that acceding to such claim will potentially open a flood gate of claims. I will come back to this and other possible objections in section 3.5. The proposals in table 7 are not exhaustive and whether they will be sufficient to help keep the globe below 1.5^{o}C is a question deserving of its own separate inquiry. Table 7, however, shows the potential of the current Paris Agreement to assist FFDEs to construct an integrated yet differentiated framework for determining how the global carbon budget could be, equitably and potentially effectively, managed. Importantly, it is potentially more politically acceptable to both developed and developing countries as it draws from current understanding in the international climate regime and apportions roles to all FFDEs regardless of developmental phase while recognizing the differences which exist between them. The other principles considered below provide further justification and reinforcement for proposals contained in table 7.

ii. Historical responsibility

Although the Paris Agreement, unlike the UNFCCC,[295] makes no explicit reference to the historical and current GHG emissions of developed States vis-à-vis global warming, this

[295] In its preamble, the UNFCCC notes that "the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs …". Similarly, the Cancun Agreements note that due to the fact that "the largest share of historical global emissions of GHG originated in developed countries, and that owing to this historical responsibility, developed country Parties must take the lead in combatting climate change and the adverse effects thereof". See *Decision 1/CP.16, The Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention – Enhanced Action on Mitigation*, FCCC/CP/2010/7/Add.1, 8.

recognition lives on in the incorporation of the CBDR principle in the Paris Agreement. Winkler and Rajamani argue that 'responsibility' in the CBDR principle relates to both historical and future emissions.[296] While it is arguable that the absence of explicit reference to historical responsibility is a pivot from previous instruments, a cursory review of developing States' NDCs suggest that they still view the principle as an essential part of the international climate regime.[297] For example, in its second NDC submitted in 2020, Tonga argues that the need for it to invest large portions of its public finance to achieve its climate resilience objectives "is a consequence of the emissions of other large countries over many generations as they developed and became wealthy".[298] Stripped down to basics, the continued relevance of the notion of historical responsibility becomes less contentious. Simply put, it refers to the climate change impacts of cumulative emissions over time, that the sources of these emissions are more concentrated in a few countries, and that other countries with lesser emission footprints bear the brunt of these emissions the most. Hence, countries with historically higher emissions have the obligation to, in Henry Shue's words, "clean up their own mess" and be accountable for the consequences of industrialization that relied on fossil fuels.[299]

Except for the politically charged environment of international climate negotiation, historical responsibility is not a radical concept. Its reasoning is found in the polluter pays principle which is widely accepted in domestic environmental law instruments; and the prohibition of transboundary harm rule which is recognized as a norm of customary international law.[300] As

---

[296] Winkler and Rajamani, *supra* note 260 at 105.

[297] For example, China, whose horse trading with the United States of America was instrumental to the adoption of the Paris Agreement, describes its understanding of the responsibilities of developed States by reason of their historical responsibility thus: "Developed countries shall, in accordance with their historical responsibilities, undertake ambitious economy wide absolute quantified emissions reduction targets by 2030". See People's Republic of China, "Enhanced Actions on Climate Change: China's Intended Nationally Determined Contributions", online: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/China%20First/China%27s%20First%20NDC%20Submission.pdf>. See also Brazil, "Brazil's Nationally Determined Contribution", online: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Brazil%20First/Brazil%20First%20NDC%20(Updated%20submission).pdf>; India, "India's Intended Nationally Determined Contribution", online: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/India%20First/INDIA%20INDC%20TO%20UNFCCC.pdf>.

[298] Kingdom of Tonga, "Tonga's Second Nationally Determined Contribution", (2020) online: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Tonga%20Second/Tonga's%20Second%20NDC.pdf>.

[299] Henry Shue, "Historical Responsibility" (4 June 2009) SBSTA Technical Briefing, 1.

[300] In a dissenting decision, Justice Weeramantry of the International Court of Justice, for example, held that "principles of environmental law, (including) the 'polluter pays principle … are part of customary international law. They are part of the *sine qua non* for human survival'". See *Legality of the Threat or Use of Nuclear Weapons*,

concluded by the Trail Smelter Arbitral Tribunal, "no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case of serious consequence and the injury is established by clear and convincing evidence".[301] Of course, unlike the *Trail Smelter Decision* where the damage in the United States could easily be traced to the sulphur emitted through operations of a Canadian smelting company, anthropogenic emissions are more dispersed and their impacts are often a cumulation of emissions from various sources and countries thereby making attribution more difficult. This does not mean that injury cannot be established, it only means that it is more difficult to directly connect injury to specific emission sources. With the advancement in attribution science, however, connecting climate injury to sources of emission is becoming more feasible.[302] Arguably, however, the issue of attribution is of lesser relevance in the context of the just management and/or distribution of the carbon budget. This is simply a matter of certain countries having appropriated more than their fair share of the global carbon budget over time, and therefore having a lesser claim to the remainder. The reason for this lesser claim is not necessarily that previous over-appropriation has caused harm, although it has, but that fairness demands that other countries have a first-line charge on the remainder.

The above argument touches on the subject of intra-generational equity which many developing countries emphasize in their case for the 'right to emit'. This, however, raises several issues, two of which I emphasize here. First is the often-unrecognized inequality among developing State parties laying claim to the remaining carbon budget. Second, the real possibility of intra-generational equity becoming a cause of inter-generational equity which could be perhaps worse than the inequity currently complained about. As shown above, Saudi Arabia first overtook the United States as the top producer of oil and gas in 1977, while China overtook the United States as the top producer of coal in 1989. Saudi Arabia and China have, therefore, been some of the

Advisory Opinion, (1996) ICJ 226 at 502 – 504. The OECD also state that "the notion that countries must ensure that activities within their jurisdiction or control do not damage the environment of other countries through "transboundary spillover effects" is a customary principle of international environmental law". See OECD, *Environmental Principles and Concepts* (Paris: OECD, 1995) 9.

[301] *Trail Smelter Arbitration (United States v. Canada)* (1941) 3 UN Rep Intl Arb Awards 1905 at 1965.

[302] Using the 2013 – 2014 Argentinian heat wave said to have been made 400% more likely by anthropogenic emissions as case study, Otto et al find that the EU-28 emissions made the heatwave 19 – 60% more likely, while the US made it more likely by 28% - 34% depending on the methodology adopted (distribution or gradient methods), and by 100%, assuming that US were the first emitters. See Friederike Otto et al, "Assigning Historic Responsibility for Extreme Weather Events" (2017) 7 Nature Climate Change 757 – 759.

foremost fossil fuel producers (and consumers) of fossil fuel for over 40 years and 30 years, respectively. While this might not be 'historical' in 1992 when the UNFCCC was negotiated and developing States under the umbrella of the G77 and China made a largely successful argument for the historical responsibility of developed States, it arguably qualifies as 'historical' in 2022.

Consistent with the finding that there is, at least, a short-term positive correlation between increasing CO_2 emissions and economic growth,[303] developing countries with higher historical emissions appear to have generally 'developed' more rapidly compared to developing countries with lower emissions. Underscoring this point, *Table 8* below compares six OPEC member States with comparable population sizes, with a focus on their rate of emissions, the period they began the commercial exploration of oil, and their HDI rankings. It becomes quickly manifest that the same argument that developing countries like Saudi Arabia, UAE and Kuwait have made that developed countries have a responsibility to address climate change given their development which was considerably powered by fossil fuel, applies to these developing countries particularly when compared to less developed economies. To argue otherwise is to adopt different standards in treating these emerging economies and to deny the reality that the 'past' is an evolving timeframe. In time, the 'present' and 'future' become history.

Table 8 – Differentiated Circumstances of Developing States[304]

Less Developed FFDEs	**Population Size, Annual Emission and Commercial Production Start period**	**Developing (Emerging Economy) FFDEs**	**Population Size, Annual Emission and Commercial Production Start period**
Angola	Pop. Size: 31.85 million Ann. Emission: 38Mt Start Period: 1950s HDI: 148	**Saudi Arabia**	Pop. Size: 34.27 million Ann. Emission: 582Mt Start Period: 1930s HDI: 40

[303] See generally Alina Manta et al, "The Nexus Between Carbon Emissions, Energy Use, Economic Growth and Financial Development: Evidence from Central and Eastern European Countries" (2020) 12 Sustainability 1 – 21. See also Jenny Cederborg and Sara Snöbohm, "Is There a Relationship Between Economic Growth and Carbon Dioxide Emissions?", (2016) online: <https://www.diva-portal.org/smash/get/diva2:1076315/FULLTEXT01.pdf>.

[304] Population Data – The World Bank, "Population, Total", (2019 Revision) online: <https://data.worldbank.org/indicator/SP.POP.TOTL>; Hannah Ritchie and Max Roser, "2019 Annual Emission Data - CO_2 Emissions", *Our World in Data* (2019) online: <https://ourworldindata.org/co2-emissions>; HDI Data - UNDP, *supra* note 243.

Republic of Congo	Pop. Size: 5.38 million Ann. Emission: 3.46Mt Start Period: 1970s HDI: 149	**United Arab Emirates**	Pop. Size: 9.77 million Ann. Emission: 190.68Mt Start Period: 1960s HDI: 31
Gabon	Pop. Size: 2.17 million Ann. Emission: 4.70Mt Start Period: 1970s HDI: 119	**Kuwait**	Pop. Size: 4.2 million Ann. Emission: 107.53Mt Start Period: 1930s HDI: 64

To the second point, there is no justification for a claim to the right to emit which will imperil future generations on the basis of the excessive emissions of some countries in the past. This is the picture-perfect case of a 'wrong' not justifying another 'wrong'. Current and future emissions, which developing countries are increasingly contributing to, will exacerbate the state of the climate in the future. For example, Winkler and Rajamani reference IPPC's 2007 assessment report which projected that two-thirds of the projected 45 – 110% increase in emissions between 2000 and 2030 will come from non-Annex I regions.[305]

Table 8 shows that the more affluent OPEC members have generally engaged in commercial exploration for fossil fuel (with the exception of UAE which started producing about a decade later than Angola) longer than their sub-Saharan counterparts, emitted more than them currently and historically, and are ranked more highly on the HDI. Fairness, therefore, demands that the more affluent countries are saddled with a higher level of responsibility than the less developed FFDEs given their historical emissions (see table 7). This, however, does not mean that the less developed FFDEs are completely absolved of mitigation responsibilities more so as an unbridled increase in emission would cause harm to future generations. Hence, the policy implications identified for less developed FFDEs in table 7 are meant to prevent intergenerational inequity, without derogating from their right to wellbeing.

iii. Capabilities and National Circumstances

While historical responsibility is based on historical, current, and future emissions, there is a largely moral case for the mitigation actions or the provision of support not on the basis of emissions-based responsibility but on capabilities and national circumstances. While 'capabilities' is a term adopted in both the UNFCCC and the Paris Agreement and is generally understood as

[305] See Winkler and Rajamani, *supra* note 260 at 106.

the financial and technological capacity necessary to mitigate and adapt to climate change, 'national circumstance' is less discernible. Whereas it is correct that the phrase 'in the light of different national circumstances' is a novel addition to the climate regime, particularly as a qualifier to the CBDR principle, it is arguable that it existed in various forms in the UNFCCC. For example, in prescribing the mitigation obligation of Annex I countries, the UNFCCC recognizes that the adopted policies and measures will take into account "other individual circumstances" such as "Parties' starting points and approaches, economic structures and resource bases, etc."[306] Voigt and Ferreira argue that the phrase "in the light of different national circumstances" introduces dynamism and flexibility to the interpretation of both 'responsibilities' and 'capabilities', and allows for a more complex approach that takes into account various criteria including "… human capacity, population size and other demographic criteria, abatement costs, opportunity costs etc.".[307] It can be reasonably concluded that the key distinction between capabilities and national circumstances is that the former is narrower and deals primarily with the ability to 'do', while the latter is a broader and more flexible concept which could admit of various other factors that might allow, enhance or constrict the ability to make meaningful contributions to the fulfilment of the global climate goals.

Capabilities and national circumstances are second-order tools of differentiation among the categories of FFDEs in table 7. Instead of defining capabilities as financial and technological abilities, I construe them here as capabilities necessary for human functioning. The question therefore is not whether countries have financial and technological abilities, but the extent to which these have translated into wellbeing as discussed in chapter two. Here, the HDI is a useful, albeit inadequate, instrument. A combination of the HDI with other complementary UNDP indexes (e.g., Global Multidimensional Poverty Index (MPI), Gender Social Norms Index (GSNI), and the Planetary Pressures-adjusted Human Development Index (PHDI)) more comprehensively captures the categories (and examples) of capabilities contained in table 5 (chapter 2), and therefore are more useful here. Within each category of FFDEs in table 7, it might be necessary to further differentiate on the basis of capabilities. For example, the UAE with an annual emission of 190.68 Mt and with an HDI ranking of 31, should have a stricter decarbonization regime than Kuwait with an annual emission of 107.68 Mt and an HDI ranking of 64 (table 8). Kuwait is, however, expected

[306] UNFCCC, art 4(2)(a).
[307] Voigt and Ferreira, *supra* note 265 at 294. See also Rajamani, *supra* note 272 at 508.

to fulfil the minimum policy implications for developing (emerging economy) countries in table 7.

The standing of a country in any of the UNDP indexes could also determine the kind of support which might be needed and by whom it could be given. In other words, 'support' is not restricted to finance or technology. It could be connected to issues like health and education under the HDI, gender inequality as in the GSNI, or excessive pressure on the planet as in the PHDI. While this does not mean financial and technological assistance are not required, they do not suffice as support in and of themselves. The focus is on the end (wellbeing), and not just the means. Here, developed countries are not the sole source of support, and developing countries are not solely 'recipients.' If support is considered to be assistance provided for the maximization of capabilities and pursuit of wellbeing, then developed States could be supported in areas of 'wellbeing' where they are lacking. For example, although the United Arab Emirates (UAE) (31) ranks higher than Ecuador (86) on the HDI, Ecuador (19) ranks higher than the UAE (-87) on the PHDI. Ecuador, in this case, could 'support' UAE to improve its response to planetary pressures. Amartya Sen identifies non-parochialism as a requirement of global justice.[308] He argues that "the demands of justice being seen to be done … cannot entirely neglect the understanding that may be generated by asking the questions about how the problem is assessed in other countries" and that "voices that can make a difference come from several sources, including global institutions …".[309] For example, UAE could learn from Ecuador's incorporation of the Rights of Nature in its Constitution, how same has been implemented, and the gains thereof.

As noted above, 'circumstances' as used in both the UNFCCC and Paris Agreement admits of various factors which impact on ambition and the ability of Parties to fulfil commitments when made. In the context of FFDEs, the viability of substitutes to fossil fuel exploration and exportation in meeting energy needs and/or earning foreign income crucial to public expenditure is a relevant circumstance which could, again, impact on the differentiation among the categories of FFDEs in table 7. Countries with viable energy substitutes given, for example, their geographical location (e.g., suitable water bodies for a power dam) and financial and technological ability to invest in, develop and deploy renewable energy technologies have lesser justification for relying on carbon

[308] Amartya Sen, *The Idea of Justice* (Cambridge, Massachusetts: Harvard University Press, 2009) 402.
[309] *Ibid* at 405, 408.

intensive sources like coal plants. Again, countries with already diversified economies whose reliance on income from fossil fuel exportation is minimal also have comparatively lesser justification to continue in the business of fossil fuel exploration. Less developed countries with unexplored fossil fuel reserves could also be incentivized to choose low carbon development pathways which do not include the exploration of fossil fuel. This would, however, necessitate the creation of what SEI et al have referred to as "more policy space to countries to implement a just transition". This could mean giving preference to less developed countries with natural resources needed to produce environmentally sound technologies or trade concessions for the importation of low carbon products from these countries. As noted in table 7, however, these forms of support to incentivize non-exploration in less developed countries should be strategically tied to capabilities and wellbeing. This is not a radical idea as the human rights and environmental stewardship records of countries have over time influenced the decision or refusal of other countries to trade with them or the terms of trade agreements.[310]

iv. Vulnerability

While the notions of collective (though differentiated) responsibility, historical responsibility, capability, and national circumstances appear in different forms in most proposals on the just distribution of the carbon budget, 'vulnerability' is, however, largely absent. Vulnerability, as used here, refers to the exposure of persons (and ecosystems) with lesser ability to adapt, lower resilience, and or at risk of suffering permanent loss or redressable damage to the adverse impacts of climate change. It is in this latter sense that the UNFCCC and the Paris Agreement use the term 'vulnerability' (or iterations thereof) the most. The Paris Agreement goes further to "establish the global goal on adaptation of enhancing capacity, strengthening resilience and reducing

[310] The Canada – Columbia Free Trade Agreement (CCFTA), marks the first FTA to include a subsidiary agreement for Party States to produce annual reports on the impact of the FTA on human rights in both countries. See *Agreement Concerning Annual Reports on Human Right and Free Trade Between Canada and the Republic of Colombia* (27 May 2010) online: <https://www.treaty accord.gc.ca/text texte.aspx?id=105278&_ga=2.78048916.1202104672.1612437213-1842160648.1612437213>. The FTA, in its chapter on the environment, affirms rights and responsibilities under both domestic law and multilateral environmental agreements, and commits the parties not to weaken, reduce, or derogate from their respective environmental laws in order to encourage trade and investment. See Canada-Colombia Free Trade Agreement, (2008) online: <https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/colombia-colombie/fta-ale/index.aspx?lang=eng> art 1701 – 1703. More recently, countries like Australia, Canada, the United Kingdom and other European countries have turned their attention to the issue of child slavery and other forms of slavery (modern-day slavery) in supply chains, requiring their companies to, at the minimum, that their vendors in third countries do use forced labour, child labour or human trafficking. See Elizabeth Raymer, "Canada Expected to Pass Legislation on Modern-day Slavery in Supply Chains", Canadian Lawyer (30 January 2020) online: <https://www.canadianlawyermag.com/news/general/canada-expected-to-pass-legislation-on-modern-day-slavery-in-supply-chains/325664>.

vulnerability to climate change",[311] and adopting the Warsaw International Mechanism for Loss and Damage to facilitate the "averting, minimizing and addressing of loss and damage associated with the adverse effects of climate change".[312] Decision 1/CP.21 which explains further the intentions of Parties to the Paris Agreement, however, states that the recognition of loss and damage in the Agreement "does not involve or provide a basis for any liability or compensation".[313] Siegele makes the important point that the fact that the presence of the non-liability clause in the non-binding Paris Decision rather than the legally binding Agreement is significant as it makes it easier to subsequently clarify or update the understanding of Parties to reflect liability and compensation for climate loss and damage.[314] In any case, the non-liability clause does not preclude remedies being sought for loss and damage outside the remit of article 8 of the Paris Agreement.[315]

One of the most common narratives of climate justice proponents is that peoples and communities who contributed the least to climate change are suffering the most from climate change. This is not only true, but also invokes another climate justice imperative that those who contributed the most to climate change have an obligation to contribute the most to avoiding or ameliorating the adverse effects borne by those who contributed the least. It is already established that emissions from fossil fuel, and invariably those who produce them, are the principal culprits for climate change and its impacts on people. It, therefore, stands to reason that those who produce and benefit from fossil fuel extraction have a responsibility to bear at least some of the cost of adaptation or reparation for loss and damage. The beneficiaries of such obligatory intervention, necessarily, include FFDEs and non-FFDEs, whether developing or developed. A just transition narrative that fails to account for the global impact of fossil fuel activities is (as most just transition frameworks do) at best, inchoate. There have been different proposals on how vulnerability could be redressed, chief among which is that having contributed the most to global warming despite knowing the harm caused by their products, the world's top fossil fuel companies should contribute to the cost

[311] Paris Agreement, art 7(1).
[312] *Ibid* at art 8(1)(2).
[313] See Decision 1/CP.21, *supra* note 250 at para. 51.
[314] Linda Siegele, "Loss and Damage (Article 8)" in Klein et al, *supra* note 294 at 232.
[315] *Ibid* at 232 – 233.

of adaptation and compensate for loss and damage.[316] While I agree with this position, I reflect briefly on vulnerability's role in determining whose fossil fuel is burnable below.

Contrary to Simon Caney's position,[317] vulnerability is relevant to deciding which fossil fuel assets should be stranded. There are few obvious situations where this is so. As a rule of thumb, there should generally be no fossil fuel exploration in fragile ecosystems like the Yasuní Biosphere Reserve or the Arctic. While this applies across the board, whether it is Ecuador's Yasuní or Russia's Arctic region, considerations bordering on support or compensation depending on historical responsibility, capability and circumstances, as already discussed are valid. This also applies to areas where fossil fuel exploration or production will perpetuate inequality, exacerbate existing vulnerabilities, or undermine resilience. For example, Carmen Gonzalez speaks of racialized communities, all over the world, which have "borne the brunt of carbon capitalism from cradle (extraction of fossil fuels) to grave (climate change)".[318] Elsewhere, these (and similar) communities were described as 'sacrifice zones'.[319] The quality of life of persons in these segregated and stigmatized spaces, as Lopes de Souza puts it,[320] is not only compromised under the pretext of economic development but their vulnerabilities are further exacerbated by climate change impacts.

More indirectly, fossil fuel exploration or production is less justifiable in countries or by companies which have no plan to contribute to the prevention and/or amelioration of the climate change consequences of emissions from fossil fuel combustion. FFDEs, developing and developed alike, have an obligation to not only ensure that the cost of explored fossil fuel reflects its social cost particularly to the most vulnerable, but also that the most vulnerable, not just domestically but globally, draw from this captured cost of externalities. In this sense, it is not sufficient that Canada

---

[316] See Union of Concerned Scientists, "Tracing Fossil Fuel Companies' Contributions to Temperature Increase and Sea Level Rise", (October 2017) online: <https://www.ucsusa.org/sites/default/files/attach/2017/10/gw-accountability-factsheet.pdf>; The Green Political Foundation, "Polluter Pay! Carbon Majors Funding Loss and Damage", (1 December 2014) online: <https://www.boell.de/en/2014/11/25/polluters-pay-carbon-majors-funding-loss-and-damage>.

[317] Caney, *supra* note 228 at 27.

[318] See Carmen Gonzalez, "Racial Capitalism, Climate Justice, and Climate Displacement" (2021) 11:1 Oñati Socio-Legal Series 108.

[319] See generally Stephen Lerner, *Sacrifice Zones: The Front Lines of Toxic Chemical Exposure in the United States* (Cambridge: MIT Press, 2010); Diana Hernández, "Sacrifice Along the Energy Continuum: A Call for Energy Justice" (2015) 8:4 Environmental Justice 151 – 156.

[320] Marcelo Lopes de Souza, "'Sacrifice Zone': The Environment-Territory-Place of Disposable Lives" (2020) Community Development Journal 1.

has placed a 'price' on fossil fuel under its GHG Pricing Pollution Act, people most vulnerable to climate change, including those outside Canada, are entitled to a portion of such captured cost.

Achieving the foregoing, including tying FFDEs and fossil fuel companies' continued production of fossil fuel (in the manner laid out in table 7) to their contribution to addressing climate change induced vulnerabilities, is dependent on the cooperation of countries (and industries) at the global stage. Article 6(1) of the Paris Agreement recognizes and allows Parties to achieve their NDCs through voluntary cooperation. For example, Peszko et al proposes a cooperative regime involving sharing carbon tax revenues between exporters and importers.[321] Claes and Garavini have also proposed an Organization of Oil Producing Countries which will determine global quantities of oil to be produced and allocate production rights.[322] On his part, Muttitt argues that OPEC could participate more collaboratively (instead of its history of obstruction) in the international climate regime and go further by restraining its oil production in line with climate limits, thus, putting "the spotlight on subsidized oil expansion in countries like the US, UK and Canada".[323] The current trend seems to validate these seemingly farfetched proposals. For example, the Oil and Gas Climate Initiative (OGCI) was established in 2014 as a CEO-led coalition of twelve of the largest oil companies in the world responsible for about 28% of the global production and about 678Mt of GHG emissions with the goal to, in part, achieve "zero routine flaring by 2030" and "near zero methane emissions".[324] Also, Aimee Barnes noted that the Biden/Harris administration could launch an International Coalition on Managed Decline and Just Transition to, among other things, provide a platform to governments and businesses to submit their plans on managing their supply of fossil fuel in alignment with a 1.5ºC scenario.[325] Recently, an International Just Energy Transition Partnership for South Africa was announced by the EU, UK, US and others entailing

[321] Peszko et al, *supra* note 43 at 114.
[322] Claes and Garavini, *supra* note 68 at 11
[323] Muttitt, *supra* note 53 at 347.
[324] See generally, OGCI, "Delivering on a Low Carbon Future: A Progress Report from the Oil and Gas Climate Initiative", (December 2020) online: <https://oilandgasclimateinitiative.com/wp-content/uploads/2020/12/OGCI-Progress-Report-2020.pdf>. BP, "Oil and Gas Climate Initiative Sets First Collective Methane Target for Member Companies", (24 September 2018) online: <https://www.bp.com/en/global/corporate/news-and-insights/press-releases/oil-and-gas-climate-initiative-sets-first-collective-methane-target-for-member-companies.html>.
[325] See Aimee Barnes, "Kamala Harris' Plan for International Climate Cooperation Could Smooth the Transition from Fossil Fuels", *State of the Planet* (20 August 2020) online: <https://blogs.ei.columbia.edu/2020/08/20/kamala-harris-coalition-just-transition/>. Also, in 2019, Norway, Iceland, Costa Rica, Fiji and New Zealand began negotiation on the Agreement on Climate Change, Trade and Sustainability (ACCTS) which, *inter alia,* will establish "disciplines to eliminate harmful fossil fuel subsidies". See "Joint Leaders' Statement on the Launch of the 'Agreement on Climate Change, Trade and Sustainability Initiative'" online: <https://www.beehive.govt.nz/sites/default/files/2019-09/ACCTS%20joint%20leaders%20statement.pdf>.

an initial commitment of $8.5 Billion.[326] While these trends point to an appreciation of the need for a more global approach to a just transition, the mere existence of these initiatives would not automatically fulfil the vision of justice as proposed in this work. Neither sharing carbon tax revenues between fossil fuel exporters and importers nor allocating production rights in themselves guarantee a just transition. While the principles considered here are no doubt susceptible to counterarguments some of which I cursorily engage with below, they arguably move the needle more closely to achieving just transition in the global sense.

3.5 Preliminary Conclusion

Kartha makes the important point that no one country can successfully protect its climate through unilateral actions and "a country is only likely to succeed in inducing reciprocal effort among its negotiating partners if it is perceived to be doing its fair share of the effort".[327] In this chapter, I have shown how the unilateral supply side mitigation policies of FFDEs are not only of questionable effectiveness given the deficiency of most in ambition, but are also replete with immense unjust cross-border implications. I have also shown how every FFDE, regardless of developmental status, can contribute its fair share to keeping global warming under 1.5°C albeit in a fair and just manner, hence, making it more likely that FFDEs will subscribe to the principles enunciated here. There remains, however, several possible objections. I address four of such objections here: the sovereignty argument, the free rider problem, resource curse, and non-discrimination among fossil fuels.

The sovereignty of nations over the natural resources within their territories is an established principle in international law as noted in chapter 2. Schrijver describes this principle as "the right of States and peoples to dispose freely of their natural resources".[328] Kartha refers to the sovereignty claim as one of the reasons that fossil fuel supply management in the context of climate change was not addressed in the Paris Agreement and often missing from domestic climate policies.[329] Sovereignty over resources is, however, not a right without bounds. Elsewhere,

---

[326] European Commission, "France, Germany, UK, US and EU Launch Ground-breaking international Just Energy Transition Partnership with South Africa" (2 November 2021) online: <https://ec.europa.eu/commission/presscorner/detail/en/IP_21_5768>.
[327] Sivan Kartha, "Fossil Fuel Production in a 2°C in a World: The Equity Implications of a Diminishing Carbon Budget", *Discussion Brief* (2016) online: <https://mediamanager.sei.org/documents/Publications/Climate/SEI-DB-2016-Equity-fossil-fuel-production-rents.pdf> 4.
[328] Nico Schrijver, "Self-determination of Peoples and Sovereignty over Natural Wealth and Resources" in OHCHR, *Realizing the Right to Development* (New York, Geneva: United Nations, 2013) 95 at 96.
[329] Kartha, *supra* note 327 at 7.

Schrijver argues that such right is necessarily moderated by obligations including due care for the environment, recognition of the rights of other states to shared resources, and the fulfilment of international obligations.[330] All of these are relevant to the current issue in focus. More specifically, I highlight two responses to the sovereignty argument which are rooted in current practices and principles in international law and relations. One, the more relevant resource is the global carbon budget which qualifies as a global common. Two, international peace and security is a recognized limitation on sovereignty.

Global commons include both areas and resources which cannot be solely subject to national jurisdiction but are meant to serve the whole of humanity. Schrijver notes that it is arguable that global natural assets such as the climate system qualifies as a global common.[331] Taking the argument further, others have argued that as the carbon budget does not meet the criterion of non-rivalry which disqualifies it from being a public good, it is more appropriate to classify it as a global common.[332] According to Ostrom et al, common pool resources possess two characteristics - exclusion through physical and institutional means and exploitation by one user reduces the resources available to others.[333] Both features apply to the carbon budget. Arguably, the Paris Agreement represents a regulatory regime through which the global carbon budget is administered with a semblance of some form of exclusion. Also, the carbon budget is finite, and if the goals under the Paris Agreement were to be strictly adhered to, usage reduces availability. Constricting the usage of global commons, despite possible recourse to the sovereignty argument, is not uncommon under international law. For example, the governance of the high seas and the outer space.[334] In fact, considering the scale of potential impact of climate change, there is perhaps a more persuasive case for collectively managing the carbon budget as a global common than in other global commons regimes.

On the second point international peace and security as a limitation on the sovereignty argument, the governance of nuclear weapons is an apt example. Under international law, that a country

---

[330] See Nico Schrijver, *Sovereignty Over Natural Resource: Balancing Rights and Duties* (Cambridge: Cambridge University Press, 1997) 391.
[331] Nico Schrijver, "Managing the Global Commons: Common Good or Common Sink" (2016) 37:7 Third World Quarterly 1252 at 1253
[332] Guilherme Gomes and Rosana Corazza, "Global Carbon Budget: An International Political Economy Approach to Global Climate Governance" (AFEP IIPEE International Conference, Lille, France, 3 – 5 July 2019) 2.
[333] Elinor Ostrom et al, "Revisiting the Commons: Local Lessons, Global Challenges" (1999) 284 Science 278 at 278 – 279.
[334] Schriver, *supra* note 331.

possesses an abundance of uranium deposit and has the 'permanent sovereignty' over the resource does not give it the legal mandate to use it in the development of a nuclear weapon. The Non-Proliferation Treaty (NPT) forbids nuclear-weapon State Parties from transferring nuclear weapons and non-nuclear weapon State Parties from receiving or manufacturing such weapons or explosive devices.[335] This, however, does not stop State Parties from using or producing nuclear material for peaceful purposes.[336] The rationale in the nuclear weapons context is also applicable to climate change. The calamitous impacts of the unrestrained use of fossil fuel are as settled as the disastrous effects of the use of nuclear weapons. Just as a non-nuclear weapon state has no justification in law for manufacturing nuclear weapons in the name of sovereignty over its uranium reserve, it is tenuous to claim that sovereignty is justification for uncontrolled exploration of fossil fuel reserves.

Another issue that could be taken with the arguments and proposals in this chapter is that it failed to pay sufficient attention to the free riding problem. The international supply side cooperation argued for here, however, provides a partial answer to this problem. It is not in doubt that regardless of the policy deployed, one would perhaps never fully deal with the problem of climate change given the diversity and complexity of its cause and considering that in one way or another, the over 7 billion people on earth contribute to the problem. Arguably, the supply side cooperative approach argued for in this work reduces the likelihood of free riding as the coverage would potentially entail fewer participants making monitoring easier. Further, the proposals contained here allocate both justice-based privileges and obligations to every member which could potentially incentivize reciprocity, inform trust amongst members and disincentivize free riding.[337] A further pushback on this point is that having fewer members in a climate action club does not in itself address the problem of free riding. For example, despite having only 13 members, collective decisions by OPEC on production quota have over the years been undermined by free riding members. As explained elsewhere, "the more OPEC is successful in increasing the oil price, the

[335] Treaty on the Non-Proliferation of Nuclear Weapons (NPT), art. 1, 2.
[336] *Ibid* at art 3(3), 4(1)(2).
[337] Ostrom has argued that "the capability of those involved to gain a reputation for being trustworthy and reciprocating the efforts of others to cooperate with their own cooperation turns out to be a central characteristic of settings where moderate to high levels of cooperation are sustained … To achieve its objects, any policy that tries to improve levels of collective action to overcome social dilemmas must enhance the level of trust by participants that others are complying with the policy or else many will seek ways of avoiding compliance". See Elinor Ostrom, "A polycentric Approach for Coping with Climate Change" (2014) 15:1 Annals of Economics and Finance 97 at 104.

stronger the incentive for individual members to defect from the cooperation, increase production …"[338] Similarly, if countries were to follow the policy implications in table 7, fossil fuel supply will fall steeply, potentially raising the cost of fossil fuel, which could then incentivize free riding. Any structure to manage a global just transition must, therefore, include some form of monitoring and sanctioning.[339]

The resource curse argument is that allocating rights to countries to explore fossil fuel or transferring revenues from fossil fuel to them does not guarantee development and could in fact lead to worse development and economic growth outcomes. While this position is not incorrect, resource curse is not unavoidable. To prevent a resource curse scenario, Ploeg emphasized the need for good institutions and no corruption.[340] I agree with Caney that to persuasively defend the proposals like the ones contained in this chapter, there is need to show that "granting extraction rights (or financial compensation received as part of an agreement to strand …) would actually benefit the needy and the vulnerable, and that the revenues generated would not go to elites".[341] Caution must also be had that countries with permission to extract do not create sacrifice zones or perpetuate existing ones. Table 7 goes further to require that concessions or support to developing or less developed FFDEs should be tied to the use of returns from fossil fuel exploration or incentives for non-exploration to facilitate the capability and wellbeing of the most vulnerable. One could again draw from the analogy of the NPT where Parties accept safeguards including the verification of fulfilment of obligations by the International Atomic Energy Agency "to prevent diversion of nuclear energy from peaceful uses …"[342] Any international arrangement on just management of the carbon budget should contain similar safeguards to ensure that developing FFDEs with particularly poor governance, transparency and accountability record, are true to their claim that 'development' is the end goal of their case for a greater share of the carbon budget.

The fourth and last objection considered here is the largely non-discriminatory approach to fossil fuels in this chapter. Fossil fuels are different, and these differences have consequences including how much carbon they emit, their availability and utility, export value, substitutability, and their

[338] Claes and Garavini, *supra* note 68 at 3.
[339] Ostrom, *supra* note 337 at 122.
[340] Frederick van der Ploeg, "Natural Resources: Curse or Blessing?" (2011) 49:2 Journal of Economic Literature 366 at 381 – 385.
[341] Caney, *supra* note 228 at 31.
[342] NPT, *supra* note 335 at art 3(1).

impact on whether exporters can engage in a unified action.[343] Given the real differences between coal, oil, and gas, should separate just transition principles be developed for each or should similar principles be applied albeit on different time scales depending on the emission intensity of each fuel? But as I have noted in chapter one, fossil fuels are not just differentiable on the basis of their generic types, each can be further categorized into sub-types with different socio-ecological implications. Hence, rather than proposing principles per type of fossil fuel, table 7 broadly drew the line between conventional and non-conventional fuels, with the expectation that no country, regardless of status, should extract non-conventional fuels considering that such fossil fuels are considerably more carbon intensive and comparatively more ecologically damaging. Invariably, considering that amongst 'conventional' fuels, coal is the most carbon intensive, it is not as globally traded as oil and gas, and it has viable substitutes in the energy mix, it is more likely that issues surrounding just coal transition would be mostly domestic.

In this chapter, I have framed just transition as a global discourse and shown that a strictly domestic narrative is inchoate. The principles identified in chapter 2 and this chapter represent how I conceptualize just transition. How these principles can inform the impact assessment policies and practices of FFDEs and fossil fuel companies and assist in making just decisions is the focus of the remainder of this thesis. Whether it is the strategic assessment conducted by the Scottish Government on its unconventional oil and gas policy or the impact assessment conducted by fossil fuel companies on existing or new projects, the relevance of impact assessment on just sustainability transition processes has become ever more evident.

[343] Margarita Balmaceda, "Differentiation, Materiality, and Power: Towards a Political Economy of Fossil fuels" (2018) 39 Energy Research and Social Science 130 at 133 – 137.

CHAPTER FOUR
IMPACT ASSESSMENT AND JUST TRANSITION: EXPLORING INTERSECTIONS

4.1 Introduction

In the previous chapters of this thesis, I have considered examples of sustainability transition initiatives, policies, and pathways with their actual and potential consequences for just transition. Also established are the unintended unjust implications of the dominant just transition narrative which focuses on the distribution of 'means' (resources, training etc.) and centralizes the interest of workers, particularly, those directly engaged by fossil fuel entities. There is no question that beyond being desirable, sustainability transition is vital to avoiding the worst consequences of climate change. The advantages are obvious, ranging from the stabilization of the global climate to the preservation of human lives and ecologies. However, as demonstrated in earlier chapters, the converse of the sustainability conversation is actual and potential injustices, with already marginalized and disadvantaged communities made further vulnerable by these injustices. The inequities of climate change induced sustainability transition do not make the transition less crucial. Rather, they compel us to ask the question - how can transition pathways be made just?[1] Perspectives and approaches will differ in answering this question. This thesis proposes impact assessment as a key piece of the answer.

Unplanned transitions are likely to be unjust transitions.[2] The need for sound planning and decision making is the primary reason impact assessment is vital to achieving a just transition. While there are other decision-making tools, impact assessment (IA) is generally wider in scope, more recognized globally, and its relevance to achieving or ensuring sustainable development is

[1] The terms 'sustainability transition' and 'just transition' have been extensively discussed in chapters one to three. In chapter one, sustainability transition has been defined as the transformation of socio-technical systems for the sustenance of nature, life support systems, and communities. In chapters two and three, human wellbeing and functionings were emphasised as the primary objectives of just transition. Reference to just transition in this and subsequent chapters, except where explicitly stated otherwise, refers to the vision of just transition in chapters two and three.

[2] Various examples including the La Trobe coal transition and the Polish experience were referenced in chapters one and two to show the danger of unplanned transitions. In the Canadian context, Kirkwood and Duncalfe make the point that without proactive planning and active management, the gains from Canada's transition to a zero-carbon economy risk being squandered, in part, because the maintenance of the *status quo* by industries in the clean economy which have historically excluded marginalized people could exacerbate inequality. See Hadrian Mertins-Kirkwood and Clay Duncalfe, *Roadmap to a Canadian Just Transition Act: A Path to a Clean and Inclusive Economy* (Canadian Centre for Policy Alternatives, 2021) 31.

established in the literature.[3] Environmental Impact Assessment (EIA) in the transboundary context is also recognized as a requirement under customary international law.[4] IA allows for more deliberate decision making and impact-sensitive and adaptive implementation of policies, plans, programmes, and projects. Identifying and addressing the impacts of transition decisions and ensuring that preferred transitional pathways are wellbeing-enriching require that just transition be a central piece of decision-making processes from the start rather than being an ex-post add-on. Although the scale and mode may differ, the consideration of the impacts of initiatives and projects whether on the entities themselves or third parties often precedes the selection of preferred project or policy options and implementation pathways by governments and corporations. At this stage, objectives are defined; alternatives are considered, discarded, or preferred; and winners and losers by reason of the preferred transition initiative are tacitly determined.

Corporate and State players in the fossil fuel industry are increasingly making decisions in response to the urgent necessity of climate change induced transition. Whether it is the decision to simply offset emissions from exploration activities or any of the transition initiatives considered in chapter 3, there are consequential impacts. Even low-ambition initiatives like land-based offsets have a potential impact on property rights, Indigenous peoples' rights, and biodiversity.[5] These impacts, while they exist, are rarely publicized. Also unknown is the process through which most states and companies consider these adverse effects, weigh alternatives, and choose sustainability transition pathways. For example, on what basis and through what process did Canada choose to

[3] John Glasson et al, *Introduction to Environmental Impact Assessment* 3rd ed. (Oxon: Routledge, 2005) 7; Klaus Jacob, "Regulatory Impact Assessment and Sustainable Development: Towards a Common Framework" (2010) 1:3 European Journal of Risk Regulation 276 – 280; Campion Benjamin Betey & Essel Godfred, "Environmental Impact Assessment and Sustainable Development in Africa: A Critical Review" (2013) 3:2 Env and Nat Res Research 37 – 51; Paolo Biancone & Silvana Secinaro eds., *Role of Impact Assessment in Sustainable Development* (Basel: MDPI, 2022).

[4] Commenting on the status of IA within international law, the International Court of Justice in the Pulp Mills case held that due to the global acceptance of environmental impact assessment (EIA), "… it may now be considered a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context … Moreover, due diligence, and the duty of vigilance and prevention which it implies, would not be considered to have been exercised, if a party planning works … did not undertake an environmental impact assessment on the potential effects of such works". *Case Concerning Pulp Mills on the River Uruguay (Argentina v Uruguay),* Judgment, ICJ Reports 2010, p 14 at para 204 (Pulp Mills Case).

[5] Kate Mackenzie, "Big Oil's Net-Zero Plans Show the Hard Limits of Carbon Offsets", *Bloomberg Green* (1 March 2021) online: <https://www.bloomberg.com/news/articles/2021-03-01/big-oil-s-net-zero-plans-show-the-hard-limits-of-carbon-offsets>; Alia Al Ghussain, "The Biggest Problem with Carbon Offsetting is that it Doesn't Really Work", *Greenpeace* (26 May 2020) online: <https://www.greenpeace.org.uk/news/the-biggest-problem-with-carbon-offsetting-is-that-it-doesnt-really-work/>.

wind down thermal coal while still allowing the development and exploration of tar sands? What are the factors considered and processes adopted in the United Kingdom's decision to ban unconventional oil and gas exploration while still greenlighting new coal mines? What considerations go into an upstream oil and gas company's decision to, in the name of the transition, shut down certain production capacities while investing and commissioning new oil and gas projects or adopting certain mitigation measures? Who are the winners and losers when these decisions are taken? How are they determined?

In this chapter, I introduce impact assessment as a viable tool for deliberate decision making for just sustainability transition. In part 4.2, the basic components of impact assessment are broadly discussed, while I classify various IA modes and consider their relevance to just transition in part 4.3. While projecting impact assessment for just transition ends might seem novel, sustainability is, in theory, the recognized objective of impact assessment. This chapter simply takes this understanding further in considering the opportunities in conventional IA for not only sustainability ends, but also in ensuring that sustainability outcomes are just. IA is multidimensional. I explore these various dimensions and modes of IA below, exploring spaces through which just transition can be catered to. In chapter one, I discussed Erik Wright's classification of transformation pathways into ruptural, interstitial, and symbiotic pathways. The objective of this chapter is symbiotic in that the changes argued for here are primarily through the use of existing IA processes and structures. Chapters five and six border more on interstitial and ruptural recommendations. The argument here, simply framed, is that while imperfect, the existing IA regulatory frameworks provide opportunities to address just transition concerns. For the purposes of this chapter, the Canadian *Impact Assessment Act* (IAA) is focused on.

4.2 The Basics of Impact Assessment

What comes to the mind of an average onlooker when impact assessment is mentioned is likely the recruitment of experts to identify the consequences of a proposed major project, the choreographed engagement of some select few conferred with the 'stakeholder' title, and the often-inaccessible jargon-filled document (Impact Statement) which decision-makers decide to accept or reject. In many cases, this assumption about impact assessment is correct. It is true that IA has developed and evolved mostly as a rationalist, technical, procedure-centric, and informational

venture.[6] This form of IA is not what I project here as an essential tool for a just transition. As I will show below, IA transcends a regulatory box-ticking exercise that provides (questionable) legitimacy to projects, policies, plans or programmes. The vision of IA essential to just transition is one that facilitates collective norm building, common ownership, transformative learning, parity-sensitive rational discourse, and, ultimately, sustainability which is construed in this work as the sustenance of life support systems, nature, and community. The impact assessment considered in this work is also not limited to domestic regulatory or statutory IA. It entails IA as a community-based, corporate managerial, and transboundary process. This more holistic engagement allows for an integrated deployment of IA in the just transition context as they capture essential features of the sustainability transition discourse. The term impact assessment has been adopted in this work instead of environmental impact assessment (EIA), given IA's broader scope and applicability. As shown later in this work, EIA is a subset of IA but not synonymous to IA. The adoption of IA is consistent with recent trends. For example, the Canadian IAA adopts IA rather than EIA (which was used in the previous Canadian Environmental Assessment Act).[7]

The definitions of IA range from narrow framings like the one proposed by Glasson et al ("a systematic process that examines the environmental consequences of development actions, in advance") to Munn's broad conception of IA as an activity designed for the identification and prediction of the impacts of legislative proposals, policies, programmes, projects and operational procedures on the environment and human wellbeing, and the interpretation and communication of information about the impact.[8] Similar to Munn's definition, Adrian Hayes posits that the development of the local and global capacity to anticipate, plan and manage the consequences of change to enhance the quality of life for all is the purpose of impact assessment.[9] While the above definitions of impact assessment are different in scope and vision, it is agreed that, at the minimum, impact assessment is a predictive venture. That actions have consequences is one of the elementary

[6] As noted by Morgan, "… there is an abundance of literature, that suggests the centre of gravity of EIA thinking is still firmly rooted at the rationalist end of [the] spectrum". Richard Morgan, "Environmental Impact Assessment: The State of the Art" (2012) 30:1 Impact Assessment and Project Appraisal 5 at 8. See also Stephen Jay et al, "Environmental Impact Assessment: Retrospect and Prospect" (2007) 27 Env Impact Assessment Rev 287 – 300.
[7] See for example, *Impact Assessment Act*, SC 2019, c-C-28, s 2 (IAA) (The IAA defines impact assessment as "an assessment of the effects of a designated project that is conducted in accordance with [the] Act").
[8] Glasson et al, *supra* note 3 at 2 – 3; R.E. Munn, *Environmental Impact Assessment: Principles and Procedures* 2nd Ed. (New York: Wiley, 1979).
[9] Adrian Hayes, "What is Impact Assessment? Some Personal Reflections C.P. Wolf (1933 - 2015), Edited Posthumously by Adrian C. Hayes" (2017) 35:3 Impact Assessment and Project Appraisal 186 at 187.

lessons taught to a child; a principle that has informed and undergirded our laws and social systems. Actions and inactions are often adjudged as good or bad by their perceived implications. While some consequences are obvious and objectively discernible, and reasonable people can agree that they are adverse or positive, others are not. Arguably, the more complex an activity is, the more difficult it is to determine whether its consequences are positive or negative. This is because such complex activities are made up of several sub-parts with a blend of positives and negatives. It is for these complex activities that a deliberate, systematic, and robust system of impact assessment is needed. It is a system that brings together multiple lenses and frames of interpretation rooted in diverse experiences and expertise for the discernment of consequences and how proposed activities can be designed and redesigned for the good of all.

Beyond the predictive value of IA, Munn and Hayes add other important components to the conceptualization of IA for the purposes of this work. They both agree that a primary objective of impact assessment is to enhance the quality of life and wellbeing. Merely anticipating and predicting change will fall short of this goal. Hence, Munn included the interpretation and communication of predicted impacts, while Hayes added planning and management to the impact assessment schema. Taken together, prediction, interpretation, communication, planning and management of impacts are essential features of impact assessment. These features serve at least two purposes. The prediction, interpretation, and communication of impacts aid understanding, while planning and management address how identified adverse impacts are prevented or remedied, while positive results are deliberately fostered. Understanding, according to Hayes, is a condition of change and the transformation from "presently unsustainable and inequitable systems and conditions to inclusive and sustainable development".[10] Understanding is, however, not an end. It must result in actions which would indeed drive the desired transformation. This is, in part, the relevance of the action-forcing purpose of impact assessment.

The 1969 United States' National Environmental Policy Act (NEPA) is commonly referenced as the origin of IA as it is presently known.[11] NEPA provides a formal, structured, and actionable

[10] *Ibid* at 188.

[11] The National Environmental Policy Act, 1969, Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, Sept. 13, 1982. Lynton Caldwell, however, notes that impact assessment came to the fore in the latter half of the 20th century. Examples of earlier practice include the Cautionary Guides published by the Design and Industries Association of Great Britain in 1930 and the Environmental Health Planning Guide by the U.S. Public Health Service in 1960. See Lynton Caldwell, *The*

policy framework for impact assessment. This framework has been adopted by hundreds of states, sub-states, and other non-state entities all over the world.[12] Reference to the NEPA origin of IA is relevant as other IA systems have largely adopted the objectives spelled out under the Act, although framed diversely. Caldwell, widely regarded as the father of environmental impact assessment (EIA) and the architect of the NEPA, provides crucial insight into the rationale and objectives which originally undergirded the NEPA. The Act's ultimate objective was to "bring agency policy into conformity with the values declared in the preamble and section 101(b) of NEPA".[13] He refers to this section as the 'substantive provisions' of the Act containing values that the legislation is centred on.[14] Section 101(b) provides that the government has the continuing responsibility, using all practical means, to improve and coordinate federal plans, functions, programs, and resources to the end that the Nation may:

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations
2. assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings
3. attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences
4. preserve important historical, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice
5. achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

National Environmental Policy Act: An Agenda for the Future (Bloomington: Indiana University Press, 1998) 48, 58 – 59. Arguably, impact assessment dates farther than Caldwell's mid-20th century peg. For example, indigenous people have, from time immemorial, regarded the effect of human activities and utilization of natural resources on nature as being a crucial part of indigenous tradition all over the world. The *buen vivir* concept rooted in various indigenous cultures in Latin America evidences it. The concept admonishes "living in plenitude, knowing how to live in harmony with the cycles of Mother Earth, of the cosmos, of life and of history, and in balance with every form of existence un a state of permanent respect". See Huanacuni Mamani, F., 2010. Buen Vivir/Vivir Bien. Filosofía, políticas, estrategias y experiencias regionales andinas. Coordinadora Andina de Organizaciones Indígenas (CAOI) quoted in Julien Vanhulst & Adrian Beling, "*Buen Vivir:* Emergent Discourse Within or Beyond Sustainable Development" (2014) 101 Ecological Economics 54 at 56. See also Eduardo Gudynas, 'Buen Vivir: Today's Tomorrow' (2011) 54:4 Development 441 – 447. Interestingly, the NEPA, while not referencing *buen vivir*, made the actualization of "productive and enjoyable harmony between man and his environment" its purpose. See NEPA, s. 2.

[12] Matthew Cashmore et al, "The Interminable Issue of Effectiveness: Substantive Purposes, Outcomes and Research Challenges in the Advancement of Environmental Impact Assessment Theory" (2004) 22:4 Impact Assessment and Project Appraisal 295.

[13] Caldwell, *supra* note 11 at 6, 49.

[14] *Ibid.*

Due to what has been referred to as the "mishaps of growth and development" to the NEPA courtesy of the "abduction by lawyers, seduction by environmentalists … misinterpretation by journalists" and conservative interpretation by the courts,[15] section 101(b) principles were delinked from the action-forcing provisions, particularly the requirement for environmental impact statements.[16] The aberration notwithstanding, NEPA was meant to be part of a whole, value-embedding, and norm-building framework, and instrumental to achieving high-level ethical objectives. It has, however, evolved as a stand-alone, technical, and procedural construct. A similar evolutionary trend to the above narrative is observed in other jurisdictions. Using the SWOT (strength, weakness, opportunity, and threat) technique to analyze 25 years of EIA in the United Kingdom, Jha-Thakur and Fisher find that UK EIA is plighted with 'technical obesity', trammeled by over-documentation, fraught with fragmented legislations, complicated and perceived as confusing, not adequately considering alternatives, and inadequately monitored.[17] The verdict is not so different in the European Union. The largely procedural definition of environmental impact assessment under the EU EIA Directive is indicative of its leaning towards the technical and informational end of the substance-procedure EIA spectrum.[18] Reviewing the evolution of EIA policies and practice in the EU including Directive 85/337 of 1985 and its amendments as codified in Directive 2011/92/EU in 2011,[19] Glasson concludes that despite the positive strides the EU has made in its EIA practices, there are considerable challenges including variations in screening, transboundary problems, quality control and lack of mandatory monitoring requirement.[20]

---

[15] Lynton Caldwell, "Environmental Impact Analysis (EIA): Origins, Evolution, and Future Directions" (1988) 6:3/4 Impact Assessment 75 at 78.

[16] Lynton Caldwell, "Analysis-Assessment-Decision: The Anatomy of Rational Policymaking" (1991) 9:4 Impact Assessment 81 at 87.

[17] Urmila Jha-Thakur & Thomas Fisher, "25 Years of the UK EIA System: Strengths, Weaknesses, Opportunities and Threats" (2016) 61 Env Impact Assessment Rev 19 at 22, 24 – 25.

[18] Directive 2011/92/EU defines EIA as a process consisting of the preparation of an EIA report, carrying out of consultations, examination by the competent authority of presented information, reasoned conclusion by the competent authority and the integration of conclusion into decisions. See Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 (codification) OJ L 26/1, art. 1(2)(g). The NEPA Implementation Regulations, however, went further to provide that the primary purpose of an EIS is to "serve as an action-forcing device to ensure that the policies and goals defined in the Act are infused into the ongoing programs and actions of the federal government". See Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, 40 CFR Parts 1500 – 1508 (2005), s. 1502.1.

[19] European Commission, Council Directive of 27 June 1985 on the Assessment of the Effects of Certain Public and Private Projects on the Environment (85/337/EEC) OJ L 175/40; Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 (codification) OJ L 26/1; Amended by Directive 2014/52/EU of the European Parliament and of the Council OJ L 124/1.

[20] John Glasson et al, *Introduction to Environmental Impact Assessment,* 4th ed (Oxon: Routledge, 2012) 52 – 53.

While EIA in EU countries appears to have, generally, improved over the years, the quantitative rather than qualitative metrics of measurement remain a blot. As noted by Cashmore et al, "the substantive criterion (whether IA achieves its purpose) is the ultimate test of effectiveness".[21] However, the quality of impact assessments has, generally, been appraised through a review of EIA reports.[22] Glasson notes that this procedural/narrow approach must give way to a substantive approach which focuses on the "fundamental question of whether EIA is maintaining, restoring, and enhancing environmental quality; is it contributing towards more sustainable development"?[23] Canada, also, exemplifies the above trend. Gibson and Hanna, in their analysis, conclude that Canada's environmental assessment process straddles the middle between what they describe as stage 2 (entailing impact identification, mitigation through formal, technical and biophysical impact assessment) and stage 3 (integration of broader environmental considerations including social, cultural, historical and economic factors).[24] However, analyzing the 2012 Canadian Environmental Assessment Act (2012 CEAA), Doelle concludes that the 2012 CEAA was closer to stage 2 than 3, as it is narrow, less of a planning tool and more informational, restricts public participation, largely biophysical, and leans more towards the "technical regulatory stage".[25] Although it is too early to deliver a verdict in respect of the 2019 IAA, it is, in theory, an improvement on the 2012 CEAA as it clearly recognizes sustainability as the primary purpose of impact assessment, firms up the provisions on meaningful participation, and substantively caters

[21] Cashmore et al, *supra* note 12 at 296.

[22] According to Barker & Wood, "[f]actors found to be important in determining quality included the experience of those involved in the EIA process (particularly consultants), the length of the EIA reports … and the nature of the projects". See Adam Barker & Christopher Wood, "Environmental Assessment in the European Union: Perspectives, Past, Present and Strategic" (2001) 9:2 European Planning Studies 243 at 245 – 246. See also Adam Barker & Christopher Wood, "An Evaluation of EIA System Performance in Eight EU Countries" (1999) 19 Environmental Impact Assessment Rev 387 – 404.

[23] Glasson, *supra* note 19 at 25. Although the EU Directive on EIA is a framework which allows member States to make more detailed regulation on how to meet its overarching provisions, the Directive, arguably, is more procedure-centric than substantive. Compared to NEPA, it is more of an action-forcing instrument than a policy document. Hence, normative concepts in the ilk of section 101(b) of NEPA are missing from the EU Directive. For one, there is no explicit or implicit reference to sustainable development. Sustainable development is, however, included in the review checklist under the 2017 EU Guidance on the Preparation of EIA Report – "Prediction of Effects on Human Health and Sustainable Development" – although the questions under the sub-head do not reflect the inter-generational component of sustainable development. See European Commission, Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (2017) online: <http://ec.europa.eu/environment/eia/pdf/EIA_guidance_EIA_report_final.pdf>.

[24] Robert Gibson & Kevin Hanna, "Progress and Uncertainty: The Evolution of Federal Environmental Assessment in Canada" in Kevin Hanna ed., *Environmental Impact Assessment: Practice and Participation* 3rd edn (Ontario: Oxford University Press, 2016) 15 – 16, 31.

[25] Meinhard Doelle, "The Evolution of Federal EA in Canada: One Step Forward, Two Steps Back?" (January 24, 2014). Available at SSRN: <https://ssrn.com/abstract=2384541 or http://dx.doi.org/10.2139/ssrn.2384541>

to vulnerability by embedding social impacts, indigenous rights, and gender as factors to be considered when conducting an impact assessment.[26] In their preliminary assessment, however, Sinclair and Doelle have criticized the IAA as being applicable to fewer projects than its predecessors thereby leaving out projects with significant sustainability outcomes.[27]

Given its interdisciplinary background, IA has generally drawn from existing theoretical orientations, including planning, social, economic, and biological theories.[28] Planning theories, however, have the most influence. Lawrence identifies five major planning theories with implications for impact assessment: rationalism, pragmatism, socio-ecological idealism, political-economic mobilization, and communications and collaborations .[29] These theories are also restated by Bartlett and Kurian in their six implicit assessment models – information processing, symbolic politics, political economy, organizational politics, pluralist politics and institutionalist.[30] As already noted, the practice of IA is historically and contemporarily steeped in the rationalist-technical tradition. A model informed by assumptions including – systematic reasoning, unitary public interest, analysis of ends and means, predictable and controllable environment, independence of expert advisor, and the separation of the planning process from the political process.[31] This model is, however, autocratic, top-down, and overdependent on quantitative knowledge. It has also been criticized for inadequately considering other forms of knowledge (e.g. indigenous knowledge), failing to recognise the limitations to predicting and controlling the environment, failing to consider the jointness of planning and dialogue, and being unable to integrate substantive issues, inequities and the political nature of planning.[32] Given these flaws and the sub-optimal results they generate, the continued dominance of the rationalist model seems indefensible and inapplicable in the just sustainability transition context.

---

[26] IAA, s 22.
[27] A. John Sinclair & Meinhard Doelle, "Entering the Next Generation of Impact Assessment in Canada" in Meinhard Doelle and A. John Sinclair eds., *The Next Generation of Impact Assessment: A Critical Review of the Canadian Impact Assessment Act* (Toronto: Irwin Law, 2021) 513 at 525.
[28] David Lawrence, "The Need for EIA Theory-Building" (1997) 17 Environmental Impact Assessment Rev 79 at 80.
[29] David Lawrence, "Planning Theories and Environmental Impact Assessment" (2000) 20 Env Impact Assessment Review 607 – 625.
[30] Robert Bartlett & Priya Kurian, "The Theory of Environmental Impact Assessment: Implicit Models of Policy Making" (1999) 27:4 Policy & Politics 415 at 417.
[31] *Ibid* at 608 – 609.
[32] *Ibid* at 610.

Stahrl Edmunds attempts to explain the dominant rationalist inclination of mainstream IA. He refers to the human tendency to reduce and simplify complex ecological problems into 'chewable' bits by "filtering, chunking and abstracting" the plethora of information and interactions at play.[33] Hence, this approach, described as bounded rationality, identifies, and focuses on select variables regarded as the most important and/or relevant. This is done by engaging with socio-ecological issues on a problem-by-problem basis (incremental approach), classifying and prioritizing information and interactions (bounding approach), and selective observation of ecologies (uncertainty approach).[34] Critiquing this reductionist outlook, Edmunds notes that the solution generated often becomes a problem requiring another remedy.[35] This observation aptly describes the challenge of sustainability transition. Examples have been considered in previous chapters where social, economic, or ecological factors are considered in isolation in reaching decisions whether against or in favour of the transition, leading to either ecologically ineffective or socially unjust outcomes.

The centrality of scoping in impact assessment process exemplifies how the bounded rationality approach plays out. After a project, policy, plan, or programme is screened as assessable, the dimensions and types of potential impacts to be assessed are scoped. Scoping is an efficiency tool. Glasson describes it as "the process of … deciding, from all of a project's possible impacts and from all the alternatives that could be addressed, which are the significant ones".[36] Scoping is construed here in its spatial, temporal, and substantive sense. In scoping substantive issues or valued ecosystem components (VEC), the potential of an activity to impact such substantive issue or VEC in a significant or relevant manner is determined. But how is such conclusion reached? How certain can the finding of significance and relevance be in the light of unknown interactions and other unconsidered components? Are significance and relevance subjects of political or scientific determination? Answers to these questions vary from jurisdiction to jurisdiction. Under the IAA, the Impact Assessment Agency of Canada is responsible for determining the scope of factors to be considered in an assessment with no mandatory requirement of input from interested parties or the public.[37] Scoping factors to be considered in an assessment is, however, different

[33] Stahrl Edmunds, "Environmental Policy: Bounded Rationality Applied to Unbounded Ecological Problems" (1980) 9:3 Policy Studies Journal 359.
[34] *Ibid* at 363 – 367.
[35] *Ibid* at 360.
[36] Glasson, *supra* note 18 at 88.
[37] IAA, s. 18 (1.2), 22(2).

from scoping the project itself. The IAA requires project proponents to describe projects in accordance with relevant government regulations,[38] in this case, the *Information and Management of Time Limits Regulations*.[39] The important point here is that while scoping is fundamental to impact assessment and its effectiveness,[40] a scoping approach premised on bounded rationality limits the potential of impact assessment.

While the criticisms of the bounded rationality approach to impact assessment are arguably valid, the practicality of capturing every information, component and/or interactions at play in a proposed project, policy, programme, or plan is doubtful. It is in this sense that significance determination at the scoping stage is not in itself negative. As much as inclusivity is vital to an IA process, unwieldy and unmanageable information can also be a clog. Edmunds' prescription is to be humble as per our knowledge limitation, inquire into uncertainties and side effects, prefer complex ecologies over isolated factors, and sample for uncertain risks through probability assessments.[41] Further, determining which likely impacts or dimensions of a project are significant enough to be assessed must, of necessity, be recognized as both a technical and political process entailing the involvement of interested persons (rights holders and stakeholders) and experts. And while efficiency is not an invalid consideration when scoping, the precautionary principle captures better the very nature of significance determination at the scoping stage since, at that time, evidence is limited, if not absent. The precautionary principle must, therefore, be given precedence.[42]

---

[38] IAA, s. 15(1).

[39] Information and Management of Time Limits Regulations, SOR/2019-283.

[40] Tim Snell and Richard Cowell, "Scoping in Environmental Impact Assessment: Balancing Precaution and Efficiency" (2006) 26 Environmental Impact Assessment Review 359 at 360. Snell and Cowell recognize that while scoping is underpinned by the needs for efficiency and precaution, these two underpinning principles are antithetical with one often demanding less (efficiency), while the other generally requires more (precaution). A bounded rationality approach aligns more with efficiency and this has been the more dominant of the underpinning principles.

[41] Edmunds, *supra* note 33 at 368.

[42] The more popular understanding of the precautionary principle in international law is contained in the 1992 Rio Declaration. It admonishes that the lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation when there are threats of serious or irreversible damage (see Rio Declaration, principle 15). This iteration of the precautionary principle has been recognized by courts around the world including the Supreme Court of Canada. See for example, *Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town)*, 2001 SCC 40, [2001] 2 S.C.R. 241, at paras 30-32. Its status as a customary international law norm is, however, disputed. McIntyre and Mosedale, for example, argue that the principle has crystalized into a norm of customary international law. See Owen McIntyre & Thomas Mosedale, "The Precautionary Principle as a Norm of Customary International Law" (1997) 9:2 Journal of Environmental Law 221 – 241. Elsewhere, the principle is described as a standard which is evolving into a binding form. See Sonia Boutillon, "The Precautionary Principle: Development of an International Standard" (2003) 23:2 Michigan Journal of Intl Law 429 – 469.

The concept of 'significance' becomes even more important when it is realized that the eventual decision in the IA process is premised on what is considered 'significant'.[43] From start to finish, a decision of 'significance' must be made. It is argued that one way of ameliorating the weakness of the bounded rationality-oriented IA practice is to expand the bracket of persons who decide what is significant. The assumption is that the more the 'stakeholders' there are, the higher the likelihood of a more wholesome sense of what is 'significant'.[44] This, essentially, takes the determination of 'significance' outside the primary realm of the 'expert', and centres persons affected by or interested in an undertaking, particularly persons whose rights are at stake. It is here that Lawrence's theories of socio-ecological idealism and communications/collaboration and Bartlett and Kurian's pluralist politics model, as alternatives to the bounded rationality approach, come to play. The theories draw from Jurgen Habermas's rational discourse and communicative action theories which emphasise the necessity of inclusive public deliberations subject to the "presuppositions of communication and rules of argumentation" and which are aimed at "rationally motivated agreement".[45]

The communicative action theory applies to matters which can be regulated in the interest of all and that entail alterations in pre-political attitudes and priorities.[46] In a parity-sensitive rational discourse model, an attempt is made to accord the same status to all forms of knowledge as opposed to the veneration of a particular kind of knowledge (e.g., scientific knowledge),[47] people are explicit about their presumptions and frames of reference (meaning schemes and meaning perspectives),[48] and there is an openness to reconsider, re-appraise and change perspectives. This model steers IA away from its scientific and technical moorings and makes more explicit its latent

[43] See for example CEAA, s. 52 (1)(a) – (b) which requires the decision maker to decide whether a designated project is likely to cause significant adverse environmental effects. Under the IAA, the responsible Minister is required to determine whether assessed impacts, in light of "… the extent to which those effects are significant", are in the public interest. See IAA, s 60(1)(a).

[44] For example, the EU guidance on the preparation of the EIA report states that the "assessment of significance relies on informed, expert judgment about what is important, desirable or acceptable with regards with regards to changes triggered by the project in question". See European Commission, *supra* note 23 at 47 – 48.

[45] Jurgen Habermas (translated by William Rehg), *Between Facts and Norms: Contributions to a Discourse Theory of Law and Democracy* (Cambridge: The MIT Press, 1996) 288 at 305.

[46] Habermas, *ibid* at 306.

[47] As noted by Lawrence, "EA practitioners have held a measure of power by virtue of their technical knowledge. This power should be tempered by recognition that expert knowledge rarely is sufficient in analysis, prediction, and management … EIA practitioners should reject the false dichotomy between expert and layperson, recognize the value of local knowledge and experience and accept the public as a legitimate partner". Lawrence, *supra* note 28 at 92.

[48] See Jack Mezirow, *Transformative Dimensions of Adult Learning* (San Francisco: Jossey Bass, 1991) 7.

political and normative agenda.[49] Indeed, this unearthing is vital, considering that value judgment is made at every point of an IA process, even when done beneath the toga of 'detached' science and technicalities.[50] This is important in the context of sustainability transition which although supposedly driven by science, is a heavily political process both in the sense of target setting and the determination of timeline and pathways both at the international, state and corporate levels.

Meaningful participation is one of the central tenets of IA.[51] This marks a vital intersection between impact assessment and mainstream just transition discourse which has also made participation a core feature. The Aarhus Convention establishes a connection between the right of persons to live in an environment adequate for health and wellbeing, and the right of access to information, public participation in decision-making, and access to justice in environmental matters.[52] The emphasis on participation, has however, been criticized as having the undesirable result of focusing on process and access to the detriment of actual outcomes.[53] Participation in IA could also be counter-productive due to conflict of interests of rights- and stake-holders, power imbalance, an incorrect presumption of equal access to knowledge by involved persons, non-consideration of large scale and long-term choices, and non-recognition of past, existing and potential inequities.[54] The issue of conflict of interest, values and positions in IA participation is worthy of further reflection, more so given its peculiar relevance in the sustainability transition context where varying rights- and stakeholders would potentially be on different sides of the transition aisle. A possible answer is that participation is a pre-decision engagement, and an 'aloof' decision maker can wade through

[49] "[P]olicy decisions are more often shaped by political expediency, and less often based upon objective scientific estimates of probabilities. Impact assessment involves both science and art and cannot avoid implications for priorities among values. Hence to some degree it is, in the better sense of the term, a political process". Caldwell, "Analysis-Assessment-Decision: The Anatomy of Rational Policymaking" *supra* note 16 at 81.
[50] See Hugh Wilkins, "The Need for Subjectivity in EIA: Discourse as a Tool for Sustainable Development" (2003) 23 Env Impact Assessment Rev 401 at 403 - 405.
[51] See generally Meinhard Doelle & John Sinclair, "Time for a New Approach to Public Participation in EA: Promoting Cooperation and Consensus for Sustainability" (2006) 26 Env Impact Assessment Rev 185 – 206; Geoffrey Salomons & George Hoberg, "Setting Boundaries of Participation in Environmental Impact Assessment" (2014) 45 Env Impact Assessment Rev 69 – 75; John Sinclair & Alan Diduck, "Reconceptualizing Public Participation in Environmental Assessment as EA Civics" (2017) 62 Env Impact Assessment Rev 174 – 182; Md Arif Hasan et al, "Public Participation in EIA: A Comparative Study of the Projects run by Government and Non-government Organizations" (2018) 72 Env Impact Assessment Rev 12 – 24.
[52] *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters*, 25 June 1998, 2161 UNTS 447 (entered into force 30 October 2001), art 1.
[53] See Doelle & Sinclair, *ibid* at 186.
[54] Lawrence, *supra* note 29 at 617.

the conflicting values and decide on one or a collection of values to endorse. This appears to be the more common approach in IA processes.

As argued by Elling, it is not the job of assessors to balance pros and cons and conflicting positions, rather, they should make explicit the implications of a project, identify all conflicts and interests connected to it, and place all the information before the politicians to reach a decision.[55] But this view only recycles and reasserts the dichotomy between the information gathering and decision-making phases and makes the participation process, at best, an information gathering process. Contrary to Elling's position, Richardson proposes that conflicting values could be resolved if IA practitioners build critique, storytelling, and ethical judgment into their work.[56] However, such approach simply shifts the forum of value determination from the decision makers to the IA practitioner and further entrenches the expert-centric nature of the bounded rationality approach. Another possible answer is that conflicting interests should be resolved in favour of what benefits the 'largest population'.[57] The determination of 'largest population', however, becomes complicated when a global phenomenon like climate change is in issue. Even if the largest affected population can be determined and might apply within a utilitarian framework, such an approach negates the centrality of the rights of individuals in a capability-based just sustainability transition narrative. Although there are exceptions as noted in previous chapters, generally, when rights are at stake, the justification that a particular decision serves the interest of the 'largest population' is less consequential. This is even more important when the interest of minorities and marginalized people, who by definition are fewer than the dominant population, are considered. Again, focusing on the 'largest population affected' is not only potentially disregarding of non-anthropogenic imperatives, but also fails to consider the interest of future generations.

While I will return to the issue of conflict of values/interests and trade-offs in just sustainability transition in chapter six for now, I argue that conflict of values is not in itself negative. Instead, it brings to the fore another potential of impact assessment as a domain of transformative learning

[55] Bo Elling, "Modernity and Communicative Reflection in Environmental Assessment" in Hilding-Rydevik T, Hlfkk, Theodo´rsdo´ ttir A´, eds., *Planning for Sustainable Development—The Practice and Potential of Environmental Assessment*, (Stockholm: Proceedings from the 5th Nordic Environmental Assessment Conference, Reykjavik, Iceland, 25–26 August 2003, 2004) 54 at 64.
[56] Tim Richardson, "Environmental Assessment and Planning Theory: Four Short Stories about Power, Multiple Rationality, and Ethics" (2005) 25 Env Impact Assessment Rev 341 at 362 – 363.
[57] See Jurgen Habermas (translated by Thomas Burger), *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society* (Cambridge: The MIT Press, 1991) 83

and norm building. Transformative learning emphasises critical-dialectical discourse which mandates subjecting one's frame of reference to critical engagement, being open, reflective and able to change, listening empathetically, avoiding premature judgment, and seeking common ground.[58] Mezirow's position that the appeal to tradition, authority figures or the use of force are the only alternatives to a critical-dialectical discourse is relevant to the points earlier made on the weaknesses of other proposals on managing conflict of values in IA. A transformative learning and norm building yielding IA participation transcends merely reaching an agreement on what policy to opt for or project to embark on. It reaches deeper into changing and realigning meaning perspectives (epistemic, psychological, and sociocultural predispositions) which inform peoples' beliefs, attitudes, and value judgments. This meta-cultural shift is valuable to achieving an enduring just sustainability transition.

In their work on impact assessment and transformative learning, Sinclair and Diduck argue that given that uncertainty, change, and conflict are recurrent themes in resource and environmental management, IA must transcend the comprehensive-rational planning frame and instead be "reconceptualized as a form of transactive, civic exploration reliant on mutual learning by all [IA] participants".[59] Elsewhere, the point was made that when IA processes are oriented to promote social learning, public participation will strengthen democracy more effectively and could overcome "the tendency of people to be rational egotists".[60] The quasi-judicial and adversarial participatory model common in IA processes is necessarily jettisoned in this dialogical enterprise. Rather than participants being potential winners and losers, they become co-teachers and learners and persons mutually committed to finding or framing answers to socio-ecological questions. To arrive at this point, Mezirow's conditions of learning, which have been employed by Sinclair and Diduck as criteria for appraising the participation quality of IA in Canada, are relevant.[61] The ideal transformative learning aligned IA process will entail accurate and complete information, freedom from coercion, openness to alternative perspectives, the ability to reflect critically upon

[58] Jack Mezirow, "Transformative Learning as Discourse" (2003) 1:1 Journal of Transformative Education 58 – 63.
[59] A. John Sinclair and Alan Diduck, "Public Involvement in EA in Canada: A Transformative Learning Perspective" (2001) 21 Environmental Impact Assessment Review 113 at 132.
[60] Patricia Fitzpatrick and A. John Sinclair, "Learning through Public Involvement in Environmental Assessment Hearings" (2003) 67 Journal of Environmental Management 161 at 162.
[61] Sinclair and Diduck, *supra* note 59 at 115.

presuppositions, equal opportunity to participate, and the ability to assess arguments in a systematic manner and accept a consensus as valid.[62]

While not purporting to be exhaustive, the above review brings to the fore some of the fundamental qualities of impact assessment. IA is value driven, normative and political as well as technical. It is, in theory, a point of convergence of diverse voices, ideas, values and interests and serves as a tool to tease out the different dimensions, aspects, and nuances of an initiative. It is systematic in the sense that there is a robust, settled and often, legally supported process of identifying impacts, considering their significance, choosing alternatives, or rejecting proposals altogether. The average model IA law generally recognizes stages like screening, scoping, baseline studies, identification and analysis of impacts, consideration of alternatives, decision making, and follow up. More recently, the need for participation in IA to begin at the earliest phase of project design has been emphasised by IA practitioners and is now being reflected in statutory instruments.[63] It is at this level that state or corporate entities identify and define problems and needs, set their objectives, reflect on options, and design initiatives which are subsequently proposed and could eventually be approved and implemented. Doelle and Sinclair refer to this planning and design phase as the most important phase of a project.[64] It is through such early participation in the design of an initiative that persons whose stakes and rights are likely to be impacted by such activity are given an initial sense of ownership.

IA is traditionally deployed in respect of the biophysical effects of non-renewable resource projects within defined geographical boundaries. The definition of impact (or effect) has, however, expanded beyond environmental impacts and broadened to include social, economic and cultural impacts,[65] and the relevance of the IA process in the design of policies, programs, and plans has also been recognized.[66] Also, beyond the geographical boundedness of jurisdiction constricted IA, there is recognition of the transboundary effects of activities both in the intra- and inter-state

[62] Jack Mezirow, "Understanding Transformation Theory" (1994) 44:4 Adult Education Quarterly 222 at 225.
[63] See for example IAA, s 11.
[64] Meinhard Doelle and A. John Sinclair, "Time for a New Approach to Public Participation in EA: Promoting Cooperation and Consensus for Sustainability" (2006) 26 Environmental Impact Assessment Review 185 at 189.
[65] The IAA defines effects as "… changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes". See IAA, s 2.
[66] One of the purposes of the IAA includes the encouragement of the assessment of "federal policies, plans or programs and the consideration of those assessments in impact assessments". See IAA, s 6(1)(m).

contexts.[67] IA has also evolved to look beyond direct project-specific impacts to capture indirect and cumulative effects.[68] The expansion of the traditional remit of IA beyond direct biophysical impact and jurisdictional boundaries further makes it the planning tool of choice for a just sustainability transition. Sustainability, particularly in the context of climate change, does not respect artificial boundaries whether in respect of particular projects or geographies. Climate change is inherently a cumulative phenomenon arising from a blend of multiple activities with transboundary and multi-layered effects. The expansive evolution of IA has also informed a proliferation of different modes of impact assessment. While I identify and reflect on IA modes which are relevant to just sustainability transition below, I argue that an integrated application of these modes will be needed to capture and appreciate the effects of sustainability transition more fulsomely. The point should be emphasized that IA does not only deal with the avoidance or mitigation of adverse effects, but it also helps to manage and maximize positive effects. This is particularly important in ensuring that persons who could be left out in a Hobbesian transition system are catered to. Equity sensitive modes of IA including Gender Impact Assessment, Indigenous Impact Assessment, and Human Rights Impact Assessment are useful in navigating this precipitous terrain.

Although it is widely agreed that the attainment of sustainability is the ultimate objective of impact assessment,[69] sustainability is neither attainable nor sustainable if equity is absent. In the 2014 IPCC Assessment Report, it was concluded with high confidence that "equity is an integral dimension of sustainable development".[70] The authors explain that while intergenerational equity underlies the very idea of sustainability, intragenerational equity serves as an intrinsic component.[71] Hence, if sustainability is IA's ultimate objective and equity is fundamental to sustainability, an IA process cannot be said to have achieved its sustainability objective if equity were to be missing both in its process and outcome. The transition-related activities of fossil fuel

[67] The IAA for example makes provisions for regional assessment and the joint assessment of undertakings with the government, sub-division or institution of a foreign state, or an international organization of states or an institution thereof. See IAA, ss 92 & 93.
[68] See IAA, s 22(1)(a)(ii)(iii).
[69] Tabatha Wallington et al, "Theorising Strategic Environmental Assessment: Fresh Perspectives and Future Challenges" (2007) 27 Env Impact Assessment Rev 569 at 571; Jos Arts, "EIA and SEA Tiering: The Missing Link" (2005) Position Paper IAIA SEA Conference, Prague.
[70] Marc Fleurbaey et al, "Sustainable Development and Equity" in Edenhofer O., eds., *Climate Change 2014: Mitigation of Climate Change – Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2014) 283 at 285.
[71] *Ibid.*

entities considered in the previous chapters have been further grouped into four categories of activities in table 9 below. This grouping summarizes the relevance of strategic and project-level IA to different just sustainability transition activities.

Table 9: Sustainability Transition in FFDEs and Relevant IA

Sustainability Transition Related Areas in FFDEs	**Nature of IA**
State and corporate policies, programs, and plans on fossil fuel development	Strategic
Upstream and midstream fossil fuel projects	Project
Non-fossil-based policies, programs, and plans	Strategic
Non-fossil-based projects	Project

I find the classification in *table 9* more useful in capturing a suite of approaches that fossil fuel entities have adopted in transitioning out of the carbon economy. While project assessment has been emphasized in this section to provide a general introduction to impact assessment, table 9 shows the equally central role of strategic assessment. Further reflection on strategic assessment and other allied IA modes is provided below, and the opportunities they provide for addressing just transition concerns are also explored. The above review shows a dissonance between the promises of theoretical IA and the actual outcomes of IA in practice. In theory, IA provides a space for rational discourse, resolution of conflicts, rational learning, respect for rights, accommodation of interests, and the sustenance of nature. In practice, however, IA is still trammeled by technical obesity, expert-centric, and fails to deal with issues of power and justice. As shown below, however, the flaws of traditional IA have led to the development of new modes of IA, some of which deal directly with the issues of power and justice.

4.3 Impact Assessment Modes: Implications for Just Transition

Since impact assessment has evolved into a multi-dimensional venture covering diverse areas and interests, it is impossible to provide an adequate picture of IA without, at least, engaging with some of its many modes. This is again consistent with the multi-layered frame of sustainability. Sustainability is not solely about ecology; it is also about community. The varied modes of IA also align with the diverse components of just transition as shown in the characteristics of just transition in chapter two. The need to attend to the diverse aspects of both ecology and community has

informed the proliferation of various IA modes.[72] With hundreds of modes of IA in existence and the continual introduction of newer lenses, it is also near impossible to engage with these IA modes in any substantial depth. Rather than attempting the impossible, I discuss various relevant IA modes and lenses under three broad categories: Ecological IAs, interest and right-based IAs, and Dimensional IAs.[73] I represent sustainability assessment as a sum of these IA categories and more. As shown in chapter two, just sustainability transition is at the same time about justice to persons as it is to the ecosystem. There cannot be one without the other. The assessment of transition related activities, as classified above, must also engage holistically with these different but intersecting impacts. This classification of IA modes and lenses has been employed for the convenience of analysis. They are not sacrosanct and some of the IA modes are cross-cutting. An example of this is strategic assessment which applies to the various classifications of IA. I have, therefore, discussed strategic IA as a cross-cutting IA mode.

A. Ecological IAs

Ecological IAs are primarily focused on non-human valued ecosystem components (VECs). They entail landscapes, visual effects, air quality, climate, soils, geology, geomorphology, water, coastal ecology, species, habitats, sites, heritage, etc. Most of these are VECs which are commonly considered to be at risk of being significantly impacted when activities are scoped for impact assessment. This is mostly done in the context of an environmental impact assessment (EIA). Nevertheless, other forms of ecological IAs like Strategic Environmental Assessment (SEA), Biodiversity Impact Assessment (BIA), Climate Change Impact Assessment, and Ecological Risk Assessment (ERA) have been developed over time. I will focus on EIA, SEA, ERA, and their relevance to just sustainability transition, while climate change and impact assessment will be considered more specifically in chapter five.

[72] Frank Vanclay, "Integration and Focus from the Perspective of Social Impact Assessment: A Response to Morrison-Saunders et al" (2014) 32:1 Impact Assessment and Project Appraisal 11.

[73] In lieu of the proliferated IA modes, Morrison-Saunders et al argue for an integrated and focused approach to impact assessment. This approach commences with the goal of sustainable development, while seeking to address the various dimensions of sustainable development. Hacking and Guthrie propose a framework for classifying sustainable development directed features within IA. See Angus Morrison-Saunders et al, "Strengthening Impact Assessment: A Call for Integration and Focus" (2014) 32:1 Impact Assessment and Project Appraisal 2 at 3. The framework entails comprehensiveness, integratedness, and strategicness. They argue that "these categories are used to form the axes of a three-dimensional space within which various forms of assessment … can be located". See Theo Hacking & Peter Guthrie, "A Framework for Clarifying the Meaning of Triple Bottom-Line, Integrated, and Sustainability Assessment" (2008) 28 Env Imp Assessment Rev 73 at 75. None of the recommendations above, however, go far enough in capturing the various modes of IA relevant for this work.

i. Environmental Impact Assessment

EIA in its most used sense focuses on projects.[74] For example, it is defined by the Convention on Biological Diversity (CBD) as "a process of evaluating the likely environmental impacts of a proposed project or development …".[75] The primary arguments against project-EIA include that it is narrow, enters into the decision making process too late, and does not cater to broader policy concerns.[76] It has also been criticized as reactive rather than anticipatory, mitigatory than sustainability driven, informational, non-cumulative, detached from final decision, focused on technique than process and result, low in the quality of participation, stifled by compressed timeline, and bereft of follow-up and monitoring.[77] In making this observation about EIA, it should be noted that EIA has evolved differently in various jurisdictions and while weaknesses abound, they differ depending on the jurisdiction.[78] The weaknesses are, nevertheless, important to highlight as they still exist in different forms and degrees in various jurisdictions and have been part of the reasons that other IA modes have proliferated.

The argument has, however, been made that the weaknesses are not unique to EIA. Bina, for instance, notes that although Strategic Environmental Assessment (SEA) has attempted to technically and methodologically redress the flaws of EIA, it has been short of success as the real

---

[74] Jenny Pope et al, "Advancing the Theory and Practice of Impact Assessment: Setting the Research Agenda" (2013) 41 Env Impact Assessment Rev 1 at 2.

[75] CBD, "What is Impact Assessment" online: <https://www.cbd.int/impact/whatis.shtml> See also EIA definitions in Directive 2011/92/EU, art. 1(2)(g); CEAA, s. 2(1). EIA has, however, been defined elsewhere more progressively. The OECD for example defines it as "an analytical process that systematically examines the possible environmental consequences of the implementation of projects, programmes and policies". See OECD, "Glossaries of Statistical Terms: Environmental Impact Assessment" (2001) online: <https://stats.oecd.org/glossary/detail.asp?ID=828>.

[76] Olivia Bina, "A Critical Review of the Dominant Lines of Argumentation on the Need for Strategic Environmental Assessment" (2007) 27 Env Impact Assessment Rev 585 at 587.

[77] *Ibid* at 591. See also John Benson, "What is the Alternative? Impact Assessment Tools and Sustainable Planning" (2003) 21:4 Impact Assessment and Project Appraisal 261 – 280.

[78] In their recent work, Doelle and Sinclair adopt Gibson's four phases of federal environmental assessment in Canada in describing how the Canada's environmental assessment practice has evolved to date. Gibson describes the phases as: (1) reactive pollution control and technical and closed-up approach to solution; (2) proactive impact identification and mitigation, focus on biophysical concerns, assessment treated as a technical issue with no serious public role; (3) integration of broader socio-economic concerns and public reviews; (4) integrated planning and decision making for sustainability, addressing policies, programmes, projects, cumulative and global effects. As at when he published the article in 2002, Gibson concluded that "stage 4 is not yet much with us". See Robert Gibson, "From Wreck Cove to Voisey's Bay: The Evolution of Federal Environmental Assessment in Canada" (2002) 20:3 Impact Assessment and Project Appraisal 151 at 152. About two decades after Gibson's verdict, Doelle and Sinclair suggest that while Canada still has some way to go to arrive at stage 4, progress has been made in the assessment of cumulative effects, participatory decision making, sustainability assessments, and the integration of social, economic, and environmental considerations beyond individual activities. They, however, note that environmental assessment processes still suffer from limited understanding of baseline conditions of the receiving environment and little use of monitoring programs as tools to improve predictive skills. See Doelle and Sinclair, *supra* note 27.

challenge is political and institutional.[79] The idea that EIA is only applicable to projects has also been rejected by Bina, who argued that "the original concept of EIA included PPPs (policies, programmes and plans) as part of its remit" and also had sustainability as an objective.[80] Buttressing this point, Noble and Gunn note that while the definition of SEA might still be in the air, it is clear that level of application (i.e. PPP) does not distinguish it from EIA, as some large project EIAs act like SEA and *vice versa*.[81] In fact, SEA has been described elsewhere as scaled up or super-charged variant of EIA.[82] What then is the relationship between EIA and SEA? Are they distinct processes or merely different layers of a single IA process? While some scholars have clamoured for a hard disconnect,[83] others have argued that both SEA and project-EIA should be seen as different stages of the same process.[84] The latter view is more representative of the position taken here.

ii. Strategic Environmental Assessment

SEA is most popularly conceived as "the environmental assessment of policies, plans and programs, and their alternatives".[85] Beyond being a definition, this understanding of SEA is representative of a phase in its evolution.[86] The definition bears similarity with EIA's focus on the assessment of projects. It focuses on the preparation of a document, aims to provide information on environmental effects of PPPs, and adopts typical EIA steps (scoping, assessment, mitigation, decision and monitoring).[87] Partidário's description of SEA as "a strategic framework instrument that helps to create a development context towards sustainability, by integrating environment and

[79] Bina, supra note 76 at 591.
[80] *Ibid* at 590.
[81] Bram Noble & Jill Gunn, "Strategic Environmental Assessment" in Hanna, *supra* note 24 at 96 – 97.
[82] Hussein Abaza et al, *Environmental Impact Assessment and Strategic Environmental Assessment: Towards an Integrated Approach* (Geneva: UNEP, 2004) 9.
[83] See generally Rodrigo Jiliberto, "Recognizing the Institutional Dimension of Strategic Environmental Assessment" (2011) 29:2 Impact Assessment and Project Appraisal 133 – 140.
[84] See Arts, *supra* note 69.
[85] Bram Noble & Lisa Christmas, "Strategic Environmental Assessment of Greenhouse Gas Mitigation Options in the Canadian Agricultural Sector" (2007) 41 Env Mgt 64. See similar definitions in Riki Therivel & M.R. Partidario eds. *The Practice of Strategic Environmental Assessment* (London: Earthscan, 1996); Riki Therivel, *Strategic Environmental Assessment in Action* 2nd ed (London: Earthscan, 2010) 9; Bram Noble & Jill Gunn, *Strategic Environmental Assessment* in Hanna, *supra* note 22 at 96 – 97; Government of Canada, "Strategic Environmental Assessment: The Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals – Guidelines for Implementing the Cabinet Directive" 2010, at 13.
[86] Bram Noble & Kelechi Nwankezie, "Conceptualizing Strategic Environmental Assessment: Principles, Approaches and Research Directions" (2017) Env Impact Assessment Rev 165 at 166; Jiliberto, *supra* note 83 at 134.
[87] Maria do Rosário Partidário, *Strategic Environmental Assessment Better Practice Guide – Methodological Guidance for Strategic Thinking in SEA* (Portuguese Environmental Agency, 2012) 14.

sustainability issues in decision-making, assessing strategic development options and issuing guidelines to assist implementation", is considered as the more recent phase of SEA in the literature.[88] The argument for this sustainability conception of SEA is that the focus of SEA should not be seen merely as the assessment of the impact of PPP, but as ensuring that the making and planning process of PPP is firmly embedded in sustainability, leading to political change.[89] In this sense, PPPs are not the direct focus of SEA but their developmental conditions, governance structure and institutional make-up.[90] Lobos and Partidário contend that given this context, SEA must be used as a catalyst for the generation of organizational long-term cultural effects and the strengthening of environmental management and planning.[91] While Partidário's idea of SEA has been endorsed by many, the actual implications of the sustainability-themed definition seem unclear. Making this point, Bina notes that "the actual meaning – in practical terms – of 'contributing' to sustainable development is poorly understood and discussed".[92] Rather than a specific mode of assessment, SEA is construed here as a high-level normative construct.[93] Wallington et al frames this transformative notion of SEA as "an intentionally 'political' process intended to change the way decisions are made, and to induce learning about environmental values in institutions, organisations and civil society".[94]

This normative approach to SEA also changes the conventional understanding of the SEA – EIA relationship, particularly in the context of tiering. Tiering is understood as a "sequence of environmental assessments at different planning levels" to prevent foreclosure and the postponement of detailed issues and to scope assessment better.[95] It could be vertical (hierarchy of

[88] *Ibid* at 11. See also Noble & Gunn, *supra* note 81 at 96; Monica Fundingsland Tetlow & Marie Hanusch, "Strategic Environmental Assessment: The State of the Art" (2012) Impact Assessment and Project Appraisal 15 at 19; Morten Bidstrup & Anne Merrild Hansen, "The Paradox of Strategic Environmental Assessment" (2014) 47 Env Impact Assessment Review 29 at 30.
[89] Tetlow & Hanusch, *ibid* at 17; Jiliberto, *supra* note 83 at 134.
[90] Partidário, supra note 87 at 20 – 23; Noble & Gunn, *supra* note 81 at 97.
[91] Victor Lobos & Maria Partidario, "Theory versus Practice in Strategic Environmental Assessment (SEA)" (2014) 48 Env Impact Assessment Review 34 at 45.
[92] Bina, *supra* note 76 at 596.
[93] Bina describes SEA in the sustainability transition sense as "more of a promise … a normative construction than an observation of systematic practice … SEA is not an assessment tool or mechanism per se, but a range of governance processes and tools". See Olivia Bina, "Strategic Environmental Assessment" in A. Jordan & A. Lenschow eds, *Innovation in Environmental Policy? Integrating Environment for Sustainability* (Cheltenham: Edward Elgar Publishing Ltd, 2008) 134 at 17, 18.
[94] Wallington et al, *supra* note 69 at 573 – 575.
[95] Luis Sanchez & Solange Silva-Sanchez, "Tiering Strategic Environmental Assessment and Project Environmental Impact Assessment in Highway Planning in Sao Paolo, Brazil" (2008) 28 Env Impact Assessment Rev 515 at 516.

levels), horizontal (same administrative level) or diagonal (combination of vertical and horizontal tiering).[96] The oft seen picture of tiering, however, rarely captures the normative concept of SEA at the topmost tier. It is argued that the normative approach makes the community the first level in a vertically tiered SEA. The determination of a strategic direction begins with the democratic process. This includes but is not limited to the determination of a country's leadership through elections.

Elections transcend the mere casting of ballots for a set of people to govern. Through this democratic process visions are articulated through campaign platforms, the citizenry is engaged and educated directly when politicians and their proxies canvass for votes, and policy debates are held in and with the public actively involved. Beyond the eventual election of individuals with the highest vote counts, the 'winners' (ideally) represent priorities and visions considered acceptable to the highest number of people. These priorities and visions, generally, inform the developmental pathways that will be opted for by the political leaders. A government which campaigned, contested, and won elections campaigning that it will double down on fossil fuel production and construct more pipelines will generally deem their election as indicative of the preference of the citizenry and is less likely to prioritize sustainability transition activities.[97] The point here is that the 'strategic' begins with the 'political'. While this position is largely unmade in the literature, Jiliberto's advocacy for a deliberative, people-oriented, and dialogue-based SEA is apposite.[98] If SEA is to be true to its claim to proactiveness then it must make the 'political' a core frontier. In the same way an economic and financial analysis of election platforms or manifesto is conducted,[99] such platforms should also be assessed for consistency with sustainability. While sustainability transition concerns are beginning to feature more prominently in the IA of fossil fuel activities, SEA appears to be one of the most engaged forms of IA.

---

[96] Arts et al, *supra* note 69 at 2 – 3.

[97] An example of this is the former Premier of Alberta (Jason Kenney), Canada, who campaigned, in part, on the promise to ensure that pipelines for oil exportation are built and that carbon tax is abolished in the province. See "Oil Prices, Pipelines and Jason Kenney's Impeccable Timing", *The Globe and Mail* (28 April 2019) <https://www.theglobeandmail.com/opinion/editorials/article-oil-prices-pipelines-and-jason-kenneys-impeccable-timing/>.

[98] Jiliberto, *supra* note 83 at 134 – 135.

[99] For example, see Kevin Page et al, "IFSD Platform Assessment Framework: Fiscal Credibility of 2019 Federal Party Election Platforms", *Institute for Fiscal Studies and Democracy* (2019) <https://www.ifsd.ca/en/blog/last-page-blog/assessment-party-platforms>.

iii. Ecological Risk Assessment

Ecological Risk Assessment (ERA) is generally not considered as the same as IA, although certain aspects of IA (e.g., scoping and effects assessment) feature in the ERA process, and it has been described as an EIA tool or component elsewhere.[100] As in the case of other forms of assessment considered, ERA has fundamentally evolved. What began as a scientific quantitative process of evaluating the "likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors",[101] is now considered as an interdisciplinary venture which, in its analysis, should factor in the contribution of ecosystems to the welfare of the people and society.[102] Suter argues that despite the independent vulnerability of ecological receptors, human risks sway decision making more.[103] On this basis he concludes that "the future success of ERA will depend on making it more compelling to decision makers than on making it more technically sophisticated".[104] This and similar arguments heralded the conception of ecosystem services as a means of valuing effects in ERA.[105]

Assessment endpoint (AE) is central to the analysis done in an ERA.[106] AE includes the specific VEC to be protected (e.g., species, habitat, or a unique place) or the characteristic of the VEC to be protected.[107] AEs are expected to be objective, neutral, and specific.[108] There is, however, no

---

[100] See generally M. Claassen, "Ecological Risk Assessment as a Framework for Environmental Impact Assessments" (1999) 39:10/11 Water Science Tech 151 – 154; S.M. Bartell, "Ecology, Environmental Impact Statements, and Ecological Risk Assessment: A Brief Historical Perspective" (1998) 4:4 Human and Ecological Risk Assessment 843 – 851.

[101] See US Environmental Protection Agency (US EPA), "Guidelines for Ecological Risk Assessment" 1998 EPA/630/R-95/002F, 1; Agáta Fargašová, "Ecological Risk Assessment Framework" (2016) 24:1 ACTA ENVIRONMENTALICA UNIVERSITATIS COMENIANAE (BRATISLAVA) 10 at 11; Wayne Munns et al, "Ecosystem Services as Assessment Endpoints for Ecological Risk Assessment" (2015) 12:3 Integrated Env Assessment and Mgt 522 at 523.

[102] See generally, Munns et al, *ibid*.

[103] Glenn Suter II, "Ecological Risk Assessment in the United States Environmental Protection Agency: A Historical Overview" (2008) 4:3 Integrated Env Assessment and Mgt 285 at 288.

[104] *Ibid.*

[105] The US EPA defines ecosystem services as "the outputs of functioning ecosystems that contribute to human well-being now or have the potential to contribute in the future". US EPA, "Generic Ecological Assessment Endpoints for Ecological Risk Assessment: Second Edition with Generic Ecosystem Services Endpoints Added" (2016) EPA/100/F15/005.

[106] US EPA, *supra* note 101 at 28. Structurally, determination of assessment endpoint is done at the problem formulation phase of ERA. This first phase as it is with scoping in the EIA process, informs the other phases – analysis and risk characterization.

[107] *Ibid* at 35.

[108] *Ibid* at 36. See also Munns et al, *supra* note 101 at 523. As noted by Munns, this does not mean that societal values are not considered in determining assessment endpoints, it only does not place them at the centre of its analysis. It is worth noting that a central purpose of ERA is to address uncertainties in impact assessment by moving uncertainty

single classification of AEs. With the introduction of the ecosystem services concept, AEs are categorized as conventional AE (CAE) and ecosystem services assessment endpoint (ESAE).[109] Generally, the latter (ESAE) seems to be preferred to the former.[110] Munns et al note that CAE and ESAE are complementary and that the latter is useful to make explicit ecological decision benefits to humans and help decision makers to better balance "environmental, ecological, and social elements of the decision".[111] ESAE can be criticized for its seeming anthropocentrism and for failing to appreciate nature's inherent value. Its value, however, lies in its pragmatism and political utility. The US Environmental Protection Agency recognizes use (consumptive, functional, informational, recreational, and educational) and non-use (cultural, religious etc.) values of ecosystems.[112]

The recognition of the use and non-use benefits of ecosystems provides a relatively fulsome picture of the values in nature. ERA identifies the risks from stressors to ecosystems using these use and non-use benefits as endpoints. It also explicitly couples ecological risk to human wellbeing as shown in *figure* 7. This does not, however, mean that every ERA explicitly achieves or even intends to achieve this connection. Such is the case with the conventional endpoint which simply considers the probabilities of stressors' impact on ecosystems without more. Showing the relevance of ERA to EIA under the NEPA, Bartell emphasizes that ERA "was designed to explicitly address the many sources of uncertainty associated with analyzing environmental impacts".[113] While there is nothing wrong with seeking resolutions to uncertainties with ERA methods, this should not discount the importance of the precautionary principle that undergirds the

---

explicitly to the forefront, making "every attempt to quantify such uncertainties … and explicitly determine their impacts on the overall quality and utility of the assessment". Bartell, *supra* note 100 at 848. This mandate necessarily requires a streamlined analytical process and a departure from the more generic processes, in part, responsible for the absence of certainty.

[109] US EPA, *supra* note 105 at 5.

[110] For example, the United Nations Millennium Ecosystem Assessment (2001 - 2005) was built almost wholly on the ESAE framework. See generally World Resources Institute (WRI), *Millennium Ecosystem Assessment - Ecosystems and Human Well-being: Synthesis* (Washington, DC: Island Press, 2005). Munns et al also note that with the exception of few legislations like the Endangered Species Act which forbids the consideration of economic factors (see United States Endangered Species Act of 1973, [As Amended Through P.L. 113–287, Enacted December 19, 2014], s. 4(f)(1)(A)), the ecosystem services concept has been included in policies, practices, and guidelines of various US agencies. See Munns et al, *supra* note 101 at 523.

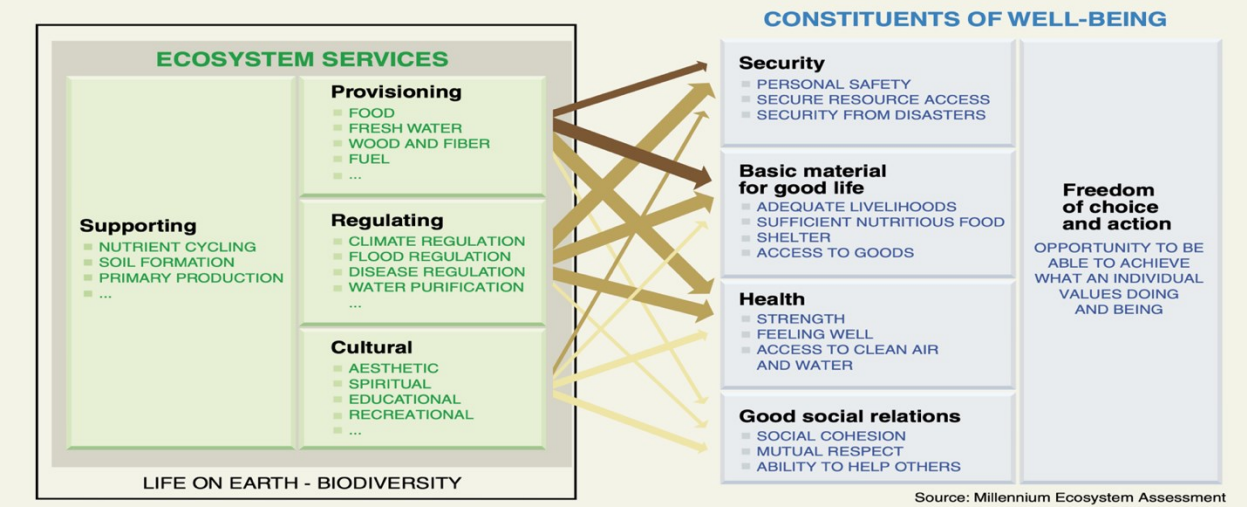
[111] Munns et al, *supra* note 101 at 524, 526, 528.

[112] US EPA, *supra* note 105 at 18 – 20.

[113] Bartell notes that "… uncertainties were often either ignored, omitted, described in qualitative terms, or merely implicit in the assessment and reflected correspondingly in the EIS." ERA moves uncertainty to the forefront and "makes every attempt to quantify such uncertainties … and explicitly determine their impacts on the overall quality and utility of the assessment." See Bartell, *supra* note 100 at 7.

treatment of uncertainties in EIA. It is also worth noting that quantitative appraisal is not always appropriate, applicable, or desirable. This is particularly the case when non-market ecosystem services like the heritage and religious values of ecosystems are at risk.

Figure 7: Ecosystem Services and Wellbeing[114]



Within the just sustainability transition context, ecological IAs help answer the question of how the process of transitioning from fossil fuel can be consistent with the mandate of restoring and protecting the integrity of nature. That an activity is non-fossil does not mean that it is ecologically just. A non-fossil response measure (e.g., converting previous coal mines into cultural and tourism sites like in Ruhr, Germany[115] or diversion to renewable energy projects like bioenergy) cannot and must not be taken at face value as ecologically just. Ecological IAs can make overt the value of transitional activities to the restoration or protection of the natural environment. It does this by adopting a historical baseline which would ordinarily pre-date the fossil project,[116] identifying the changes that have occurred by reason of the fossil activity and determining whether response

[114] WRI, *supra* note 110 at vi.

[115] See for example Gabriel Popkin, "Germany's Ruhr Valley Beckons with Converted Coal Mines and a Unique Industrial Heritage", *The Washington Post* (21 February 2020) online: <https://www.washingtonpost.com/lifestyle/travel/germanys-ruhr-valley-beckons-with-converted-coal-mines-and-a-unique-industrial-heritage/2020/02/20/aac02bd0-4841-11ea-bc78-8a18f7afcee7_story.html>.

[116] The baseline could either be an abundant resource baseline when the ecological component was less affected by human action or a stable ecosystem historical state when the ecosystem is consistent with management or governance goals. See Clark Murray et al, *Cumulative Effects in Marine Ecosystems: Scientific Perspectives on its Challenges and Solutions* (Vancouver: WWF-Canada, 2014) 28 – 31.

activities further exacerbate the harm already done by the fossil project, simply maintains the status quo, or helps to reverse the decline and restore the ecosystem.

This determination must be made before the implementation of response measures. Hence, the need for impact assessment in making transition related decisions. Ideally, only response measures which reverse existing ecosystem decline and re-enriches same should be permitted, while exacerbating measures should be disallowed. In many cases, however, the decision will not be so black and white. The important point is the need to avoid the presumption that a response measure is positive just because it is non-fossil. A safer assumption is that every response measure has potential adverse and positive ecological effects which must be deliberately and carefully assessed to restore and protect the ecosystem. While the inherent value of ecosystems is important to recognize, ecosystem services provide a more relatable language for conveying the importance of ecosystem components. In the conflict-infested terrain of sustainability transition, the availability of such language is important. In figure 6, for example, climate regulation is not just crafted using the 1.5ºC or 2ºC language. It is about personal safety, security from extreme weather event, adequate livelihoods, and good health. Ecological IAs are useful in identifying the connection between ecological impacts and impacts on ecosystem services, thus providing a useful language for effective communication.

B. Interest and Right-based IAs

Interest and right-based IAs focus on how projects, plans, programmes, and policies affect people and how such impacts are managed. Shortly after the introduction of environmental impact assessment in the late 1960s, social impact assessment (SIA) was developed in the 1970s. Since this time, various interest and right-based IAs have come into existence, including health impact assessment, human rights impact assessment, indigenous and cultural impact assessment, and gender impact assessment. These IA modes generally focus on distinct albeit intersecting concerns. A common denominator is the expectation that they should be socially situated, actively and meaningfully involving affected and interested persons. Beyond focusing on issues, the various modes and lenses of interest and right-based IAs turn the searchlight on vulnerable individuals or classes of marginalized people at the margins of developmental activities, often paying the price for those activities. The highlighting of the specific interests and rights of individuals and communities which could otherwise fall through the cracks of more overarching IA modes like the SIA is a major justification for the existence of more specific interest and right based IA lenses

(e.g., gender, cultural, indigenous impact assessment).[117] To exemplify this necessity, consider what Lerner describes as sacrifice zones where toxic chemical effusing industries are lopsidedly sited in racialized communities.[118] While most of such industries or projects were assessed as part of the permit procurement processes, race is often a missing factor.

The sacrifice zone phenomenon also blights sustainability transition activities. Take for example the recent report on the hardship experienced by marginalized communities in the United States through the siting of biomass plants dominantly in such communities.[119] While Enviva went through the review process under the American Clean Air Act to obtain a Title V permit in setting up its biomass plants, race is not a required factor in the review process.[120] The tendency to unintentionally reproduce inequitable racial outcomes by not consciously addressing racial inequity premises the clamour for Racial Equity Impact Assessment;[121] a rare find in impact assessment laws globally. The pliability of the impact assessment system to centering the concern of otherwise unheard voices is one other reason it is key to the just transition cause. I consider key interest and right based impact assessment modes and lenses and their relevance in the just transition discourse below.

i. Social Impact Assessment

Vanclay describes Social Impact Assessment (SIA) as "an umbrella … that embodies the evaluation of all impacts on humans and on all the ways in which people and communities interact with their socio-cultural, economic and biophysical surroundings".[122] In other words, if it affects humans, their welfare, values, norms, and relationships, then it is 'social'. As noted by the Interorganizational Committee on Guidelines and Principles for SIA (Interorganizational Committee), when properly done, "SIAs help the affected community or communities and the agencies plan for social change resulting from a proposed action or bring forward information

[117] Vanclay, *supra* note 72.
[118] Stephen Lerner, *Sacrifice Zones: The Front Lines of Toxic Chemical Exposure in the United States* (Cambridge: MIT Press, 2010).
[119] Majlie de Puy Kamp, "How Marginalized Communities in the South are Paying the Price for 'Green Energy' in Europe", *CNN* (July 9, 2021) online: <https://www.cnn.com/interactive/2021/07/us/american-south-biomass-energy-invs/>. See also Dayna Scott, ""Sacrifice Zones" in the Green Energy Economy: Toward an Environmental Justice framework" (2017) 62:3 McGill LJ 861 – 898.
[120] *Clean Air Act*, 42 USC §§7401-7671.
[121] The Center for Racial Justice Innovation, "Racial Equity Impact Assessment", online: <https://www.raceforward.org/sites/default/files/RacialJusticeImpactAssessment_v5.pdf>.
[122] *Ibid*.

leading to reasons not to carry out the proposal".[123] The remit of what are considered social impacts is broad. For example, Vanclay's indicative social impacts include health and social well-being impacts, quality living environment, economic impacts, cultural impacts, family and community impacts, legal and equity impacts, and gender relations impacts.[124] The Interorganizational Committee took a more thematic approach in compiling its social impact variable list which highlights population characteristics, community and institutional structures, political and social resources, community and family changes, and community resources as social and cultural assessment variables relevant in measuring and explaining impacts under SIA.[125] Although Vanclay argues that this list contains mostly causal factors rather than the impacts themselves,[126] I argue that they put SIA in a more strategic position for identifying, appraising and managing social risks. This is also important in distinguishing SIA from the more specific right and interest-based IA modes, which is difficult to do using Vanclay's indicators. While this does not mean that identity related factors like gender and race should not be considered under SIA, such consideration is done within an overarching context.

SIA has evolved from a regulatory tool to being primarily used for managerial purposes.[127] This connotes an integration of social considerations into the entire value chain and operations of a company ranging from what a business determines as its values to its distribution of benefits. Unlike ecological impacts which might not surface until the construction phase of an undertaking or the actual implementation of a policy, plan or programme, social impacts can begin from the moment rumours about a project, policy, plan or programme, whether or not such activity proceeds. Describing these impacts, Vanclay notes that "anxiety is created, and speculation and opportunism occur, creating social impacts … Because people act on their fears and beliefs, and their outlook on life and perceived opportunities are affected …"[128] According to the Interorganizational Committee, hopes and hostilities begin to mount from the time of announcing a pending policy change or possible project, "speculators can lock up potentially important

[123] The Interorganizational Committee on Guidelines and Principles for SIA, "Principles and Guidelines for SIA in the USA" (2003) 21:3 Impact Assessment and Project Appraisal 231 at 232 (Interorganizational Committee).
[124] Frank Vanclay, "Conceptualising Social Impacts" (2002) 22 Env Impact Assessment Rev 183 at 200 – 208.
[125] Interorganizational Committee, *supra* note 123.
[126] Vanclay, *supra* note 124 at 187 – 189.
[127] Frank Vanclay, "Reflections on Social Impact Assessment in the 21st Century" (2020) 38:2 Impact Assessment and Project Appraisal 126.
[128] *Ibid* at 127.

properties, politicians can maneuver for position, and interest can form or redirect their energies".[129] These early forms of impacts provide a different type of justification for the early meaningful participation of interested and affected persons in the conceptualization and design of activities. Beyond early meaningful participation being useful in ensuring public input at the planning and design phase of the project before the company invests so much in conceptualizing the project, there are impacts at this phase which go undetected and uncatered to. These impacts could also serve as early indicators of subsequent impacts when an activity is implemented.

While there is a strategic dimension to the assessment of social impacts, strategic assessment is often employed primarily in respect of the environmental impacts of policies, plans and programmes (PPP). The most common iteration of strategic assessment is strategic environmental assessment (SEA), briefly considered above. Most principles of SEA, however, apply to the strategic assessment of social impacts. Elsa João, for example, highlights two principles vital to the implementation of SEA. First, SEA identifies and compares feasible PPP options within an assessment context, and second, SEA improves rather than simply analyzes the PPPs.[130] These principles apply to investigating strategic social impacts as much as they do to assessing strategic environmental impacts. It is difficult, if not impossible, to fully identify and compare 'feasible PPP options' and adequately improve on them if 'environmental' impacts defined in the biophysical sense were the sole focus of a strategic assessment and 'experts' or policy makers and planners were the key participants. The social implication of strategic assessment becomes even more telling if the envisioning and design of a sustainability aligned developmental framework and system, as suggested above, were to be its ultimate end. 'Development' is a social concept which has humans as its primary stewards, beneficiaries, and victims. This is true even when 'development' is considered in the 'de-growth' or 'de-development' sense. One can, therefore, not envision a sustainable future *in vacuo* without considering what that means for humans, even if such future also has non-human consequences.

One of the main advantages of framing strategic assessment in the social sense is the opportunity for early pre-project engagement of potentially affected and interested individuals, and the legitimacy such engagement can confer on resultant policies, plans and programmes. Strategic

[129] Interorganizational Committee, *supra* note 123 at 240.
[130] Elsa João, "Key Principles of SEA" in M. Schmidt et al eds, *Implementing Strategic Environmental Assessment* (Berlin: Springer, 2005) 7.

social impact assessment allows for the participation of stakeholders in supplying alternative visions, frontally considering conflicting envisioned futures, and collectively agreeing to preferred developmental pathways proactively. The location of strategic assessment before specific project assessment potentially reduces the influence of businesses and corporate interests and the imbalance in power relations that such influence fuels. While this does not mean corporations do not influence strategic assessment processes, it means that since strategic assessment is ideally done before specific projects are proposed or assessed, vested business interests are limited and there is a possibility of a greater amplification of various voices in the community. In their work on strategic perspectives analysis (SPA) and SIA, Dale and Lane highlight how SPA assists stakeholders, including disenfranchised and marginalized interest groups, to formulate their preferred visions, objectives and strategies, and to deal proactively with resource developments.[131] This is done in relation to others' visions, which may at times conflict, informing better integration of plural perspectives within planning processes and outcomes.[132]

Rather than avoiding conflict, conflict is assumed and integrated into the SPA methodology where the eliciting of strategic perspectives of interest groups, analysis, validation, and negotiation of perspectives are key components.[133] With these components, strategic assessment of social impact becomes not just a phase of assessment preceding project EIA but a more ideal terrain for public dialogue, and potentially, experiential learning. Constraints that limit project IA's potential as a domain of dialogue and learning, like limited time, narrow scope and vested commercial interest, are less prominent at the strategic phase. The strategic assessment of social impacts has considerable implications for just sustainability transition. It has the prospect of assisting with the methodical collection of various sustainability visions, pathways and what they mean for various groups. This also implies early identification of areas of convergence and points of conflict allowing for proactive and robust consideration of various viewpoints and a search for resolution. This manner of engagement has the prospect of producing place sensitive and culturally appropriate visions and pathways which can guide sustainability transition coherently in the long term. The point is worth repeating that strategic assessment is most relevant at the planning phases before the project phase. Such positioning allows for the anticipation of likely objections and

[131] Allan Dale & Marcus Lane, "Strategic Perspectives Analysis: A Procedure for Participatory and Political Social Impact Assessment" (1994) 7:3 Society & Natural Resources 253 at 256 – 257.
[132] *Ibid* at 257.
[133] *Ibid* at 258.

oppositions and ways to avoid them. Fisher, for example, argues that when SEA is steeped in public participation, there is the possibility of avoiding domains of resistance like NIMBY (not in my back yard) and LULU (locally unwanted land use), which could lead to reduced costs and efficient decision making at the project level.[134]

ii. Human Rights Impact Assessment

While modes of assessment like human rights, health, gender, and cultural IA could, as suggested by Vanclay, be subsumed under SIA,[135] the failure to pay sufficient attention to the peculiar demands of each of these concerns has led to the development of specific IA modes. Human rights impact assessment (HRIA) has in recent years gained prominence. HRIA identifies, examines, and seeks to address the effects of a project, policy, or intervention on human rights.[136] While it has been around for many years, its more recent uptake by businesses is due to its recognition in the United Nations Guiding Principles on Business and Human Rights (UNGP).[137] The UNGP is a departure from the more traditional understanding that states are primarily or solely responsible for human rights. It establishes that businesses have a responsibility to respect human rights, which means that businesses should avoid infringing on human rights and address human rights impacts directly or indirectly resulting from their actions. The courts are beginning to recognize and endorse this responsibility.[138] The human rights focused on by the UNGP are those which are internationally recognized.[139] The UNGP highlights the International Bill of Human Rights and fundamental rights principles contained in the International Labour Organization's Declaration on Fundamental Principles and Rights at Work as a 'minimum' understanding of human rights which are internationally recognized. A key takeaway from these highlighted examples is that

[134] Thomas Fisher, "Strategic Environmental Assessment in Post-Modern Times" (2003) 23 Environmental Impact Assessment Review 155 at 166 – 167.
[135] Vanclay, *supra* note 124 at 187 – 189.
[136] Eitan Felner et al, *Human Rights Impact Assessment: A Review of the Literature, Differences with other Forms of Assessments and Relevance for Development* (The World Bank & Nordic Trust Fund, 2013) ix.
[137] UN Office of the United Nations High Commissioner for Human Rights (OHCHR), 'Guiding Principles on Business and Human Rights: Implementing the United Nations "Protect, Respect and Remedy" Framework' (2011) online: <https://www.ohchr.org/documents/publications/GuidingprinciplesBusinesshr_eN.pdf> (UNGP).
[138] In *Milieudefensie et al v. Royal Dutch Shell Plc* ECLI:NL:RBDHA:2021:5339, para 4.4.13, the Hague District Court held that businesses' responsibility to respect human rights as contained in the UNGP "is a global standard of expected conduct" for all businesses wherever they operate. This responsibility exists independently of the States' abilities or willingness to fulfil their own human rights obligations and above what is contained in national laws and regulations.
[139] Nora Götzmann, "Introduction to the Handbook on Human Rights Impact Assessment: Principles, Methods and Approaches" in Nora Götzmann, ed., *Handbook on Human Rights and Impact Assessment* (Cheltenham: Edward Elgar, 2019) 7 – 9.

'internationally recognized' human rights which businesses should respect are not limited to rights contained in binding international treaties or even rights that have evolved into customary international norms. Internationally recognized rights include the right to social protection and the right to a clean and healthy environment already recognized in various forms in numerous countries.[140] The UNGP further explains that apart from the highlighted instruments, the rights of vulnerable individuals or populations requiring particular attention must be attended to by businesses.[141] These include the rights of Indigenous peoples, women, minority groups, children, persons with disabilities, and migrants.

The UNGP promotes human rights due diligence (HRDD) as the primary mechanism through which businesses should identify, prevent, mitigate, and account for how they address adverse human rights impacts.[142] While HRIA is not one and the same as HRDD, it is a key instrument in meeting HRDD's broader objectives. Distinguishing HRIA from other HRDD tools like risk assessments and gap analysis, Götzmann notes that HRIA is based on internationally recognized human rights standards and principles; emphasises the participation of rights-holders, duty-bearers, and other human rights holders; heightens attention paid to equality and non-discrimination; and places focus on accountability including transparency, access to information and access to remedy.[143] Considering the inherent and personal nature of human rights, the notion of trade-off applies less in the context of HRIA than it does in other HRDD tools and IA modes. The 'overall' good does not justify projects or initiatives that infringe on human rights. Hence, remediation, including through an operational-level grievance mechanism, is a key component of HRIA.[144] The interests sought to be protected through HRIA are generally rights which are legally

[140] The right to safe, clean, healthy and sustainable environment enjoys constitutional protection in 110 countries. See Human Rights Council, "Right to a Healthy Environment: Good Practices – Report of the Special Rapporteur on the issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment" 43rd Sess (30 December 2019) para 10. In 2022, the United Nations recognized the right to a clean, healthy and sustainable environment as a human right. See *The Human Right to a Clean, Healthy and Sustainable Environment,* (2022) A/Res/76/300, Art 1. On the right to social security, see Art. 9 of the International Covenant on Economic, Social and Cultural Rights (1966) recognizes the right of everyone to social security.
[141] UNGP, 23.
[142] UNGP, principle 17. This expectation stated even more clearly in the UN Framework Principles on Human Rights and the Environment. It establishes that "states should take additional measures to protect the rights of those who are most vulnerable to, or at particular risk from, environmental harm, taking into account their needs, risks and capacities". See *Framework Principles on Human Rights and the Environment*, A/HRC/37/59, framework principle 14.
[143] Götzmann, *supra* note 139 at 13 – 16.
[144] *Ibid* at 16.

enforceable, creating a right holder and duty bearer relationship between affected persons and project proponents.

The methodical identification, consideration, and remediation of human rights impact which HRIA fosters is useful in attaining wellbeing and human functionings, which is the ultimate objective of just transition as envisioned in this thesis. The human rights consequences of various sustainability transition pathways have been highlighted in the earlier chapters of this thesis and other published works. For example, the IHRB shows how sustainability transition implicates human rights and how procedural and substantive human rights are key to planning and implementing just transition strategies.[145] Human rights due diligence is promoted by the IHRB as a practical tool for addressing "the wider implications of just transition processes … on communities, indigenous people and gender perspectives".[146] Particularly, the IHRB highlights the usefulness of HRDD for the screening of the human rights impacts of policy tools associated with sustainability transition.[147] This bears similarity to strategic assessment, although the relevance of impact assessment for just transition was not expressly examined by the IHRB. It, however, recognizes that cumulative climate related risks and impacts to both businesses and communities can be addressed through the integration of climate risk into human rights impact assessment.[148]

iii. Gender Impact Assessment and Gender-based Analysis Plus

The effects of projects and policies on gender and other identity factors like race, age, immigration status, mental or physical disability and the need to deliberately identify and address such impacts have led to the development of IA modes like gender impact assessment (GIA) and gender-based analysis plus (GBA+). While GIA focuses primarily on the gender implications of projects and policies, particularly on women and girls, GBA+ incorporates other gender and non-gender related identities. The objective of GIA is to ensure that projects and policies do not maintain or worsen the inequality between women and men.[149] Developmental activities might claim gender neutrality, but even when unintended, such activities are conditioned and impacted by existing

[145] IHRB, "Just Transitions for All: Business, Human Rights, and Climate Action", (November 2020) online: <https://www.ihrb.org/uploads/reports/Just_Transitions_For_All_-_Business%2C_Human_Rights%2C_and_Climate_Action_-_IHRB_Nov2020.pdf > 22 – 25.
[146] *Ibid* at 7.
[147] *Ibid* at 51.
[148] *Ibid* at 30.
[149] European Institute for Gender Equality, *Gender Impact Assessment: Gender Mainstreaming Toolkit* (Gedimino, Lithuania; EIGE, 2016) 8.

structural gender inequalities. GIA considers whether a project or policy has possible direct or indirect gender implications;[150] existing and likely environmental, sociological, and normative factors informing the sensitivity of a specific gender to the impacts of developmental activities; and the quantum of impact on a gender group.[151] To adequately identify gender specific impacts, the availability and use of sex disaggregated data is central to GIA. Although gender is considered in broader IA modes like SIA and HRIA, it has been argued that such integration might lead to gender perspectives becoming blurred and being made irrelevant.[152]

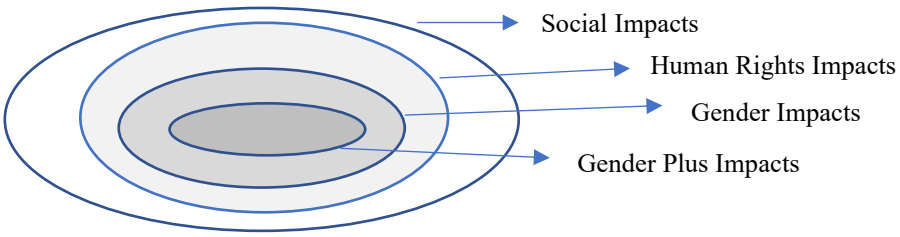
Climate change has also been shown to have more impacts on women, impacts which could be made worse through transition initiatives insensitive to the existing inequalities. In its report on gender and climate change, the Subsidiary Body for Implementation (SBI) concludes that the differentiated impacts of climate change on women and men increased vulnerabilities, especially of women, to climate change.[153] The increased vulnerability is not due to the mere fact that women are women but are caused by factors including existing inequalities due to unequal power relations and structures, discriminatory laws and customs, unequal access to and control of resources, and skewed burden of unpaid domestic and care responsibilities.[154] Other factors include limited access to sexual and reproductive health care, and increased exposure to gender-based harassment and violence and impoverishment particularly when male spouses lose their jobs, migrate or leave the household.[155] Specifically, on responses to climate change, the SBI report referenced the design and implementation of REDD-plus programme in Vietnam where there was meagre effort to ensure the meaningful participation of women in the benefit sharing arrangements.[156] Hence, benefits from the project risked "reflecting only powerful male social groups' priorities, excluding women altogether and/or exacerbating gender and social inequalities".[157] Further highlighting the gender implications of sustainability transition, the ILO points to the limited access of women to

[150] According to the EIGE, while direct impacts affect the status and position of women and men directly and immediately (e.g., grants, jobs etc.), indirect impacts flow from institutional and structural initiatives or projects which are not directly addressed to individuals (e.g., management of activities and facilities, incentives for projects etc.) but have eventual consequences. *Ibid* at 14.
[151] *Ibid* at 14 – 16.
[152] *Ibid* at 11.
[153] SBI, *Differentiated Impacts of Climate Change on Women and Men; the Integration of Gender Considerations in Climate Policies, Plans and Actions; and Progress in Enhancing Gender Balance in National Climate Delegations*, 50th Sess, FCCC/SNI/2019/INF.8, para 18.
[154] *Ibid* at para 25.
[155] *Ibid.*
[156] *Ibid* at para 36.
[157] *Ibid.*

social protection as many are unable to make contributions given that they are mostly engaged in the informal sector.[158] The SBI recognizes gender impact assessment as one of the tools useful in acquiring and analyzing sex-disaggregated data and using such data in identifying differentiated impacts.[159]

Intersectionality is another key factor when gender is considered in the assessment of impacts. Gender is not a monolithic construct. For example, there are different identities in the female gender category which could be distinguished whether by race, class, or disability. The consideration of intersectional identities in the assessment of impacts is the focus of GBA+.[160] GBA+ goes further than merely asking how a project or policy entrenches or worsens inequality amongst women and men; it further recognizes that not all women or men are affected similarly. Indigenous women could be more affected than non-Indigenous women, and women without property rights and access to resources more affected than women with such privileges. Also, while men might be generally deemed 'privileged', men with certain disabilities or disadvantages could be more prone to adverse impacts than other individuals. GBA+ turns the assessment searchlight towards a more defined and specific demography than any of the interest or right based IA considered here. This is essential for just transition, the focus on vulnerability, and truly achieving the mantra of leaving no one behind in the move to a post-carbon economy. A transition policy which includes traveling to another city to work on a green project might, for example, have more impact on single parents, requiring that such factor be taken into consideration when designing such policy. I will further show the role of intersectionality within the just transition impact assessment framework in chapter five.

Figure 8: Interest and Right based Impacts



[158] International Labour Organization, "Gender, Labour and a Just Transition Towards Environmentally Sustainable Economies and Societies for all" (2017) online: <https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/--- iloaids/documents/publication/wcms_592348.pdf>.
[159] SBI, *supra* note 146 at para 40 – 43.
[160] Nicole Peletz et al, *Gender Analysis and Impact Assessment: Canadian and International Experiences* (Vancouver: Canadian International Resources and Development Institute, 2019) 2.

The Canadian IAA explicitly requires the consideration of interest and right-based impacts, including Indigenous rights, changes to health, social or economic conditions, and gender plus impacts.[161] Beyond being factors to be considered when conducting an assessment, the determination of public interest by a decision maker is, in part, informed by a consideration of the impact of a project on an Indigenous group and the rights of Indigenous peoples.[162] The Act also allows for the consideration of Indigenous and community knowledge,[163] and importantly, the recognition of an assessment conducted by or on behalf of an Indigenous governing body.[164] As noted by Mainville and Pelletier, the promise of recognizing the right to Indigenous-led assessment allows for the true understanding of the concerns of Indigenous people and the centering of Indigenous laws and principles which fundamentally different from western ideal based conventional IA.[165] These provisions under the IAA present some of the most important opportunities for catering to just transition concerns in Canada. A key disadvantage, however, is that the consideration of these interest and rights-based factors might come too late in the IA process. Further, there is no explicit requirement for the consideration of human rights impacts under the IAA, although it is arguable that socio-economic impacts under the Act include human right impacts.[166]

C. Dimensional IAs

Scoping a project for impact assessment does not just focus on impacts but also the extent of impact whether in temporal or spatial terms. Traditional IA focuses on impacts within a specific jurisdictional sphere caused by specific stressors within a specific timeframe. Such narrowly scoped IA is, however, fundamentally defective as it discounts the multiplicative nature of impacts. Projects and their impacts are not isolated from existing and subsequent developments. In fact, the prospect, materialization, and degree of impacts are realized more fulsomely when they are considered in the broader context of developments across time and space. The quality of the assessments of specific subject matter (e.g., environmental or social impacts) is considerably

[161] IAA, s 22 (1)(a)(c)(s).
[162] IAA, s 63(d).
[163] IAA, s 22(1)(g)(m).
[164] IAA, s 22(1)(r). Section 31 of the Act allows the Minister to approve the substitution of an assessment conducted by an Indigenous governing body for a federal IA process.
[165] Sara Mainville and Renée Pelletier, "UNDRIP, Decision Making, and the Role of Indigenous Peoples" in Doelle & Sinclair, *supra* note 27 at 139.
[166] Adebayo Majekolagbe, Sara Seck, and Penelope Simons, "Human Rights and the Impact Assessment Act: Proponents and Consultants as Duty Bearers", Doelle & Sinclair, *supra* note 27 at 446 – 447.

dependent on assessment across dimensions, including life cycle impacts, cumulative impacts, regional effects and transboundary impacts. Dimensional IAs also have implications for just sustainability transition. Importantly, they are useful in answering the question of who the subjects of just transition should be and the extent to which impacts can be reasonably scoped and addressed.

i. Life Cycle Assessment

Life Cycle Assessment (LCA) is mostly discussed as an assessment tool or technique rather than a type of assessment.[167] It is defined in ISO 14040 as the "compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system" from the acquisition of raw material to final disposal.[168] Unlike the EIA, which originated as a policy concern with focus on projects, the LCA is more product (goods and services) focused.[169] While mostly known for its focus on products and the biophysical environment, LCA has also been mainstreamed into the assessment of the lifecycle of products in respect of social and socio-economic considerations.[170] A distinction has been made between LCA and Life Cycle Impact Assessment (LCIA). LCA is an umbrella term including LCIA. According to the International Organizational for Standardization (ISO), LCIA is the third phase of a four-step assessment process, including goal and scope definition, inventory analysis, impact assessment and interpretation.[171] While the first two phases entail the establishment of the boundary of analysis, collection of data and clarification of calculation procedures for the quantification of inputs and outputs of a product system, the LCIA assigns the inventory results to selected environmental impact categories.[172] Hauschild and Huijbregts note that LCIA has evolved from its earlier use of midpoint methods to an endpoint approach and more recently a hybrid methodology.[173] Midpoints and endpoints are different

[167] See generally Michael Hauschild & Mark Huijbregts eds, *Life Cycle Impact Assessment* (Dordretch: Springer, 2015); J. W. Owens, "Life-Cycle Assessment: Constraints on Moving from Inventory to Impact Assessment" (1997) 1:1 Journal of Industrial Ecology 37 – 49.
[168] International Standard ISO 14040, 2nd ed, (2006) ISO 14040:2006(E) "Environmental Management – Life Cycle Assessment – Principles and Framework" at para.3.1 and 3.2.
[169] Hauschild & Huijbregts trace LCA's origin to a study on resource and emission profiles in the United States in the late 1960s. It was increasingly used for packaging studies in the 1980s and was further improved on through the works of scientific working groups under the Society of Environmental Toxicology and Chemistry in the 1990s. See Hauschild & Huijbregts, *supra* note 166 at 2. See also ISO 14040:2006, para. 3.9.
[170] See generally Marzia Traverso et al, "Towards Social Cycle Assessment: A Quantitative Product Social Impact Assessment" (2018) 23 Int J Life Cycle Assess 597 – 606; Catherine Benoit et al, "The Guidelines for Social Life Cycle Assessment of products: Just in Time" (2010) 15 Int J Life Cycle Assess 156 – 163.
[171] *Ibid* at v, 14.
[172] *Ibid* at 15. See also Hauschild & Huijbregts, *supra* note 167 at 4.
[173] *Ibid* at 2 – 3.

positions on the impact pathway between the inventory flow (input - output) and the areas of protection (final point of impact, e.g. human health and ecosystem). While the endpoints are the areas of protection, the midpoint indicators are intermediate ecological effects (e.g. radiative forcing increase and atmospheric temperature increase).[174] A choice between midpoint or endpoint method affects the degree and comprehensiveness of analysis; while an endpoint approach models the entire impact pathway, a midpoint method focuses on more direct and immediate effects.[175] While a combination of both has been recommended,[176] the relative certainty that characterizes the midpoint method (given the less complex variables it works with) makes it the more popular approach in the climate change context.[177]

A key feature of the LCA is that it allows for assessment at different phases of a product's life-cycle.[178] Variants of the LCA include cradle-to-grave analysis (entire life cycle), cradle-to-cradle analysis (entire circular life cycle), gate-to-gate analysis (selected stages of the life cycle), cradle-to-gate analysis (selected stages of life cycle and upstream environmental impacts), and gate-to-grave analysis (selected stages of life cycle and downstream environmental impacts).[179] In essence, LCA, unlike conventional EIA, is trans-phasic; transcending singular phases. Despite their dissimilarities, the LCA has been shown to have the potential to address the weakness of conventional EIA in adequately capturing impacts throughout the life cycle of projects.[180] Blazejowska and Palekhov demonstrate how the various phases of LCA can be integrated into and used to improve EIA at the scoping, identification of feasible alternatives, and assessment of significance stages.[181] They note that LCA's robust inventory process can provide more information for the EIA scoping stage, the quantitative data about the magnitude or scale of the

[174] *Ibid* at 8.
[175] *Ibid* at 8 – 9.
[176] See generally Jane Bare et al, "Midpoints versus Endpoints: The Sacrifices and Benefits" (2012) Intl J of Life Cycle Assessment 319 – 326.
[177] Annie Levasseur, "Climate Change" in Hauschild & Huijbregts, eds, *supra* note 167 at 42 – 46.
[178] Magdalena Rybaczewska-Blażejowska & Dmitry Palekhov, "Life Cycle Assessment (LCA) in Environmental Impact Assessment (EIA): Principles and Practical Implications for Industrial Projects" (2018) 22:1 Management 138 at 140.
[179] *Ibid.*
[180] It has been noted that "the advantage of (LCA) … is that it considers temporal scales that are often ignored in standard assessments, and it emphasizes the continuing responsibility of the proponents and related stakeholders … for the long-term maintenance of the project". Robert Milne & Lorne Bennett, "Assessment Methods" in Hanna, *supra* note 22 at 60. See also Anastassia Manuilova et al, "Should Life Cycle Assessment be part of the Environmental Impact Assessment? Case Study: EIA of CO_2 Capture and Storage in Canada" (2009) 1 Energy Procedia 4511 – 4518.
[181] Blazejowska & Palekhov, *supra* note 178 at 147 – 149. See also Arnold Tukker, "Life Cycle Assessment as a Tool in Environmental Impact Assessment" (2000) 20 Env Impact Assessment Rev 435 – 456.

project and analysed alternatives sourced from the LCA process can support EIA's identification of alternatives, and boost the credibility of the EIA significance assessment through its well-developed quantitative methodologies.[182] LCA has also been shown to be complementary to SEA.[183]

Despite the positive light in which the LCA has been cast, some of the claims made by LCA proponents like Blazejowska and Palekhov are questionable. An example is the claim that the LCA can improve EIA's identification of alternatives. As pointed out by Owens, there is a misconception that "LCA can by itself distinguish or discriminate environmentally relevant differences … LCA does not demonstrate any direct linkage between cause and effect".[184] More pointedly, Ayres notes that in most cases, LCA only exposes trade-offs, but "rarely point unambiguously at the 'best' technological choice".[185] He further critiqued the LCA's comparison of unlikes, non-disclosure of the underlying process data used for analysis and excessive focus on energy as a measure of environmental impact in lieu of market-based valuation.[186] Ayres' preference for market-based valuation, however, does not seem to resolve the criticisms he levelled against LCA's dominant use of energy valuation. Importantly, the ethics and accuracy of converting people's health, culture, ecosystem, and social and moral considerations into commodities and attaching monetary value to them is innately problematic.[187]

The LCA is further limited by non-consideration of factors or processes outside the product system being assessed.[188] The restriction of the various LCA phases (except the LCIA) to a system boundary detracts from the regional and cumulative reach of the assessment. Owens notes that, "spatial considerations are largely removed" in LCAs.[189] To address these deficits, it has been recommended that the LCA approach be integrated into a comprehensive environmental management framework with other complementary approaches.[190] Cumulative effects assessment

---

[182] *Ibid.*
[183] See Goran Finnveden et al, "Strategic Environmental Assessment Methodologies: Applications within the Energy Sector" (2003) 23 Env Impact Assessment Rev 91 at 111.
[184] Owens, *supra* note 167 at 46.
[185] Robert Ayres, "Life Cycle Analysis: A Critique" (1995) 15 Resources, Conservation and Recycling 199 at 201.
[186] *Ibid* at 219.
[187] See Norishiro Itsubo, "Weighting" in Michael Hauschild & Mark Huijbregts eds, *supra* note 154 at 613; Francois Retief et al, "Exploring the Psychology of Trade-off Decision-making in Environmental Impact Assessment" (2013) 31:1 Impact Assessment and Project Appraisal 13 at 16.
[188] Hauschild & Huijbregts, *supra* note 167 at 10.
[189] Owens, *supra* note 167 at 42.
[190] *Ibid* at 47.

and regional effects assessment are examples of such complementary approaches. Irrespective of the limitations of LCA, the temporal bridge and robust phase-by-phase cause-effect analysis that the methodology provides, help to fill gaps in the conventional EIA and SEA processes. While the integration of LCA into EIA does not appear to be rife in the EIA policies and laws of most countries, it is not unusual that proponents are mandated to include such assessments when carrying out project EIAs.[191] The EU included a question on the lifecycle assessment of a project's impact in its EIA review checklist.[192]

Despite its limitations, LCA brings to the fore an important nature of the impacts of projects or products – every phase of a project or product has its impact, and there is the possibility of overlooking these impacts if a specific phase is chosen for assessment, while other phases are discounted. Traditional IA, for example is largely considered an ex-ante exercise, most relevant at the pre-operation phases of a project. Although follow-up and monitoring have been recognized as key IA phases, follow-up plans are mostly tied to foreseen impacts and the implementation of pre-designed mitigation plans.[193] Even in new generation IA statutes like the Canadian Impact Assessment Act (IAA), adaptive management is considered optional rather than an essential component of the IA process.[194] LCA provides a platform for assessing impacts throughout the value chain of a product or project. This necessarily brings in dimensions of impacts that would otherwise be left out of consideration. It is not just about the impacts of the project; it entails other upstream and downstream impacts. Take a solar farm for example. Whereas a conventional IA might be scoped to focus on the effect of the construction on the environment and Indigenous rights, where relevant, it often does not take into consideration issues like the impacts of the production of solar panels and the implications of their disposal.[195] This is where the just transition

[191] The joint review panel for the whites point quarry and marine terminal project in Nova Scotia, Canada, for instance, requested the proponent to assess the effects of the project over its lifecycle. There was, however, no reference to life cycle assessment in the joint review panel report. See Joint Review Panel, 2006. EIS Information Request—July 28, 2006.Whites Point Quarry and Marine Terminal Project. Canadian Environmental Assessment Agency, Ottawa, ON; Joint Review Panel, 2007. Joint Review Panel Report, Environmental Assessment of the Whites Point Quarry and Marine Terminal Project. Canadian Environmental Assessment Agency, Ottawa, ON.
[192] European Commission, *supra* note 23 at 98.
[193] According to the IAA, a follow-up program means "a program for verifying the accuracy of the impact assessment of a designated project and determining the effectiveness of any mitigation measures". See IAA, s 2.
[194] Under the IAA, the Minister may require an adaptive management plan and its implementation if the Minister considers it 'appropriate'. See IAA, s 64(4)(b).
[195] For example, Infrastructure Canada determined that the 10 MW Awasis Solar project is unlikely to cause significant adverse environmental effects. The determination was based on the consideration of the impacts of the project on

value of LCA lies. It helps to investigate the justice impacts at all levels of the processes which go into projects and products. Sovacool et al have, for example, carried out an empirical study on the upstream and downstream effects of climate response measures in African countries. They conclude that it is the story of two extremes – a story of how carbon transitions in developed countries implicate toxic pollution, biodiversity loss, exacerbation of gender inequality, exploration of child labor, and subjugation of ethnic minorities elsewhere.[196] This contrast is termed the "decarbonisation divide."[197]

ii. Transboundary Impact Assessment

As exemplified in Sovacool et al's study, there is a transboundary dimension to LCA's cradle to grave or cradle to cradle lifecycle impact analysis. The spatial location of the 'cradle' or 'grave' of products or projects is rarely the same. Even if one were to attribute what constitutes a project's 'cradle' narrowly, restricting it to the project itself, the 'grave' of the project or its product is still likely to be different, at times, meaning a different country. Agbogbloshie in Ghana, one of the world's largest e-waste dumpsites, including solar panels from Europe and North America, is an example of such a grave site of projects.[198] These locations rarely feature in impact assessments despite the horrendous impacts of the irresponsible disposal of decommissioned technologies and facilities used for projects. This highlights the relevance of transboundary impact assessment to just sustainability transition. While there is potential under the Basel Convention to address the problem of the transboundary impacts of transition activities, it is unclear if most climate change relevant technologies will qualify as hazardous waste under the Convention.[199]

---

rights of Indigenous peoples, relevant potential environmental effects, comments received from the public, and technically and economically feasible mitigation measures. There is, however, no indication that any of these factors were considered beyond the scope of the Cowessess First Nation reserve land where the project was situated. Neither was there any indication of the consideration of how the project will be decommissioned and whether other Indigenous people or other communities will be impacted by the process of decommissioning. This is even more important considering the relatively short lifetime of solar projects of about 25 years. See Impact Assessment Agency of Canada, "Awasis Solar – 10 MW Project" (9 December 2020) online: <https://iaac-aeic.gc.ca/050/evaluations/proj/80915>.

[196] Benjamin Sovacool et al, "The Decarbonization Divide: Contextualizing Landscapes of Low-carbon Exploitation and Toxicity in Africa" (2020) 60: 102028 Global Environmental Change 1 – 19.

[197] *Ibid* at 17.

[198] *Ibid* at 10 – 15. Agbogboloshie receives an estimated 900 tons of solar e-waste annually. See Safiyah Ouaguena, "How Solar Energy E-Waste is Leaving Ghana Burnt Out" (4 October 2020) online: <https://ingena.co.uk/2020/10/04/how-solar-energy-e-waste-is-leaving-ghana-burnt-out/>.

[199] The Basel Convention provides a list of hazardous wastes in respect of which various restrictions have been established. It is noteworthy that the Convention does not make the manufacturing or movement of hazardous substances unlawful. Complete prohibition is only in respect of exportation to or importation from a non-Party and disposal within area south of 60º South latitude. Whether a climate change relevant technology will qualify as

The only international treaty dealing solely with impact assessment focuses on EIA in the transboundary context.[200] Although the treaty focuses on environmental impacts, it recognizes that such impacts also have potential adverse implications for "cultural heritage or socioeconomic conditions".[201] The potential transboundary impacts of policies, plans and programmes have also been recognized and addressed in a Protocol on SEA to the Espoo Convention (the Kiev Protocol).[202] The mischief the Espoo Convention addresses are potential impacts of physical activities in jurisdictions other than the jurisdictions where such stressors are located.[203] The Kiev Protocol, on the other hand, mandates the conduct of SEA in respect of national and transnational impacts of policies, plans and programmes.[204] The Convention excludes impacts that are "exclusively of a global nature" from its definition of 'transboundary impact'. Mayer has interpreted this as meaning the exclusion of global environmental harms from the obligations the Convention exerts.[205] Climate change would have been a concrete example of an impact of a 'global nature', except that the Espoo Convention only recognizes effects of physical activities on the climate in its definition of 'impact'.[206] It appears that an impact is only of a global nature under Espoo if an impact in country A can be attributed to stressors in country B. Hence, the Convention recognizes the participation of Parties of origin and affected Parties as central to the transboundary impact assessment (TIA) process.[207] Furthermore, whereas the Convention contains a list of undertakings which should be subjected to TIA ranging from the construction of crude oil

---

hazardous depends on whether it is listed, contains components listed, or satisfies listed characteristics in the various annexes to the Convention. See generally *The Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal* 22 March 1989, 1673 UNTS 126 (entered into force 5 May 1992).

[200] *Convention on Environmental Impact Assessment in a Transboundary Context*, 25 February 1991, 1989 UNTS 309 (entered into force 10 September 1997) (as amended on 27 February 2001 and 4 June 2004) (Espoo Convention). The United Nations Economic Commission for Europe which has member states from Europe, North America and Asia is the coordinating UN agency for the Espoo Convention. While there are currently 45 parties from Europe and North America to the Convention, a 2001 amendment (Sofia Amendment entered into force in 2014) to the convention now allows non-UNECE members to participate in implementing the Convention. Other international treaties like the United Nations Convention on the Law of the Sea, the Convention on Biological Diversity, and the UNFCCC require or encourage the conduct of impact assessment in different specific contexts.

[201] *Espoo Convention*, art 1(vii).

[202] Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, 21 May 2003, 2685 UNTS 34028 (entered into force 11 July 2010) (Kiev Protocol).

[203] Transboundary impact means "any impact, not exclusively of a global nature, within an area under the jurisdiction of a Party caused by a proposed activity the physical origin of which is situated wholly or in part within the area under the jurisdiction of another Party". See *Espoo Convention,* art 1(viii).

[204] Kiev Protocol, art 4, 10, 13.

[205] Benoit Mayer, "Environmental Assessments in the Context of Climate Change: The Role of the UN Economic Commission for Europe" (2019) 28 RECIEL 82 at 87.

[206] Espoo Convention, art 1(vii).

[207] Espoo Convention, art 1 (ii), (iii).

refineries to major installations to harness wind power,[208] the list of qualified undertakings is not closed. Unlisted activities which are 'large', located in or close to areas of special environmental sensitivity and with particularly complex and potentially adverse effects on humans or on valued species or organisms are to be assessed as though listed.[209]

TIA takes impact assessment beyond its traditional domestic space, recognizes that various ecological and social implications of projects, policies, programmes, and plans do not respect artificially drawn boundaries, and internationalizes the concept of meaningful public engagement. The Convention mandates Parties of origin to provide opportunities to the public in areas impacted in affected States in a manner equivalent to opportunities provided to the public of the Party of origin.[210] The equal opportunity to participate under the Espoo Convention begins with a Party of origin notifying an affected Party about a proposed activity with prospective transboundary impact not later than when informing its own public.[211] Beyond being informed, the public in the affected country should be provided with the opportunity to comment or object to a proposed activity, and such positions should be reflected in the final decision reached.[212] While highlighting the opportunity for transboundary stakeholder engagement as a major benefit of TIA, Shrage and Bonvoisin identify some practical difficulties including language barriers, limited public access to documents, access issues to hearings when held in countries of origin, and other socio-political barriers.[213] However, many of these difficulties are in no way unique to TIA, as issues of access are confronted in national IAs. Further, with the growth in telecommunications, new media technologies and social media, the convention's transboundary public engagement aspiration has been made more realizable today than it was in 1991 when the Espoo Convention was introduced.

The practice of TIA shows that it is indeed possible to integrate the transboundary implications of sustainability transition into just transition discourse as discussed in chapter 3. This applies at various levels, some more overtly than others. Climate adaptation projects like initiatives to respond to water shortages through transfer of water between river basins and mitigation projects

[208] Espoo Convention, appendix I.
[209] Espoo Convention, appendix III.
[210] Espoo Convention, art 2(6).
[211] Espoo Convention, art 3(1).
[212] Espoo Convention, art 3(8), 4(1).
[213] Wiek Schrage & Nick Bonvoisin, "Transboundary Impact Assessment: Frameworks, Experiences and Challenges" (2008) 26:4 Impact Assessment and Project Appraisal 234 at 235 – 236.

like wind farms are expressly listed for transboundary assessment in the Espoo Convention.[214] As already noted, the Espoo Convention is not limited to environmental impacts; it recognizes "effects on cultural heritage or socioeconomic conditions" resulting from alterations to the environment.[215] However, Espoo does not allow for the independent consideration of non-environmental impacts. If such impacts are to be considered, they must flow from primary environmental impact. This places a limitation on the application of TIA under the Espoo regime to sustainability transition. TIA transcends the Espoo regime. In the Pulp Mills decision, although the ICJ refused to apply the Espoo Convention as the parties were not parties to the Convention, it held that undertaking an environmental impact assessment may be considered as a requirement under general international law.[216] The ICJ further held that since there is no specification on the scope and content of EIA in general international law, each State should determine the EIA content in its domestic legislation or authorization process for the project.[217] This is important as the definition of EIA in many countries explicitly includes non-environmental impacts which are not directly connected to environmental impacts. The EIA process in the United Kingdom, for example, requires the consideration of direct and indirect significant effects on population and human health, material assets, cultural heritage, and the landscape.[218] Indeed, in concluding that Uruguay satisfied its EIA obligation, the ICJ highlighted that Uruguay had considered a location (Nueva Palmira) unsuitable given its "proximity to residential, recreational, and culturally important areas".[219]

The point is that EIA in the transboundary context as recognized in general international law, has more potential for just sustainability transition than its narrower framing under the Espoo regime. It is arguable that a TIA must be conducted if it is likely that decommissioned solar panels from a Canadian solar farm might end up in a third country thus creating a situation as seen in the Agbogbloshie example.[220] Although geographical proximity (e.g., states sharing borders) is a common feature in disputes entailing TIA, this is not required in law. In so far as there is the possibility of an adverse impact in another country, the need for TIA is triggered. A more difficult

[214] Espoo Convention, appendix I, items 18(a)(b), 22.
[215] *Espoo Convention*, art 1(vii).
[216] *The Pulp Mills Case*, para 204.
[217] *Ibid* at para 205.
[218] *The Town and Country Planning (Environmental Impact Assessment) Regulations*, 2017 No. 571, Reg. 4(2)(a)(d).
[219] The Pulp Mills Case, para 210.
[220] There is no provision under the Canadian IAA that addresses this scenario. The IAA only covers the carrying out of a project by a federal authority or providing financial assistance in respect of a project, in whole or in part, outside Canada. See IAA, s 83.

argument is whether TIA can be required if climate related transitional policies have direct adverse non-environmental impact in another country. For example, does a country or group of countries have the responsibility to conduct TIA in respect of a border tax adjustment policy if such policy has the potential of having considerable environmental and non-environmental impacts in another country or countries?

Although most transboundary impact disputes focus on the potential or actual impacts of projects, the ICJ in the dispute involving Costa Rica and Nicaragua held that although the court in the Pulp Mills case had recognized the duty to conduct EIA in respect of the impacts of industrial activities on a shared resource, "the underlying principle applies generally to proposed activities which may have a significant adverse impact in a transboundary context".[221] It is also worth noting that the court did not restrict 'significant adverse impact' to environmental impacts.[222] It is, therefore, arguable that, under general international law, TIA can be requested in respect of sustainability transition policies with potentially significant adverse impact. This position is even more defensible under the Espoo regime as the Kiev Protocol requires a Party of origin to notify and consult with a Party likely to be affected if the implementation of "a plan or programme is likely to have significant transboundary environmental, including health, effects".[223] Environmental effects in the Kiev Convention include any effect on factors including human health, natural sites, material assets, and cultural heritage.[224]

The Trade Sustainability Impact Assessment (TSIA) conducted by the European Union in respect of the Environmental Goods Agreement (EGA) is, perhaps, the closest example to how impact assessment applies to sustainability transition related policies. It was concluded that although the liberalisation of trade in environmental goods has considerable benefits, impacts will not be consistent for all regions, some countries will incur losses in import tax revenue, and there might

[221] *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua) and Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, Judgment, I.C.J. Reports 2015, 665 at para 104.
[222] The arbitral tribunal in the Lake Lanoux Arbitration, however, suggests that transboundary impacts solely pertain to environmental impacts. In the case, Spain had complained that France's proposal to redirect the flow of Lake Lanoux will give France dominant control over the lake which might put Spain at risk. The tribunal rejected this argument, holding in part that, Spain's concerns were not premised on any environmental concerns. See *The Lake Lanoux Arbitration (France v Spain)* (1957) 12 R.I.A.A. 281; 24 I.L.R. 101.
[223] Kiev Protocol, art 10.
[224] *Ibid* at art 2(7).

be inadequate capacity in developing countries to implement the agreement.[225] While the TSIA of the EGA is flawed on various grounds including the non-consideration of alternatives to the removal of tariffs on environmental goods, the process serves as an example of what the TIA of sustainability transition policies could look like even when undertaken by stand-alone States.

iii. Regional Effects Assessment

Regional Effects Assessment (REA) is another IA mode aimed at taking IA beyond narrowly scoped geographical areas. Sinclair et al define REA as "an EA whose primary or sole defining features is its regional scope and its focus on understanding the interactions between human activities and the natural world".[226] The operational word in this definition is 'regional'. Duinker describes a 'region' as "an area that is ecologically meaningful (e.g., watersheds, ecoregions), not one defined in terms of administrative boundaries".[227] While not expressly defining 'region', Foley et al's description of the spatial scale of cumulative effects assessment (CEA) provides a more comprehensive description of 'regional'. They state that "the spatial scale of CEA should be broad enough to encompass the distribution of the resource or system affected (e.g., habitat, watershed), the interactions between local and regional processes, and/or the geographic extent of ecosystem level processes".[228] The most distinguishing feature of REA is that it looks beyond the immediate local context. It could be in respect of a project, previous or future undertakings, or completely independent of any specific activity. REA could be employed to establish baseline conditions, to understand past change or for future planning and development in an identified region or area. While most regional assessments have both strategic and cumulative features, the absence of these

[225] European Commission, *Trade Sustainability Impact Assessment on the Environmental Goods Agreement: Executive Summary* (European Union, 2016) 7 – 12.

[226] A. John Sinclair et al, "Looking up, down, and sideways: Reconceiving Cumulative Assessment as a Mindset" (2017) 62 Env Impact Assessment Rev 183 at 184. Going further, Scott et al identify five characteristics of regional assessment – multi-dimensional, long-term, credible, authoritative, and accountable. The spatial element does not feature prominently in the proposed characteristics. See Dayna Scott et al, "Synthesis Report: Implementing a Regional, Indigenous-led and Sustainability-Informed Impact Assessment in Ontario's Ring of Fire" (2020) 2807 Articles & Book Chapters 1 at 11 – 12.

[227] Peter Duinker & Lorne Greig, "The Impotence of Cumulative Effects Assessment in Canada: Ailments and Ideas for Redeployment" (2006) 37:2 Environmental Management 153 at 159.

[228] Melissa Foley et al, "The Challenges and Opportunities in Cumulative Effects Assessment" (2017) 62 Env Impact Assessment Rev 122 at 129.

features does not in themselves make an assessment non-regional.[229] REA is, however, most ideal when it serves strategic objectives and addresses cumulative impacts.[230]

A major advantage of REA covering cumulative impacts and done with strategic intents is the provision of a developmental framework which could inform allowable undertakings within a region of interest. Take for example the regional assessment of the Great Sand Hills (GSH) in Saskatchewan, Canada which is one of the largest grasslands in Canada with active sand dunes. The study did not only provide an inventory of previous and ongoing activities and the cumulative impacts, but, importantly, gave recommendations on areas that should be accorded greater protection, activities that should not be allowed, and conditions that must be in place when permitting undertakings to protect the integrity of the GSH.[231] It has, however, been found that regional assessments rarely influence project assessment in practice.[232] This is, in part, because regional assessment is rarely required in law. The IAA is an exception.[233] The possibility for regional assessment under the IAA is, however, subject to the discretion of the Minister.

Despite its obvious usefulness for the planning of a just sustainability transition, there is no known regional assessment designed to foster a transition that is ecologically sensitive and socially responsible. REA's relevance to just transition is heightened when 'region' is not only defined as ecologically meaningful areas as Duinker has done, but also as socially meaningful areas. Like ecological impacts, social impacts do not respect artificially drawn administrative boundaries. Undertakings could have regional scale social impacts which are not derived from regional environmental impacts. For example, a transition plan for oilsands operation in Fort McMurray, Alberta, must necessarily consider implications which go beyond the Municipality of Wood

[229] Blakley et al find that of the 42 regional assessments in Canada, only 57% were both strategic and focused on cumulative effects, 88% focused significantly on cumulative environmental effects, and 67% have a strategic component. See Jill Blakley et al, *Lessons Learned, Best Practices and Critical Gaps in Regional Environmental Assessment: A Synthesis of Canadian and International Literature* (2020, prepared for the Social Sciences and Humanities Research Council of Canada and the Impact Assessment Agency of Canada) 10 – 11.

[230] Commenting on the separate treatment of regional and strategic assessment in the IAA, Blakley et al note that without regional assessment of cumulative effects deliberately focusing on future conditions which strategic assessment draws attention to, regional assessment becomes retrospective in nature and "limits the ability to understand system responses to disturbances in the future". See Jill Blakley et al, "The Scope and Focus of Cumulative Effects and Regional Assessment" in Meinhard Doelle and A. John Sinclair eds., *The Next Generation of Impact Assessment: A Critical Review of the Canadian Impact Assessment Act* (Toronto: Irwin Law, 2021) 251 – 252.

[231] Great Sand Hills Advisory Committee (GSHAC), *Great Sand Hills Regional Environmental Study* (GSHAC 2017).

[232] Blakley et al, *supra* note 229 at 251.

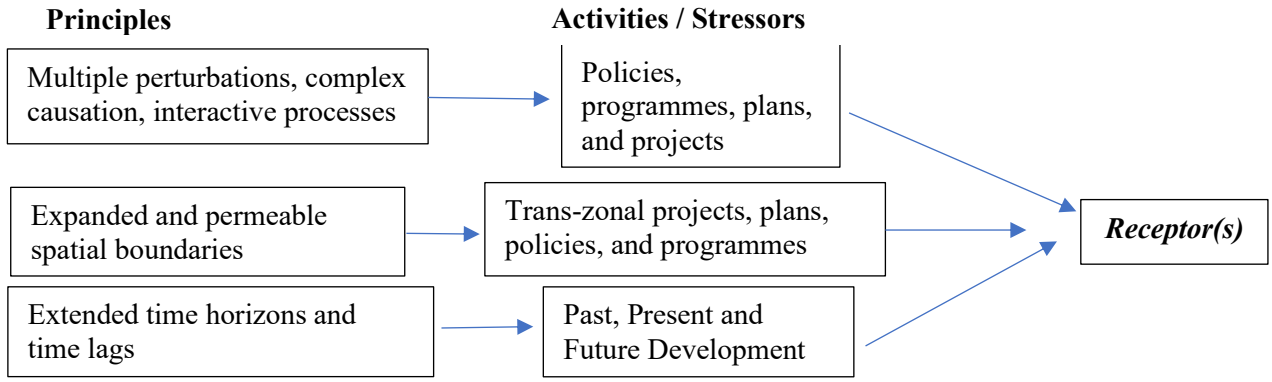
[233] The IAA allows the Minister to authorize the conduct of a regional assessment of the effects of existing or future physical activities in a region entirely on federal lands. See IAA, s 92.

Buffalo, where the oil sands are located. A socially aware regional assessment will consider the possibility of migration, impacts of migration into the likely urban areas where people will migrate to, implications for fly-in-fly-out workers in other provinces, etc. Framing 'regional' in the social sense helps in capturing and addressing possible adverse effects of policy decisions and undertakings outside the more directly impacted local area.

iv. Cumulative Effects Assessment

As already noted, while the ideal regional assessment should necessarily entail the consideration of cumulative impacts, they are not one and the same. Cumulative effects assessment (CEA) is trans-action (includes multiple projects, plans and policies), trans-space (includes developments in other areas), trans-time (includes previous and future actions), and trans-impact (goes beyond the direct impact of specific undertakings). Duinker reflects the trans-dimensionality of CEA by describing it as being characterized by multi-causes (multiple agents of change impacting a VEC), multi-effects (various responses of a VEC to an agent of change), nibbling-in-space (innocuous singular activities with significant effects when taken as a collective), and repeat offences (insignificant small scale events with significant effect if they occur at several times).[234] CEA is said to prevent death by a thousand cuts.[235] While a cut could be considered benign, a combination of multiple cuts becomes life threatening.

Figure 9 - Cumulative Effects Assessment[236]



[234] Peter Duinker, "Cumulative Effects Assessment: What's the Big Deal?" in Alan Kennedy ed., *Cumulative Effects Assessment in Canada: From Concept to Practice* (Edmonton: Alberta Society of Professional Biologists, 1994) 13 – 14.
[235] Foley et al, *supra* note 228 at 129.
[236] Harry Spaling, "Cumulative Effects Assessment: Concept and Principles" (1994) 12:3 Impact Assessment 231.

According to Spaling, "CEA is complex because of the need to consider multiple sources of change, alternate pathways of accumulation, and temporally and spatially variable effects".[237] The complexity notwithstanding, the importance of CEA to impact assessment, more so for IA to fulfill its overarching aim of sustainability, is unquestionable. In Duinker's words, "CEA is the only kind of EIA worth doing … it is what EIA was meant to be".[238] The rationale for CEA is straight forward - receptors (or VECs) are almost never simply affected by a singular activity (or stressor) and, VECs, particularly ecological components, are interconnected. Duinker makes the point that since most VECs are impact integrators, assessments must also be integrative.[239] Sinclair et al construe cumulative assessment as a mindset that should inform every type of impact assessment.[240] They recommend inculcating this mindset by synthesizing the technical lens (reliable and incisive scientific understanding of causes and effects), the law and policy lens (substantive legislative provisions on cumulative, regional and strategic assessment), and a participatory lens (including early and broad involvement, deliberative dialogue, mutual learning and information management).[241]

CEA can be scoped in terms of their spatial and temporal bounds, and by considering their baselines and thresholds. Referring to the spatial and temporal dimensions, Spaling notes that CEA entails "the accumulation of environmental changes over long timeframes (decades, centuries) and among spatial scales (local, regional, global)".[242] In factoring in contributory past and future stressors, what are reasonable baseline conditions and foreseeable projection? Foley et al state that "the temporal scale of CEAs should be informed by the length of time stressors affect ecological components" and this may extend beyond the timeline of a project.[243] While past stressors might not be so difficult to identify, in part, due to previous studies and past documentation, future projections are more difficult to make.[244] Indeed, it has been stated that "the focus of CEA is explicitly on the future".[245] Various methods ranging from Geographic Information Systems to the

[237] *Ibid* at 232.
[238] Duinker, *supra* note 234 at 50.
[239] *Ibid* at 21.
[240] A. John Sinclair et al, "Looking up, down, and sideways: Reconceiving Cumulative Assessment as a Mindset" (2017) 62 Env Impact Assessment Rev 183 – 194.
[241] *Ibid* at 185 – 187.
[242] Spaling, *supra* note 236 at 239.
[243] Foley et al, *supra* note 228 at 129 – 130.
[244] Peter Duinker & Lorne Greig, "Scenario Analysis in Environmental Impact Assessment: Improving Explorations of the Future" (2007) 27 Env Impact Assessment Rev 206 at 213.
[245] Duinker & Greig, *supra* note 227 at 158.

use of scenarios have been developed to project future developments.[246] A common denominator in the various methods is the use of trends (whether quantitative or qualitative) and, with it, the supposition of possible continuity.[247] It is, however, not unlikely that projected developments will not come to fruition or un-projected occurrences will happen.[248] The bottom line is that there would never be complete certainty about projected future events. In the face of such uncertainties, it is argued that the prevailing presumption must be one which advances the cause of sustainability the most.

Baselines and thresholds are crucial in the conduct of CEA. While baselines provide an understanding of the state of affairs before the introduction of a new stressor and helps appreciate whether there is a cumulative problem,[249] thresholds assist in assessing the significance of cumulative effects.[250] Murray et al identify stressor baselines and baselines of ecological condition as the two main types of baselines.[251] Baselines can be measured by considering a current ecosystem state, an abundant resource historical state, a stable ecosystem historical state (when ecosystem is consistent with management goals), and future ecosystem conditions.[252] While current baselines are mostly used, the argument has been made that the abundant resource historical state where "an ecological component was more abundant and/or less affected by human action" is the ideal as this prevents shifting baselines to an already degraded system.[253] Although it might be difficult to trace such historical baselines, the usefulness of traditional and local ecological knowledge in helping to understand historical trends has been noted.[254]

---

[246] See Duinker et al, *supra* note 234 at 46.
[247] Duinker & Greig, *supra* note 227 at 208.
[248] See for example the Cheviot mine in Alberta, Canada which although was approved was not developed due to lost business opportunity. *Ibid* at 213.
[249] Riki Therivel & Bill Ross, "Cumulative Effects Assessment: Does Scale Matter?" (2007) 27 Env Impact Assessment Rev 365 at 379.
[250] Peter Duinker et al, "Scientific Dimensions of Cumulative Effects Assessment: Toward Improvements in Guidance for Practice" (2013) 21 Environ Rev 40 at 47.
[251] Clark Murray et al, *Cumulative Effects in Marine Ecosystems: Scientific Perspectives on its Challenges and Solutions* (Vancouver: WWF-Canada, 2014) 31
[252] *Ibid* at 28 – 31; Foley et al, *supra* note 228 at 129.
[253] Murray et al, *supra* note 251 at 30 - 31.
[254] See CEAA, "Considering Aboriginal Traditional Knowledge in Environmental Assessments Conducted under the Canadian Environmental Assessment Act" (2015) online: <https://www.canada.ca/en/environmental-assessment-agency/services/policy-guidance/considering-aboriginal-traditional-knowledge-environmental-assessments-conducted-under-canadian-environmental-assessment-act-2012.html>

If the baseline represents the start-point of CEA, the threshold is the red line where "a system can no longer resist or absorb inputs".[255] Again, here, we are confronted with the same challenge as in the case of baselines. To what extent can the absorptive capacity of a VEC be adjudged? The question becomes further complicated if the threshold is biotic or social.[256] Ziemer notes that biological and social risk thresholds for CEA are almost always limited by data in time and space. Duinker et al make a similar point about two decades later that the threshold concept probably is CEA's Achilles heel.[257] But perhaps even more crucial is the question whether the concept of threshold constitutes a valid component of a sustainability IA framework. Rendered simply, threshold's question is - how far is too far and how do we avoid going too far in resource usage? It is argued that while this approach might align with the economy-dominant idea of sustainable development, sustainability is more aligned with a historical baseline reference.[258] In other words, the focus should be on determining the baseline condition and tailoring use to keeping an ecosystem as much as possible in the same state rather than aiming for an uncertain threshold condition.

The decision of the British Columbia Supreme Court on the cumulative impacts of previous undertakings on the treaty 8 rights of the Blueberry River First Nation (Blueberry River) is instructive on the implications of cumulative impacts for just sustainability transition. Blueberry River contended that the cumulative impacts from a combination of provincially authorized industrial developments over time infringed their treaty rights.[259] The infringing activities complained against ranged from fossil-based projects like oil and gas to arguably renewable energy projects like hydroelectricity dams. In reaching its decision, the court referenced British Columbia's CEA Framework which requires the consideration of available cumulative assessments when reviewing applications for the use of land and natural resources. Blueberry River had, however, argued that the Framework did not set thresholds or alter existing decision-making processes. The court concluded that by failing to take into consideration the cumulative

[255] Spaling, *supra* note 236 at 240. See also Robert Ziemer, "Cumulative Effects Assessment Impact Thresholds: Myths and Realities" in Alan Kennedy, *supra* note 234 at 319.
[256] Duinker et al, *supra* note 250 at 47.
[257] *Ibid.*
[258] For a distinction between sustainable development and sustainability, see generally Subhabrata Bobby Banerjee, 'Who Sustains Whose Development? Sustainable Development and the Reinvention of Nature' (2003) 24:1 Organization Studies 143 – 180.
[259] *Yahey v. British Columbia* 2021 BCSC 1287 at para 3.

impacts of developments spanning decades, the province "failed to act with diligence to ensure that … it protects the meaningful exercise of treaty rights, and this has resulted in an infringement of Blueberry's rights to hunt, fish and trap as part of their way of life".[260] The court further found that the province's regulatory regime and processes fail to adequately consider treaty rights or cumulative effects, hence contributing to "the meaningful diminishment of Blueberry's treaty rights to hunt, fish, and trap when viewed within the way of life from which these rights arise and are grounded".[261]

The court in *Yahey* considered the impacts of all industrial projects without distinguishing them on the basis of their greenhouse gas potential. While not an issue in the case, the findings of the court bring to the fore the issue of sustainability transition friendly projects, which, although they have considerable benefits in terms of reduction in GHG emission, could exacerbate existing adverse impacts from previous stressors. Take Blueberry River for example where development has been found to already exceed thresholds consistent with ecological functioning bringing the area to a state of maximum fragmentation,[262] it does not matter whether a project is a solar energy farm which would further lead to encroachment on already strained systems and infringement on rights or an oil and gas project. A cumulative mindset to just sustainability transition compels taking into consideration the current state of socio-ecological disrepair and how transition projects and policies might further worsen the situation. This has considerable implications for decisions on creating 'green' economies in areas previously hosting fossil related projects to address job loss. While green job creation is *prima facie* positive, it could negate sustainability ends if jobs created would cumulatively place further strain on already strained systems.

D. Sustainability Assessment

Although all forms of IA should contribute to sustainability,[263] sustainability assessment (SA) has evolved as a distinct form of IA. However, SA is more availing in practice when it is construed as establishing the principles and processes which should be applied in impact assessments to ensure

[260] *Ibid* at para 1737.
[261] *Ibid* at para 1751.
[262] *Ibid* at para 1743.
[263] According to Bond, "any process that directs decision-making towards sustainability". See Alan Bond et al, "Sustainability Assessment: The State of the Art" (2012) 30:1 Impact Assessment and Project Appraisal 53. See also William Sheate, "The Evolving Nature of Environmental Assessment and Management: Linking Tools to Help Deliver Sustainability" in William Sheate ed, *Tools, Techniques and Approaches for Sustainability: Collected Writings in Environmental Assessment Policy and Management* (Singapore: World Scientific, 2009) 1 at 19.

that IA serves sustainability aligned ends. According to Gibson et al, SA emphasises the interrelations and interdependency of biophysical and socio-economic concerns, mainstreams the precautionary principle, and focuses on encouraging positive steps towards ecological and societal sustainability rather than mitigation of negative effects. It also recognizes inviolable limits, acknowledges that the pursuit of sustainability is both universal and context specific, and relegates trade-offs as an option of last resort while insisting on multiple reinforcing and durable gains.[264] In conducting a sustainability-aligned assessment, Gibson et al propose the following "minimal set of core requirements."[265]

i. Establishing and maintaining socio-ecological systems integrity to allow for a viable context of human life over the long term.
ii. Ensuring livelihood sufficiency and opportunity for everyone to have a decent life without compromising future generations' possibilities for sufficiency and opportunity.
iii. Ensuring intragenerational equity by facilitating reduction in dangerous gaps in sufficiency and opportunity between various classes of people.
iv. Favouring options and actions most likely to preserve and enhance intergenerational equity.
v. Focusing on resource maintenance and efficiency even as viable and inclusive base for ensuring sustainable livelihoods is being established.
vi. Building capacity and opportunities for socio-ecological civility by engaging with and applying sustainability principles in individual and collective open, inclusive, and deliberative decision-making processes.
vii. Approaching decisions with the precautionary mindset, respecting uncertainty, avoiding poorly understood risks with irreversible implications, learning and designing for surprise, and managing for adaptation.
viii. Attempting to meet all requirements for sustainability as a set of interdependent and mutually supportive parts with immediate and long-term benefits.

While SA has its root in the concept of sustainable development as developed in the 1987 Brundtland Report, it departs from the Report's focus on the three pillars of sustainability – society, economy, and ecology. As noted by Gibson et al, the focus on the three pillars is divisive, has made effective integration difficult, and trade-off an easy cop-out.[266] The point is made elsewhere that, in the actual sense, the public is more concerned about secure livelihoods, safety, healthy, vibrant and attractive communities, new opportunities and choice, and influence in decisions, than

[264] Robert Gibson, "Sustainability Assessment: Basic Components of a Practical Approach" (2006) 24:3 Impact Assessment and Project Appraisal 170 at 172.
[265] See Robert Gibson et al, *Sustainability Assessment: Criteria, Processes and Applications* (Virginia: Earthscan, 2005) 95 - 114.
[266] *Ibid* at 56, 94 – 95; Bond et al, *supra* note 263 at 55.

the dichotomy between the three pillars.[267] But beyond substance, process is also vital to SA. Gibson focuses on the process imperative of SA while articulating his trade-off rules.[268] He notes that "proposed compromises and trade-offs must be addressed and justified through processes that include open and effective involvement of all stakeholders".[269]

Sustainability assessment, as practised, has been criticized as non-inclusive due to its expensive engagement requirement, rarely accommodating long-term impacts and intergenerational equity, lack of attention to follow-up, and failure to inculcate learning into practice.[270] It has further been argued that stakeholder involvement in SA is limited to choosing between limited options rather than radically redirecting policy and that guidance on SA methods is lacking.[271] Gibson has also pointed to the low uptake of SA due to its misalignment with existing structures, cultures and preferences.[272] However, in recent years, there have been increased incorporation of SA into IA practices. Canada, for example, does not only require that sustainability be assessed for, but has provided considerably detailed Guidance on how this should be done.[273] The Guidance, however, does not go as far as the framework proposed by Gibson et al.

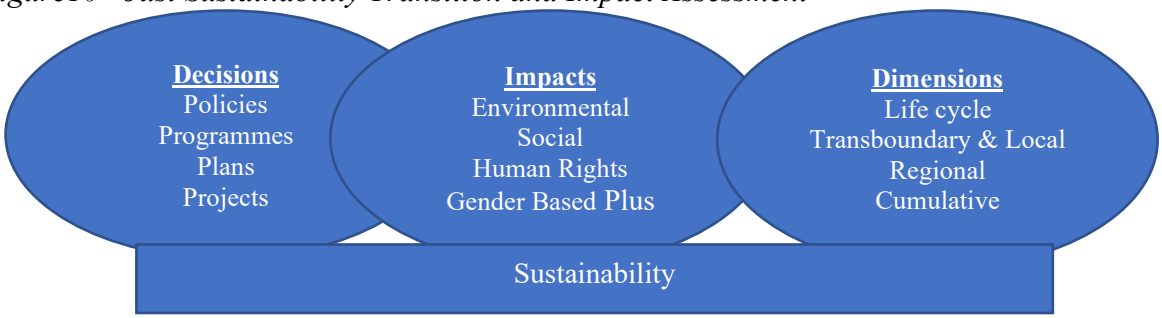
Gibson suggests that the simple notion that underpins sustainability assessment is the enhancement of our prospect of lasting wellbeing through "a little more vigour, humility and foresight in our decision making".[274] While Gibson's decades-long work has focused on sustainability, it has been less explicit on sustainability transition when construed narrowly as transitioning from a carbon intensive global socio-economic system to a non-carbon (intensive) system, or even more particularly, sustainability transition which has socio-ecological justice as a primary objective. The principles he has articulated, however, apply with equal strength. To achieve the vision of just

---

[267] Gibson, *supra* note 264 at 173.
[268] Trade-off must deliver net gains, burden of proof is on trade off proponent, significant adverse effects must be avoided unless alternatives are worse, significant adverse impact must not be displaced to the future except alternatives are worse, trade-offs must be explicitly justified, and stakeholders must be involved through an open participation process. Gibson et al, *supra* note 265 at 139 – 140.
[269] *Ibid* at 140.
[270] Bond et al, *supra* note 263 at 59.
[271] M. Djik et al, "Sustainability Assessment as Problem Structuring: Three Typical Ways" (2017) 12 Sustainability Science 305 at 306.
[272] Robert Gibson, "Opportunities: Finding Best Openings for Influential Applications" in Robert Gibson ed., *Sustainability Assessment: Applications and Opportunities* (London: Earthscan, 2016) 253 – 257.
[273] Government of Canada, "Guidance: Considering the Extent to which a Project Contributes to Sustainability" (2020) online: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/guidance-considering.html>
[274] Robert Gibson, "Foundations: Sustainability and the Requirements for Getting There" in Gibson ed., *supra* note 272 at 1.

transition articulated in the previous chapters of this work, we need "a little more vigour, humility and foresight in our decision making". It is easy to make an argument for replacing a fossil fuel guzzling car for one which runs on electricity or retiring a coal power plant for wind turbines. But such transition will, however, not be automatically sustainability enhancing or just. With a little more vigour, we can pay attention to blind-spots and dark edges; with more humility we can design, consider, and choose interventions more carefully, and with more foresight we can discern the justice-related consequences of our decisions for this generation and those to come.

Figure10 - Just Sustainability Transition and Impact Assessment



4.4 Preliminary Conclusion

The objective of this chapter is to showcase IA's relevance to just transition. *Figure 10* provides a snapshot of the various modes of assessment reviewed as relevant to the discourse on just transition in this chapter. What stands out is the various dimensions of the just transition conversation that the different modes of IA apply to. First, just sustainability transition is premised on both project-based and strategic (policy, programmes, and plans) decision making as captured in *table 10*. IA has an established framework for the assessment of impacts of activities at both levels of decision making, which particularly entails the consideration of alternative pathways and the determination of significance of both negative and positive impacts. These impacts are diverse and are triggered by sustainability transition undertakings both at the project and strategic levels. They are, however, often not considered in any systematically meaningful manner. Further, the impacts are rarely solely local or constrained to a specific time frame. Often, they exist throughout the life cycle of undertakings, have transboundary and regional effects, and are cumulative in scope. These various elements come together in the basic requirements which actuate sustainability assessment. What also becomes clear from the consideration of IA modes is that while each addresses an aspect of just sustainability transition, it takes the combination of the various modes, with a sustainability underpinning (as shown in figure 10), to effectively address just transition concerns.

CHAPTER FIVE
MAINSTREAMING JUST TRANSITION INTO CLIMATE CHANGE AND IMPACT ASSESSMENT

5.1 Introduction

In this work, climate change induced transition has been located and discussed within the broader objective of sustainability transition. As shown in chapter one, sustainability transition is multi-dimensional and requires a wholesale shift in domestic and global socio-technical systems. Theoretically, impact assessment is useful to facilitate such wholesale shift by making sustainability the ultimate objective of any IA process whether at the strategic or project level. I considered the various ways several IA modes and lenses can help achieve just sustainability ends in chapter four. The adjective 'just' has been described in chapter two as having "the realization of combined capabilities and the enrichment of wellbeing", particularly of the most vulnerable, as the central objective. While chapter four considers the usefulness and limitations of various IA modes in achieving just transition ends, this chapter focuses on recent developments in the incorporation of climate change into impact assessment, both in theory and practice. This subject is worthy of detailed inquiry as it represents the most direct, although still evolving, IA framework explicitly catering to climate change concerns. Importantly, this chapter takes a just transition lens in analyzing scholarly and regulatory developments in the efforts to incorporate climate change into impact assessment.

In part 5.2, I review literature, laws, policies, and practices on climate change and impact assessment, in part, identifying the extent to which the dominant orientations co-opt or cater to just transition concerns. The consideration of the impacts of response measures under the UNFCCC and the assessment of policies using the EU Better Regulation Guidelines are some of the most applicable developments in the assessment of the effects of climate responses at the international level. These regimes are considered and critiqued in part 5.3. Particularly, developments under the UNFCCC were found to be too high level and generic to adequately address just transition (social and human right) impacts. This chapter ends with a closer look at how social impacts are addressed in the assessment of climate initiatives around the world. The European Union and Scotland provide some of the most robust examples in this regard. However, existing examples are prevalently strategic assessment based, hence, still leaving a considerable gap on how just transition concerns are addressed at the project assessment level. The relevance of the social cost

of carbon concept to the consideration of just transition in impact assessment is reflected upon in part 5.4.

5.2 Climate Change and Impact Assessment: Rethinking Impact Assessment

There is a trove of scholarly works on the incorporation of climate change in impact assessment spanning over two decades. In 1998, Feenstra et al edited a handbook on various methods for designing assessment studies of climate change impacts and relevant adaptation strategies.[1] They described climate change impact assessment as "research and investigations designed to find out what effect future changes in climate could have on human activities and the natural world" and "the identification and assessment of possible adaptive responses to a changing climate".[2] This type of climate change impact assessment is highly technical in the methods used and high-level in its results.[3] To differentiate between this technical form of climate change impact assessment (CCIA) and the impact assessment focused on in this chapter, the descriptor climate change and impact assessment (CC&IA) is preferred. While the overarching findings of CCIA provide important context for CC&IA, the focus of CC&IA is fundamentally different. Rather than focusing on the impact of future climatic changes on human activities, CC&IA assesses the impact of human activities on the climate and the related socio-ecological effects.[4]

Although Wende et al identify strategic environmental assessment (SEA) and Environmental Impact Assessment (EIA) as "the vehicle for the implementation of climate protection within spatial planning" and "the right tool for 'climate proofing'",[5] it is difficult to apply traditional EIA methodologies and processes in assessing climate change impacts. The global nature of GHG emissions and variations in the nature and scale of effects, delayed manifestation of impacts,[6] and

[1] Jan Feenstra et al, *Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies* (Nairobi: UNEP, 1998).
[2] *Ibid* at xx.
[3] Feenstra et al identify palaeological, archeological or historical studies; forecasting by analogy; studies of trends and variability; models; and expert judgment as models frequently used in assessing climate impacts. See *Ibid* at xxi.
[4] Byer et al similarly described their work on best practice principles for CC&IA, "IAIA statement on climate change and impact assessment". They note that IA is important in assisting governments meet their commitments to address human-induced climate change, reduce and manage adverse effects, and enhance potential benefits for proposed policies, programs, plans, and projects. See Philip Byer et al, "Climate Change in Impact Assessment: International Best Practice Principles" (2018) 8 IAIA Special Publication Series 1.
[5] Wolfgang Wende et al, "Climate Change Mitigation and Adaptation in Strategic Environmental Assessment" (2012) 32 Env Impact Assessment Rev 88.
[6] The timescale of effects of emissions depends on the type and size of GHG emitted. For CO_2, this ranges between a decade to centuries (for example for large pulses of emission of about 5000GtC, maximum warming occurs 785 years

cumulative nature of impacts and the non-traceability of effects to specific sources are some of the characteristics of climate change making traditional impact assessment (IA) not easily applicable.[7] Further, climate change impacts are ubiquitous; affecting all economic sectors, people, and communities. Climate change responses are also multifaceted and tiered as they include mitigation, adaptation, and loss and damage; and to avoid the worst impacts, responses must be ambitious, far-reaching, and immediate. For impact assessment to be the 'right tool' for climate proofing or vehicle for sustainability planning as Wende et al have argued, IA processes and practice must address the characteristics highlighted above. This necessarily warrants a rethinking of some of the assumptions and approaches of IA. For example, as shown in chapter four, apart from transboundary impact assessments, IA is primarily local in the scoping of projects, valued ecosystem components, impacts, and participation. The focus on local impacts is wholly inadequate in the climate change context.

The review of the scholarship, policies and laws on CC&IA below is organized around these fundamental characteristics of climate change – global and multi-sectoral nature of the sources and impacts of climate change; climate change adaptation and loss and damage (locally and globally); delayed and cumulative nature of climate impacts and the causation challenge; and ambitious and immediate climate action. The need to rethink and refashion IA to adequately address climate change does not make inapt the key phases of traditional IA process (screening, scoping, assessing for impacts, consideration of alternatives, mitigation, and follow-up). It, however, means that these IA stages must reflect and cater to the unique characteristics of climate change without negating broader sustainability considerations. Further, CC&IA is discussed both in its strategic and project-specific contexts.

A. Global and Multi-Sectoral Sources of GHG Emissions

The climate is a global common; human stressors causing climate change are globally situated; climate change impacts are globally dispersed; and efforts to respond to climate change are globally coordinated. While global climate governance is highly complex and multiplex involving various international organizations and coalitions, the Paris Agreement represents the most

after the emission). See Kirsten Zickfield and Tyler Herrington, "The Time Lag between a Carbon Dioxide Emission and Maximum Warming Increases with the Size of the Emission" (2015) 10 Environ. Res. Lett. 1 at 2.

[7] Meinhard Doelle, "Integrating Climate Change Mitigation into the Impact Assessment Act" in Meinhard Doelle and A. John Sinclair eds., *The Next Generation of Impact Assessment: A Critical Review of the Canadian Impact Assessment Act* (Toronto: Irwin Law, 2021) 277 at 278.

endorsed and recognized binding framework for climate action.[8] The following Paris Agreement commitments are particularly relevant to this sub-section:

i. Achieving the long-term temperature goal of holding the increase in the global average temperature to well below 2ºC above pre-industrial levels while pursuing efforts to limit the temperature increase to 1.5ºC by reaching global peaking of GHG as soon as possible and undertaking rapid reductions to achieve net zero emissions in the second half of this century.[9]

ii. The preparation, communication, and maintenance of successively progressing nationally determined contributions (NDCs) reflecting a country's highest possible ambition which shall be pursued through domestic mitigation measures.[10] While developed countries should take the lead by undertaking economy-wide absolute emission reduction targets, developing countries should over time move towards economy-wide emission reduction or limitation targets.[11]

As shown later, post-Paris Agreement literature on CC&IA mostly takes the above commitments, particularly (ii), as starting point. A widely canvassed position is that emissions from projects which adversely affect the ability of a country to meet its international climate mitigation commitment should trigger impact assessment.[12] However, questions abound on when emissions could be said to adversely impact a country's climate commitment. According to Doelle, the overall goal of CC&IA should be "to assess projects that on their face are not consistent with decarbonization".[13] Consistency with decarbonization could be determined using criteria including "annual and lifetime thresholds for direct GHG emissions and for impact on natural sinks, but with

[8] The Paris Agreement has been ratified by 193 Parties. As noted by the UNFCCC Secretariat, it is "a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects". See United Nations Climate Change, "What is the Paris Agreement?" online: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.
[9] Paris Agreement, art 2(1)(a).
[10] *Ibid* at arts 3, 4(2).
[11] *Ibid* at art 4(4).
[12] For example, Gibson et al note that the core test is that projects that may be GHG significant must "be consistent with meeting Canada's international climate change mitigation commitments, and not hinder transition to GHG neutrality in time to meet these commitments". See Robert Gibson et al, *From Paris to Projects: Clarifying the Implications for Canada's Climate Change Mitigation Commitments for the Planning and Assessment of Projects and Strategic Undertakings* (Waterloo: 2019) 135.
[13] Doelle, *supra* note 7 at 284.

more nuanced and specific criteria for each key sector".[14] The use of emission thresholds to determine whether a project should be assessed is a common approach used by state regulators. For example, after assessing guidance from different countries on screening projects for IA, Murphy and Gillam suggest that emissions less than 10,000 CO_2e/year are nominal, but emissions above 10,000 should be quantified and reported.[15] A threshold approach to screening, however, disregards the fact that the danger of GHG emissions lies in its cumulative tendency. As noted by the Institute of Environmental Management and Assessment (IEMA), all GHG emissions from projects contribute to climate change.[16] Further, such approach focuses primarily on direct (scope 1) emissions, leaving out indirect (scopes 2 and 3) emissions. As already shown, in many cases, particularly in the fossil fuel sector, scopes 2 and 3 emissions are greater than scope 1.

Another common approach to screening and the determination of the significance of GHG emissions is by comparing emissions from projects to global, national, regional, or sectoral mitigation targets.[17] Duniker and Oshawa find that most Canadian project IAs which included assessment for GHG emissions (as of 2014) "compared estimated GHG emissions with those of Canada or their host provinces".[18] It is, therefore, not unusual to find conclusions that those projects will only emit a fraction of Canadian and provincial emissions.[19] This 'scale trick' ignores the magnitude of emissions if projects were compared to low carbon emission jurisdictions.[20] Rather than 'comparison', Duinker and Oshawa argue for the linkage of mitigation of GHG

---

[14] *Ibid.*

[15] See Michael Murphy and Karren Gillam, "Greenhouse Gases and Climate in Environmental Impact Assessment – Practical Guidance" (2013) online: <https://conferences.iaia.org/2013/pdf/Final%20papers%20review%20process%2013/Greenhouse%20Gases%20and%20Climate%20in%20Environmental%20Impact%20Assessment%20%e2%80%93%20Practical%20Guidance.pdf> 5. This is similar to the approach under the 2003 CCCEAC where emissions are grouped as low, medium, and high volumes. Although this was more qualitative, the idea was the same as projects with 'low' emissions are generally not required to be assessed. See Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment (CCCEA), *Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners* (CCCEA, 2003) 10.

[16] IEMA, *Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance* (Lincoln: IEMA, 2017) 14.

[17] CCCEA, *supra* note 13; Takafumi Ohsawa and Peter Duinker, "Climate Change Mitigation in Canadian Environmental Impact Assessments" (2014) 32:3 Impact Assessment and Project Appraisal 222.

[18] Oshawa and Duinker, *ibid* at 224.

[19] *Ibid* at 229.

[20] Oshawa and Duinker gave the example of the Donkin export coking coal project projected to emit 451,000 CO_2e per year after mitigation. The Environmental Impact Statement states that this emission is only 0.07% of Canada's emission and about 2.2% of Nova Scotia's emission. However, the same emission represents 10% of Iceland's emission as of 2010. The responsible agency, however, concluded that the project is unlikely to cause significant adverse environmental effects given the mitigation measures. see *Ibid* at 224, 227.

emissions in projects to the final goal of climate stabilization.[21] In what they describe as a 'linked and addressable pattern', projects should use the most environmentally friendly technologies and control emissions as much as feasible, and the difference in emissions between controlled emissions and carbon budget for projects under a regional climate mitigation plan should be addressed through compensatory measures.[22]

Duinker and Oshawa, however, do not address the triggering question – which projects should be required to be assessed for climate change, particularly, in respect of GHG emissions? There is a two-step approach to determining whether a project will be assessed for GHG emissions in Canada. First, the determination of whether the project is listed in the Physical Activities Regulations pursuant to section 2 of the Impact Assessment Act.[23] This first stage requires detailed initial descriptions of designated projects which include an estimate and description of GHG emissions during any phase of the project and the plan to manage them.[24] Second, a GHG emissions assessment will be required if the project's upstream emissions exceed 500 KT CO_2 per year if the impact statement is published between 2020 and 2029.[25] The project list approach does not only leave out most projects which would potentially be contrary to Canada's climate commitment, but there is also a possibility that several projects will not be thoroughly assessed for GHG emissions as they fall below the threshold. The calculation of emissions based only on 'net GHG emissions' (upstream emissions (direct and acquired energy emissions) minus captured emissions, avoided domestic emissions, and offset credits) is also problematic. This approach disregards the advanced science and developing consensus on the inclusion of scope 3 emissions in emissions reporting.[26]

[21] *Ibid* at 230.
[22] *Ibid* at 223.
[23] Government of Canada, *Strategic Assessment of Climate Change* (Government of Canada: Ottawa, 2020) 6 – 8.
[24] *Ibid*
[25] The threshold declines over time (300 KT if EIS is published between 2030 and 2039, 200 KT if between 2040 and 2049, and 100KT if between 2050 and beyond). *Ibid* at 8.
[26] For example, in the Science Based Target standard, companies are required to have a thorough emissions inventory which covers at least 95% of scopes 1 and 2 emissions and a complete scope 3 screening. Companies are also required to develop a complete scope 3 inventory "critical for identifying emissions hotspots, reduction opportunities, and areas of risk up and down the value chain". See Science Based Targets, *SBTI Corporate Net-zero Standard* (SBT, 2021) 20, 21.

Figure 11: State-Centric IA Model for Climate Mitigation

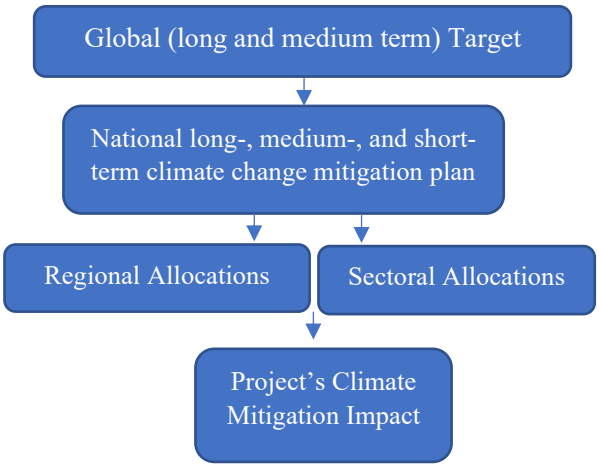
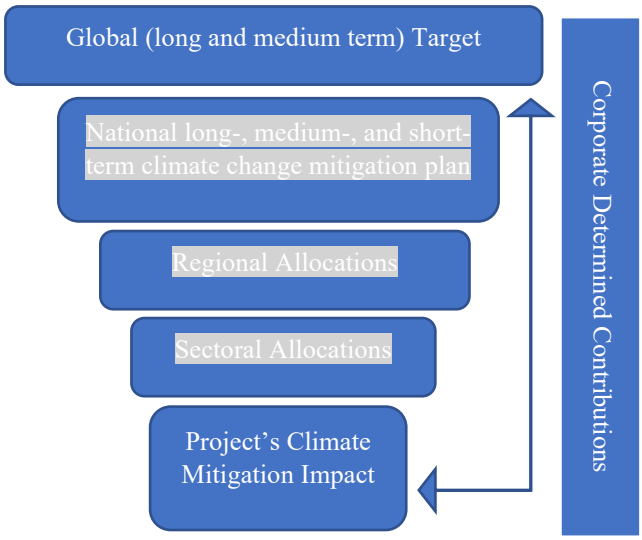


Figure 12: Corporate IA Model for Climate Mitigation



I have shown two different approaches to the consideration of GHG emissions in impact assessment in figures 11 and 12. The first figure, in part, interprets Doelle's multilayered recommendation on how IA should be triggered from a climate mitigation perspective. He recommends the development of project lists for sectors key to the transition (e.g., energy, transportation, agriculture, industry, building etc.) containing projects with the potential to hinder the transition and that should be assessed unless proponents prove that the projects are transition-consistent.[27] This sectoral project list will be informed by a credible and transparent national climate change mitigation policy (including decarbonization pathways, allocated carbon budgets, and implementation schedule) and a sectoral strategic assessment which could be national or regional.[28] Doelle's approach allows for a more effective and potentially efficient process to ensure that projects inconsistent with a country's decarbonization policy are assessed. This approach could, however, be defanged by jurisdictional constraints in federal states like Canada and the United States. In Canada, for example, although the Supreme Court has upheld the power of the federal government to set minimum carbon prices,[29] the question of jurisdiction in respect of climate change writ large is still open.[30] Doelle's approach like many other CC&IA approaches

[27] Doelle, *supra* note 7 at 283 – 284.
[28] *Ibid* at 283.
[29] *References re Greenhouse Gas Pollution Pricing Act (re GPPA)*, 2021 SCC 11.
[30] There are two arguments here. The 'environment' argument which recognizes the environment as falling under federal and provincial heads of power; and the 'national concern' argument as in the decision of the Supreme Court of Canada in *R v Crown Zellerbach Canada Ltd* [1988] 1 SCR 401 which recognizes that only the federal government can manage 'non-territorial' issues like climate change.

takes national decarbonization goals under international frameworks as the starting point. Apart from regions (like Canadian provinces) not being automatically obligated under these international commitments, the global climate goals themselves are generally considered weak and inadequate. The approach in *figure 12* directly connects climate mitigation obligations of project proponents to the global long term (keeping global temperature below 1.5°C) and medium term (net zero by 2050) goals. As represented by the greyed-out stages between the global target and the project's mitigation impact in *figure 12*, sectoral, regional, and national plans could play a role in a corporate IA model. Unlike the state-centric IA model, however, these mediating levels are not mandatory.

Emissions from projects reduce the global carbon budget and contribute to climate change globally. Hence, the goal of the assessment and management of project emissions is, ultimately, the 'conservation' of the global carbon budget and prevention of climate change inducing emissions, rather than just meeting international climate commitments (the sum of which will still result in the exhaustion of the global carbon budget in a few years). We must therefore look beyond NDCs and avoid making state-centric international commitments the sole touchstone of every mitigation commitment. The role of companies in meeting global climate goals is already being translated into international climate commitments. Mirroring NDCs, these commitments have been described as business determined contributions or corporate determined contributions (CDCs).[31] The latter is used here. While not included in the substantive provisions of the Paris Agreement, Decision 1/CP.21 adopted alongside the Paris Agreement recognizes the Non-State Actor Zone for Climate Action Platform (now Global Climate Action Portal (GCAP)).[32] CGAP is a registration platform for the climate commitments made and actions taken by non-state climate stakeholders.[33] Thousands of companies across the world participate in cooperative initiatives like the Race to Zero Campaign, Climate Action 100+, Climate Neutral Now, and the Global Financial Alliance for Net Zero. The minimum criteria to participate in these initiatives are in many cases more robust than requirements under national laws. Take the Race to Zero campaign as an example. To participate in Race to Zero, an entity must meet a minimum set of common criteria including:[34]

---

[31] CDP & We Mean Business, *The Business End of Climate Change* (CDP & We Mean Business, 2016) 2; World Business Council for Sustainable Development (WBCSD), *The Business Manifesto for Climate Recovery* (WBCSD, 2021) 5.
[32] *Adoption of the Paris Agreement*, Decision 1/CP.21, FCCC/CP/2015/10/aDD.1, para 133 – 136.
[33] As at the time of writing, there are 26,318 actors engaged in climate actions registered on CGAP. These include 9,983 companies and 1,441 investors. See Global Climate Action, online: <https://climateaction.unfccc.int>.
[34] UNFCCC Secretariat, "Race to Zero Campaign" online: <https://unfccc.int/climate-action/race-to-zero-campaign>

i. Pledging to meet (net) zero GHGs as soon as possible and by mid-century at the latest in line with global efforts to limit warming to 1.5°C; Setting an interim target to achieve in the next decade reflecting maximum effort toward or beyond a fair share of 50% global reduction by 2030 (based on IPCC projection).

ii. Providing an explanation within twelve months of joining of what actions will be taken to achieve interim and longer-term pledges in the short to medium term.

iii. Taking immediate action toward achieving (net zero) consistent with delivering interim targets.

iv. Committing to report progress and actions taken to meet interim and long-term targets at least annually.

Targets made under Race to Zero must include scope 3 emissions where material to total emissions and when there are no available data allowing such emissions to be sufficiently measured and may also include cumulative emissions.[35] Further, while reducing emissions is to be prioritized, there should be transparency in the use of sinks and credits and entities should aim for permanent removals of emissions by the time (net) zero status is achieved.[36] Entities should also seek to enable all actors to contribute to the global sustainability (net zero) transition and design their pledges, plans and actions in consideration of equity drawing on Articles 2 and 4 of the Paris Agreement and the Sustainable Development Goals.[37]

The argument is that companies with commitments under international initiatives like Race to Zero can and should be held to those commitments under impact assessment laws. This does not mean that the state-based CC&IA model becomes irrelevant. It only means that when companies make international commitments which are more ambitious than expectations under national IA laws, States should recognize such commitment as a better indicator of the intention and capacity of the company as far as climate change mitigation is concerned. Hence, rather than benchmarking the climate change impacts of projects or initiatives against national commitments or climate plans by default, such projects or initiatives could be measured against CDCs, if the CDCs are more ambitious than national climate commitments, policies, plans. International sector-based

[35] Race to Zero, "Starting Line and Leadership Practices 2.0 – In force from 1 June 2021", online: <https://racetozero.unfccc.int/wp-content/uploads/2021/04/Race-to-Zero-Criteria-2.0.pdf>.
[36] *Ibid.*
[37] *Ibid.*

cooperative initiatives are also useful in determining best practice standards that companies can be held to under national laws. Examples of this alternative corporate model are presently almost non-existent. However, there are positive signals as to the model's possibility and utility around the world in the quickly evolving landscape of climate litigation.

The decision of the Hague District Court *Milieudefensie et al v Royal Dutch Shell Plc* (RDS) is an example of how courts can rely on otherwise non-binding soft law instruments in grounding corporate climate responsibilities and interpreting obligations under state law.[38] The claimants argued, in part, that RDS has an obligation to contribute to the prevention of climate change further to the unwritten standard of care under the Dutch Civil Code. The duty of care, they argued, should be interpreted using soft law instruments like the UNGPs, the United Nations Global Compact, and the OECD Guidelines for Multinational Enterprises, which RDS has endorsed.[39] The court acknowledged this endorsement, but further held that such endorsement is not needed as the expectation that businesses will respect human rights under these soft law instruments already constitutes a "global standard of expected conduct" for all businesses regardless of businesses' commitment to them.[40] More relevantly, the court referenced the participation of RDS in international cooperative initiatives like the carbon disclosure project (CDP) in determining the scope of its climate mitigation responsibilities (e.g., to include value chain, short and long term emissions, and scopes 2 and 3 emissions).[41] The point here is that even if not binding in the sense hard laws are, commitments under international cooperative initiatives are interpretive and evidentiary of a company's climate responsibility, and can be the benchmark when assessing for GHG emissions in IA.

There are different arguments against this supplementary model for assessing GHG emissions during IA. One is the fact that not only do voluntary initiatives lack the force of law that obligations under domestic legislation or binding international treaties have, but also companies could easily renege from these voluntary commitments. A possible answer to this is that the basic commitments under the various voluntary initiatives are beginning to coalesce around key science-based

[38] *Milieudefensie & ors v Royal Dutch Shell PLC*, ECLI:NL:RBDHA:2021:5339 (RDS).
[39] *Ibid* at para 3.2.
[40] *Ibid* at para 4.4.13.
[41] *Ibid* at para 2.5.5 – 2.5.8.

standards.[42] It is, therefore, possible that courts might conclude as in the RDS decision that companies are not bound by these basic standards just because they voluntarily subscribed, but that meeting the basic standards constitutes a globally expected conduct.[43] There is also a promising prospect to hold companies to commitments under international voluntary initiatives through mandatory due diligence laws. The French Duty of Vigilance Law, for example, requires eligible companies to establish and implement an effective vigilance plan including reasonable measures for risk identification, and appropriate actions to mitigate risks or prevent serious harms directly and indirectly from its operations, companies it controls, and other companies within its supply chain.[44]

The obligation under the Duty of Vigilance Law is not merely an obligation to report, but also an obligation of the means to implement the due diligence measures and a clear demonstration that measures have been implemented. Further to this legislation, an action has been initiated against Total S.A. that its duty of care plan failed to identify and prevent risks linked to global warming.[45] While the French law did not stipulate specific measurable standards that mitigation and prevention plans should meet, it is clear enough that such plan should be "appropriate" to mitigate or prevent. The determination of what is appropriate to mitigate or prevent must be science-based, and this is where courts might leverage common science-based standards adopted for use by international voluntary initiatives. Given that Mandatory Due Diligence Laws do not set a standard of care with which companies could be adjudged as meeting or failing to meet their duty of care in respect of climate mitigation, uniform basic science-based standards adopted under various cooperative initiatives could be useful in determining such standard of care.[46] The bottom-line,

---

[42] For example, various initiatives registered with the Global Climate Action Platform and particularly aligned with UNFCCC-linked voluntary initiatives like race to zero adopt the SBTI standards.

[43] While not a judicial body, the decision of the Dutch OECD National Contact Point (NCP) in Oxfam *Novib & Ors v ING* indicates the possibility of reliance on common standards as a basis for adjudging what is expected of companies in respect of climate mitigation. The NCP emphasised the need for a methodology or internationally accepted standard to set and measure emission targets. It, however, further noted that the absence of such methodology or standard will not dismiss companies from measuring and disclosing environmental impact of GHG emissions. See Oxfam *Novib & Ors v ING,* OECD Dutch NCP Final Statement (19 April 2019) 5.

[44] *French Corporate Duty of Vigilance Law* (2017), Art L. 225-102-4.

[45] See complaint filed in *Notre Affaire à Tous & Others v Total* (2019) online: <http://climatecasechart.com/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2020/20200128_NA_complaint-2.pdf>. (As at the time of writing, this action is still ongoing).

[46] The *Notre Affaire à Tous* complaint references the International Law Commission's description of 'reasonable standard of care or due diligence'. This standard changes with time and "due diligence in ensuring safety requires a State to keep abreast of technological changes and scientific developments". See International Law Commission,

here, is that the Corporate IA model, arguably, does a better job in capturing the global nature of GHG emissions and climate change than the state-centric model.

B. Adaptation and Loss and Damage

Even with the most ambitious mitigation efforts to rein in climate change, there are already locked in emissions with serious adverse consequences for both natural and human systems both now and in the future. Preparing for, adjusting to, and providing redress for these adverse consequences is the focus of adaptation and loss and damage (L&D). To leave out adaptation and L&D in the integration of climate change with IA is to leave out two-thirds of what climate change entails. Importantly, addressing adaptation and L&D in IA is crucial to just transition as historically vulnerable persons and communities are most likely to bear the brunt of climate change impacts and are indeed already bearing the brunt.[47] Adaptation measures focus on preparing for (ex-ante) and adjusting to (ex-post) climate change impacts by strengthening resilience and reducing vulnerabilities. L&D measures deal with impacts that cannot be adjusted to. These are impacts, including extreme weather and slow onset events, which result in permanent loss (e.g., death) or 'repairable' damage. Redressing these permanent or 'repairable' injuries is, therefore, a key feature of L&D.

The urgency, intensity, and extensiveness of future adaptation needs depend on the level of ambition and pace at which mitigation targets are met today. Put simply, the lower the mitigation efforts, the higher the need for and price of adaptation. This link between mitigation and adaptation adds to the uncertainty surrounding predictions about adaptation needs and goals. While mitigation targets can be quantitatively measured and pegged to equally measurable global and national emissions reduction goals, adaptation goals are generally framed in qualitative terms. For example,

---

Articles on Prevention of Transboundary Harm from Hazardous Activities, with Commentaries (2001) 2:2 Yearbook of the International Law Commission, art 3, para 11.

[47] According to the IPCC, climate change impacts "are expected to be particularly severe in the developing world and among marginalized communities because of limited adaptive capacity" See Nubuo Mimura et al, "Adaptation planning and implementation" in C.B Field et al, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2014) 869 at 873. More recently, the IPCC noted, with high confidence, that small island states are being disproportionately affected by displacement caused by climate and weather extremes, and African and South African countries are facing increased flood and drought-related acute food insecurity and malnutrition. Further, with high confidence, it was noted that "global hotspots of high human vulnerability are found particularly in West-, Central-, and East Africa, South Asia, Central and South America, Small Island Developing States and the Arctic". Hans-O. Pörtner et al, *Climate Change 2022: Impacts, Adaptation and Vulnerability – Summary for Policymakers* (IPCC, 2022) 11, 12.

while the Paris Agreement establishes a global goal on adaptation to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change, there is no definite framework to measure this goal or the adaptation efforts of countries. While it might be difficult to prepare for long term climate change impacts which depend on the level of global mitigation efforts, there is increasing certainty around specific climate impacts in specific places associated with different levels of mitigation. There are also already ecosystems and communities in need of enhanced resilience given their peculiar vulnerability to the adverse impacts of climate change.

Vulnerability and resilience are key terms that summarize what adaptation entails. While vulnerability speaks to the susceptibility of systems to be adversely impacted by climate change, resilience deals primarily with the systems' capacity to cope with or recover from adverse climate events. Reducing the vulnerability and building/enhancing the resilience of natural and human systems to the consequences of climate change are the primary focus of adaptation. Both vulnerability and resilience must be seen as two sides of the same adaptation coin. Communities with low vulnerability and high resilience are best positioned to address climate change impacts, while communities with high vulnerability and low resilience are most prone to the effects of climate change. High resilience and low vulnerability communities are generally constituted by resourceful, adaptable, and knowledgeable stakeholders and actors, managed by proactive, transparent, and accountable institutions, with the necessary infrastructural and financial capacity, and situated in ecologically healthy environments.[48]

Adaptation sensitive project IA is an important tool in ensuring that vulnerabilities are not exacerbated, and resilience is bolstered rather than undermined when projects or policies are being designed. Various IA policies and laws incorporating climate change, like the Canadian IAA, however, focus primarily on climate change mitigation.[49] While adaptation and mitigation are

[48] In her study of heat and cold related vulnerability and resilience, for example, Nunes find that better-off participants with low vulnerability and high resilience "overall have the assets and/or the understanding and/or motivation to act in order to reduce the health impacts of heat (and cold)". See Ana Raquel Nunes, "Exploring the Interactions Between Vulnerability, Resilience, and Adaptation to Extreme Temperatures" (2021) 109 Natural Hazards 2261 at 2277. Asset is defined to include human capital, financial assets, physical assets, place-based assets, and social assets.

[49] The IAA makes explicit reference to "Canada's ability to meet its environmental obligations and its commitments in respect of climate change". See IAA, s 22(1)(i). While this could be interpreted broadly as including the entire suite of commitments made under the Paris Agreement including the "global goal on adaptation" (Paris Agreement, art 7), the IAA policy context (and other relevant IAA regulations) on climate change focuses on climate change mitigation. See *Policy Context: Considering Environmental Obligations and Commitments in respect of Climate Change under the IAA,* online: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/considering-environmental-obligations.html>.

essential dimensions of climate change, their integration into IA differs in a few key areas. As noted above, unlike the mooring of climate change mitigation to international climate obligations, which are quantifiable, there is no such concrete quantifiable international obligation on adaptation. Further, while projects with prospectively substantial direct and indirect emissions are the focus of mitigation-oriented IA, adaptation sensitive IA applies to every project whether with emissions potential or not. Insofar as a project can be adversely impacted by climate change or has the potential to negatively affect the adaptive capacity of a community or environment, it is a subject of adaptation IA. Importantly also, adaptation has a more local resonance than mitigation, making it arguably more amenable to the traditional IA process.

More generally, considering climate adaptation in IA provides a unique role for impact assessment in ensuring that the transition to a green economy is not just respectful of ecological integrity but also of equity and fairness. Equity plays an important role in considering the vulnerability and resilience of a community, and the significance of project impacts on the state of resilience and vulnerability. Communities can be less adaptive due to existing inequities or new inequities inflicted by ill-conceived projects. Take, for example, the location of biomass plants in already racially disadvantaged communities in North Carolina, United States; making the communities further prone to illnesses and potentially other climate change induced consequences.[50] At the minimum, a just transition ensures that the most vulnerable do not bear the burden of the green transition. It is in this regard that adaptation IA's focus on projects, whether renewable or not, is vital. GHG emitting projects are not the only projects with climate related consequences. There are both natural and social effects of non-emitting projects that could make such projects inimical to the adaptive capacity of human systems. For example, while renewable energy projects are important mitigation tools, they could further worsen the state of food insecurity in places already bearing the burden of climate induced food shortages. This is a justice issue and considering adaptation in IA could be critical to identifying such possibilities and addressing them early.

IA applies to climate change adaptation in two broad aspects. Firstly, the likely impacts of climate change on a project and, secondly, the effect of projects on the adaptive capacity of human and

[50] Majlie de Puy Kamp, "How Marginalized Communities in the South are Paying the Price for 'Green Energy' in Europe", *CNN* (9 July 2021) online: <https://www.cnn.com/interactive/2021/07/us/american-south-biomass-energy-invs/>.

natural systems.[51] The first instance is the most common understanding of the application of impact assessment to climate change adaptation.[52] Climate change could adversely impact a project either through outright damage or a reduction in functionality and profitability. While this appears to be a departure from IA's traditional focus on the effect of projects on ecological and social environments, there is a connection between the adverse impact of climate change on a project and the indirect environmental and social consequences. For example, intense flooding from climate induced sea level rise can compromise an electricity dam which could then lead to the dam's failure and the flooding of localities downstream, threatening lives, destroying biodiversity, and fostering energy poverty.

Projects could have more direct impacts on exacerbating the vulnerability and undermining the resilience of their host environment.[53] Maladaptation – when adaptation measures result in increased vulnerability and reduced resilience – is a good example of this form of adaptation related impact. In response to the vulnerability of projects to climate change, measures could be taken to 'climate proof' the project. This could, however, have unintended and unconsidered effects on people and the environment. For example, measures to protect a hypothetical electricity dam from flooding could in turn result in greater vulnerability of local communities to flooding. More directly, projects could themselves induce greater vulnerability and lower resilience of local natural systems and communities. An example is when a project puts pressure on a community's water supply, making the community further susceptible to climate induced drought.

---

[51] According to Sparling et al, assessing projects for climate change effects should include "each project effect assessed to be worsened by climate change" and "each project component assessed to be vulnerable to climate change". See Erik Sparling et al, "Best Practices for Consideration of the Effects of Climate Change in Project-level Environmental Assessments", *Ontario Centre for Climate Impacts and Adaptation Resources* (September 2017) online: <http://www.climateontario.ca/doc/reports/BestPracticesForConsiderationOfEffectsOfClimateChangeInProjectEAs2017.pdf>, 20.

[52] For example, in Nova Scotia (Canada), project proponents are expected to develop an adaptation plan for the project when there is indication that "the project is vulnerable to climate change". See Nova Scotia Environment, "Guide to Considering Climate Change in Environmental Assessments in Nova Scotia", (February 2011) online: <https://novascotia.ca/nse/ea/docs/EA.Climate.Change.Guide.pdf>, 10 – 11. In the United Kingdom, proponents are required to include information describing the "vulnerability of the project to climate change" in their environmental statements. See *The Town and Country Planning (Environmental Impact Assessment) Regulations,* 2017 No. 571, schedule 4, para 5(f).

[53] In an ongoing case in the United States, Exxon Mobil has been challenged for failing to take climate change impacts into account in its stormwater pollution prevention plan, spill prevention, control and countermeasures plan, and facility response plan. Hence, putting the claimants in directly in harm's way. See *Conservation Law Foundation Inc. v ExxonMobil Corporation & Ors.*, United States District Court for the District. of Massachusetts (Complaint), para 11.

In all these instances, an effective IA relating to climate adaptation would need to include both the biophysical and project environment baselines, probable climate change scenarios and local impacts, and the vulnerability and resilience of the project, the environment, and the community. The extensiveness of likely climate impacts compels the involvement of a wide range of stakeholders in the identification of baselines, probable scenarios, and localized impacts at the earliest possible time. The involvement of other stakeholders alongside experts becomes even more important considering the uncertainty of climate scenarios and the need for local knowledge of baseline conditions and experienced change. Indigenous people are, for example, authoritative knowledge holders on historical baselines of various valued ecosystem components in Indigenous territories. They have also observed and provided accounts of changes experienced and existing vulnerabilities.[54]

Importantly, the notions of vulnerability and resilience are not merely biophysical concepts discernible and measurable through objective scientific media. They are also social realities. For example, available resources, information and skills, competent institutions, and overall state of equity in the society have been highlighted as important to the adaptive capacity of a community.[55] Knowledge about these essential socio-economic factors and their implications for the climate related impacts of projects can only be acquired through meaningful and inclusive dialogue.[56] A key question here is whether climate change adaptation should always be considered. The answer is a resounding yes. The impacts of climate change are ubiquitous and while the scope and scale might vary, it is unlikely that any project will escape the reality of climate change. It is the

[54] In an edited work published in 2019, various adaptation practices and approaches by Indigenous communities across the world were studied. They ranged from the application of traditional environmental knowledge to grassland stewardship in the face of increasing temperature and unseasonable weather in Mongolia to the application of indigenous knowledge for climate resilience in the Ecuadorian Amazonia. See generally Ariell Ahearn et al eds., *Indigenous Peoples and Climate Change: Emerging Research on Traditional Knowledge and Livelihoods* (Geneva: International Labour Organization, 2019). See also IPCC, *Climate Change 2014: Synthesis Report – Summary for Policymakers* (IPCC, 2014) 19. See also Chanel Anderson, "What are Indigenous Knowledge Systems – and how can they help fight climate change?", *tvo* (30 September 2021) online: <https://www.tvo.org/article/what-are-indigenous-knowledge-systems-and-how-can-they-help-fight-climate-change>.

[55] Noble et al note the transition from the emphasis on biophysical vulnerability to underlying social and economic drivers of vulnerability (informational, capacity, financial, institutional, and technological). See generally Ian Noble et al, "Adaptation Needs and Options" in C.B. Fields et al, *supra* note 47 at 836 – 868.

[56] The United States Agency for International Development (USAID) notes that "adaptation planning requires more than legal frameworks and compliance to ensure that decisions are effective in meeting the challenges of vulnerability reduction … Decision making in a changing climate requires new areas of expertise and wider consultation than might typically be involved in traditional "development decision-making"," See USAID, *Stakeholder Participation in Climate Change Adaptation Planning* (USAID, 2013) 2 – 3.

responsibility of those responsible for carrying out IA to make all reasonable efforts to predict these impacts and address them. Following the precautionary principle, the inevitable uncertainty dogging climate impact predictions does not excuse inaction. Rather, it underscores the importance of involving diverse voices in predicting impacts and addressing them through efforts to lower vulnerability and increase resilience. The involvement of those potentially affected must be actively sought at the earliest stages of the assessment process.

While involved voices might be pruned later in the IA process for the sake of effectiveness and efficiency, the process must begin with the broadest participation possible. During these early planning and scoping phases, it could indeed be determined that likely impacts apply mostly or most gravely to an aspect of project-adaptation impact, which will in turn help explore the continuum between stakeholders with a 'mere' interest and right holders with clearly threatened rights. For example, the scoping phase could establish that while there are likely climate impacts to the project itself, there are little or no direct or indirect effects on the host community or environment. In such case, investors and workers may have specific associated interests and threatened rights that warrant their involvement in deliberations regarding the adaptive capacity of the project and measures that should be taken. The active involvement of interested and affected persons throughout the assessment process of a project, particularly, when alternatives or mitigation options are being considered, is crucial to climate change adaptation. Take, for example, ENI's construction of embankments and other structures for its Nigerian subsidiary's oil field in Southern Nigeria. The host community took the position that the constructions completely blocked its natural streams with no adequate drainage leading to backed-up stream and flooded farmlands and residential areas during the rainy season. Although the company argued that the low-lying terrain of the community made it particularly prone to all-season flooding, the community had experiential knowledge of the baseline prior to the project and the complications caused by ENI's projects.[57] Actively involving the community while the project was being designed and assessed would have availed ENI of this local knowledge.

[57] Italian National Contact Point for the OECD Guidelines, *Specific Instance submitted to the Italian NCP on the 15th December 2017 by Chima Williams & Associate (CWA) and Advocates for Community Alternatives (ACA), on behalf of Egbema Voices of Freedom, versus ENI S.p.A. and ENI International BV – Report on the Agreement by the Parties,* online: <*https://pcnitalia.mise.gov.it/attachments/article/2035928/Report%20CWA-ENI%20case%20-%20NCP%20final.pdf*>.

The uncertainty and volatility of climate impacts make the existence of a responsive community embedded follow-up structure vital to an adaptation sensitive IA process. IA is not an exact science in predicting impacts and ensuring that measures are put in place to address the potential impacts. This is even more so in the context of climate change. There has been a consistent overshoot of climate impacts in intensity and timeline. This mandates an iterative and adaptive approach to public participation in respect of climate change adaptation. Like the ENI example, while it could be indeed correct that at the time of design and construction the risk of flooding was not aggravated, it was not impossible that the constructions made the community more vulnerable given increased flooding possibly due to subsequent climate change induced changes in stream flow. Rather than contesting the claim and its escalation to the OECD Italian National Contact Point (NCP), ENI should have had an ongoing relationship and a structure for engaging the host community, receiving their feedback on the socio-ecological impact of the project more so in a volatile climate. Indeed, the agreement brokered by the OECD NCP appointed conciliator mirrors this conclusion including that the community should play an active role in appraising the functionality of adaptation measures (culverts/drainages) and should be able to promptly signal malfunctions to a company designate.[58]

Under the Paris Agreement, countries recognize the need to avert, minimize, and address loss and damage (L&D) associated with the adverse impacts of climate change, and the usefulness of sustainable development to reduce such risk.[59] This recognition frames L&D response measures as both ex-ante (avert and minimize) and ex-post (address). Incorporating L&D into project impact assessment affects IA analysis in important ways. Impacts that can be 'reversed', 'mitigated', or 'adapted to' are *prima facie* less significant than L&D impacts that cannot be reversed. It is, however, difficult to determine the implications of specific projects for L&D. Two general assumptions could help in this regard: (i.) emissions from projects make loss and damage more likely even if it might be difficult or impossible to determine where and when those losses and damages will occur; and (ii.) projects can trigger or exacerbate loss and damage by undermining the resilience of communities.

[58] *CWA & ACA v. ENI s.p.a.*, Terms of Settlement (Accepted July 8, 2019) online: <https://pcnitalia.mise.gov.it/attachments/article/2035928/ACA%20v.%20ENI%20ToS%20DEF.pdf>.
[59] Paris Agreement, art 8(1).

The first assumption is related to the increased connection drawn between companies' climate (in)action and human rights in both judicial and non-judicial fora. Courts across the world are determining that the failure of private and public actors to take (ambitious) climate action violates various human rights, including the right to life.[60] Previous arguments based on the non-traceability of impacts to emissions are being rejected.[61] A relevant aspect of this development is the more liberal approach of courts to standing, recognizing the right of persons affected by climate change, projected to be affected by climate change, or representing those affected or prospectively affected, to sue.[62] Project proponents are, therefore, advised to proactively make room for the involvement of potentially affected persons when assessing the climate implications of their projects. The question should not just be whether a project is carbon intensive or whether it affects international commitments, but also what economic and non-economic losses and damages will be incurred by real people due to climate change.

The second assumption draws on the discussion on climate adaptation above. However, a slight addition under L&D is the recognition of the right of persons impacted by climate change to 'redress'. Firstly, it should be non-controversial that projects that expose communities and persons to irreversible loss and damage, particularly lives, livelihood, and vital ecosystems, by undermining their resilience should not be allowed to proceed. However, given that it is likely that the full implications of projects on the resilience of communities might not be foreseen, it is important that the public be involved throughout the lifecycle of approved projects. There should be proactive and up-to-date adaptive management strategies jointly designed, updated, and maintained by project proponents and affected communities. A key component of a climate sensitive adaptive management framework is the availability of operational level grievance

[60] For example, the Hague District Court recently held that businesses' responsibility to respect human rights is a global standard of expected conduct, and Royal Dutch Shell's (RDS) emissions, which were contributory to global warming and dangerous climate change, have serious and irreversible consequences and risks for human rights. See *RDS, supra* note 36 at paras 4.4.15 - 4.4.16. See also *The State of the Netherlands v Urgenda*, ECLI:NL:HR:2019:2007.

[61] The Dutch Supreme Court held that the fact that Netherland's contribution to the global GHG emissions is minor does not diminish the country's duty of care to take mitigation measures. See *The State of the Netherlands v Urgenda*, para 2.3.1.

[62] *Neubauer, et al v Germany* ECLI:DE:BVerfG:2021:rs20210324.1bvr265618, paras 96 – 137.

mechanisms which could be established by proponents or third parties to address loss and damage claims, non-contentiously and expeditiously.[63]

C. Delayed and Cumulative Climate Impacts and the Causation Challenge

Traditional IA attempts to predict and manage discernible impacts. Such impacts can generally be traced to the specific project and in some instances, there are clear cause and effect connections. The same cannot be said for climate change impacts. Climate change impacts are, generally, both delayed and cumulative. This is, more so, for direct mitigation-related climate change impacts. As already observed, adaptation related impacts (e.g., increased vulnerabilities or reduced resilience caused by projects) generally have the nature of impacts traditional IA deals with. Climate change, as a macro-impact, is a result of the cumulation of emissions from multiple sources over the years. Depending on the type of emitted GHG, it takes decades and centuries for emitted gases to translate into changes to the global temperature. This is not entirely unique to climate change as there are, generally, time lags between other environmental stressors and their impacts.[64] Emissions leading to climate change and climate change impacts are, however, peculiar considering that the impact of some GHGs, like carbon dioxide, could be in the atmosphere for up to a thousand years.[65] Although climate change modelling has grown immensely over the years and the degree of certainty in respect of the climate change impacts attributed to emissions has geometrically increased; foreseeing, predicting, and conclusively attributing the impacts of emissions from specific projects to those projects remains a challenge. This is due to the incredibly extensive time lag in climate change impacts vis-à-vis GHG emissions, and the fact that, generally, no singular emission source can be indicted as responsible for climate change.[66]

The delayed and cumulative nature of climate change compels a rethinking of traditional IA which is otherwise able to attribute specific impacts to defined stressors. Even when cumulative impacts

[63] For more on grievance mechanisms, see International Commission of Jurists, *Effective Operational-level Grievance Mechanisms* (Geneva: International Commission of Jurists, 2019).
[64] Biber, for example, referenced the delayed generational impacts of the drug DES. See Eric Biber, "Climate Change, Causation, and Delayed Harm" (2009) 37 Hofstra Law Review 975 at 976 – 978.
[65] Alan Buis, "The Atmosphere: Getting a Handle on Carbon Dioxide", *NASA* (9 October 2019) online: <https://climate.nasa.gov/news/2915/the-atmosphere-getting-a-handle-on-carbon-dioxide/>.
[66] Attribution science is, however, growing, and there is movement towards sectoral, geographical, or group attribution. Recent studies attributing climate change and impacts to carbon majors are examples. See Richard Heede, *Carbon Majors: Updating Activity Data, Adding Entities, and Calculating Emissions: A Training Manual* (Climate Accountability Institute, 2019); Rachel Licker, "Attributing Ocean Acidification to Major Carbon Producers" (2019) Environmental Research Letters.

are considered in traditional IA, the contributory harms from specific projects are defined. How, then, does impact assessment address these defining characteristics of climate change? There is extensive literature on climate change causation challenges, and insights from this body of literature could be useful in designing an IA framework suited to climate change. Causation is a well-developed concept in law. It is a central issue in the tort of negligence, within which context various scholars have situated the discussion on climate change and causation. Negligence comes into existence when there is a legally recognized duty of care that has been breached through a negligent act which has led to an injury which is not too remote a consequence from the action of the negligent person.[67] The last element of the tort of negligence is showing that the damage is caused, in fact and in law, by the breach of duty of care. It is not farfetched to contend that given the settled state of the science of climate change, emitters hold a duty of care which is breached when they emit, and such emissions result in tangible damage. And while there could be a case for the existence of a general factual causal link between climate harm and emissions, it is very difficult to establish a specific causal link which is vital to showing a legal causal link. To establish a legal causal link, a remoteness inquiry, which considers whether the harm is not too reasonably and foreseeably unrelated to the wrongful conduct, is required.[68] It is difficult to, even on a balance of probability, satisfy this inquiry in the climate change context.

To get around the causation challenge, attempts have been made to draw lessons from tobacco litigations which started to record judicial success in the 1990s. Olszynski et al, for example, referred to the legislative route taken by British Columbia (BC) which enacted the Tobacco Damages and Health Care Costs Recovery Act to enable direct action by the province against tobacco companies to recover the public costs of healthcare incurred as a result of tobacco-related diseases.[69] On causation, Olszynski et al highlight Gage and Wewerinke's modest legislative proposals, which allow nuisance claims against 'major emitters'.[70] Closer to the BC Tobacco legislation example, however, is the proposed presumption that "the province's costs associated with climate change … occurred as a result of emissions-generating activities in the province".[71]

---

[67] See *Mustapha v Culligan of Canada Ltd*. [2008] 2 SCR 114 at para 3.
[68] *Ibid* at para 12.
[69] Martin Olszynski et al, "From Smokes to Smokestacks: Lessons from Tobacco for the Future of Climate Change Liability" (2017) 30:1 Georgetown Envtl Law Review 1 – 45.
[70] See Andrew Gage & Margaretha Weweinke, *Taking Climate Justice into our own Hands: A Model Climate Compensation Act*, (Vanatu Environmental Law Association & West Coast Environmental Law, 2015).
[71] Olszynski et al, *supra* note 69 at 41.

In other words, the defendants will be deemed responsible for the climate change related harm within a jurisdiction caused by emissions from other jurisdictions. As in the BC example, however, this presumption will be subject to a reverse burden of proof on the defendants to show that they are not responsible.[72] In support of this proposal, the authors cited the decision of the Supreme Court of Canada in *Clements v. Clements* on the principle of "material contribution to risk",[73] although noting that the rule would need some substantial modification to apply to climate change.[74]

The tobacco example could validly be criticized as an oversimplification of a far more complex subject – climate change.[75] While the reverse burden proposal by Olszynski et al cannot be scientifically and factually supported,[76] the presumption of harm component of the proposal is deserving of attention. The presumption endorsed here, however, differs from the version conceived by Olszynski et al as there is no recognition of a reverse burden of proof and given the settled position of science on the definite harm posed by the emission of GHGs, this presumption is irrebuttable. While it might be difficult, if not impossible to trace specific impacts to specific emission sources, given what Jacqueline Peel has described as "the drop in the ocean problem",[77] the science is clear that GHG emissions are responsible for climate change impacts. This is not an issue of the quantum of emissions or attribution of impacts; it is simply that inherent in the emission of GHGs are harms to nature and humans. In this instance, torts actionable *per se* (e.g., trespass) which are considered complete without proof of damage is a more apt form of tort to

[72] *Ibid* at 42.
[73] In *Clements v Clements* [2012] 2 SCR 181, the SCC established that when a plaintiff satisfies the 'but for' test but is unable to establish the specific liability of individual defendants which have contributed to an injury, "each defendant who has contributed to the risk of the injury that occurred can be faulted". This is, however, difficult to apply to climate change in the light of the *de minimis* rule, as it is difficult to attribute 'material contribution' (depending on how it is defined) to a singular emitter.
[74] Olszynski et al, *supra* note 69 at 42.
[75] While there are similarities between the tobacco problem and climate change, climate change is infinitely broader in scope both as to its causal sources, impacts, and receptors of impacts. There are various justice issues tied to a tobacco-styled climate attribution regime. For example, who are the defendants who benefit from damages imposed on emitters? Is it justified for BC to be compensated for harms experienced more acutely in underdeveloped countries or even deprived communities within Canada but outside BC?
[76] The argument that emitters can be held responsible for the climate impacts within specific jurisdiction caused by emissions both within and outside the jurisdiction is contrary to the basic understanding that no singular actors can be held responsible for climate change impacts. More significantly, the reverse onus proposal cannot work in the context of climate change as in the same way emitters cannot be shown to be responsible for specific climate impacts, they cannot be conclusively proven not to be responsible for climate impacts, as climate impacts are a product of cumulative emissions including the emissions of emitters being litigated against, however, little.
[77] Jacqueline Peel, "Issues in Climate Change Litigation" (2011) 24 Carbon & Climate Law Review 15 at 19.

draw from.[78] For such torts, the conduct itself is deemed inherently injurious, and a plaintiff is not required to further prove actual harm to be entitled to compensation, which might vary depending on whether the tort (trespass) is accidental or wilful.[79]

As already noted, courts around the world are beginning to apply the kind of 'presumption of harm' described above. For example, rejecting the argument of the Dutch government that Netherland's GHG emissions are very small and reducing emissions makes little difference on a global scale, the Dutch Supreme Court held that the country has 'partial responsibility' to account for its share of emissions more so as "each reduction of GHG emissions has a positive effect on combating dangerous climate change … no reduction is negligible".[80] The Supreme Court of Canada (SCC) reached a similar decision holding that while there is no direct connection between climate change impacts and GHG emission sources, "every province's GHG emissions contribute to climate change, the consequences of which will be borne extra-provincially, across Canada and around the world".[81] More specifically, the SCC rejected the argument that the province's GHG emissions cause no "measurable harm", instead emphasising the measurable nature of emissions which inevitably lead to climate change.[82] The court held that the "underlying logic of this argument would apply equally to all individual sources of emission everywhere".[83] The U.S. Supreme Court in *Massachusetts v Environmental Protection Agency*[84] and the more recent decision of the Hague High Court in the RDS decision have equally reached conclusions consistent with the irrebuttable presumption of harm that attends GHG emissions. Indeed, such presumption latently undergirds carbon pricing instruments like carbon tax and cap and trade. Individuals mandated to pay carbon tax are compelled to do so to internalize external harm caused by their emissions without any need to prove the linkage of their emissions to any specific harm.

This presumption is fundamentally misaligned with the pre-eminence enjoyed by identifiable and linkable impacts in traditional IA. For example, under most IA regimes, projects are only

[78] G.H.L. Fridman, *The Law of torts in Canada* (Toronto: Carswell, 1989) 7. Trespass, as a tort actionable per se, is, however, not entirely applicable to climate change given the requirement that interference must be direct. It is unlikely that emissions even with impacts caused suffice as direct interference. This limitation is addressed by the tort of nuisance which permits indirect interference except that damage must be proven.
[79] Philip Osborne, *The Law of Torts*, 6th ed (Toronto: Irwin Law, 2020) 319 – 320.
[80] *Urgenda Foundation v State of the Netherlands* [2019] ECLI:NL:HR:2019:2007, Paras 5.7.7 – 5.7.8.
[81] *re GPPA*, *supra* note 27 at para 187.
[82] *Ibid* at para 188.
[83] *Ibid.*
[84] *Massachusetts v Environmental Protection Agency*, 549 US 497 (2007).

considered worthy of assessment if they are likely to result in significant adverse impacts. Assessing climate change impacts, whether at the project or strategic level, requires an application of the presumption of harm. The starting assumption of any project with GHG emissions is that such project has adverse climate impacts even if such impacts cannot be conclusively determined. In this sense, the role of IA is not necessarily to determine the 'impacts' of GHG emissions, but to quantify likely emissions over the course of a project, determine how the emissions should be avoided or mitigated, whether the project should be allowed to proceed if emissions cannot be effectively avoided or mitigated, the impacts of avoidance or mitigation measures, and how those impacts are to be avoided or redressed. Arguably, the presumption of harm is a major rethinking that must happen to traditional IA for it to be fit for climate-purpose. This approach is different from the current dominant approach of appraising the 'impacts' of emissions by how much it impacts on the ability of a country to meet its commitment under the Paris Agreement. As already noted, this approach negates the cumulative nature of climate change inducing emissions as it suggests that certain emissions might not contribute to a country's inability to meet its climate obligations. The point has been emphasized that every emission contributes to climate change. The presumption of harm approach, therefore, rejects the artificial distinction between major and minor emissions. Instead, it recognizes the inherent harm in every source of emissions and requires that IA helps in designing pathways to avoid or mitigate such emissions effectively and equitably.

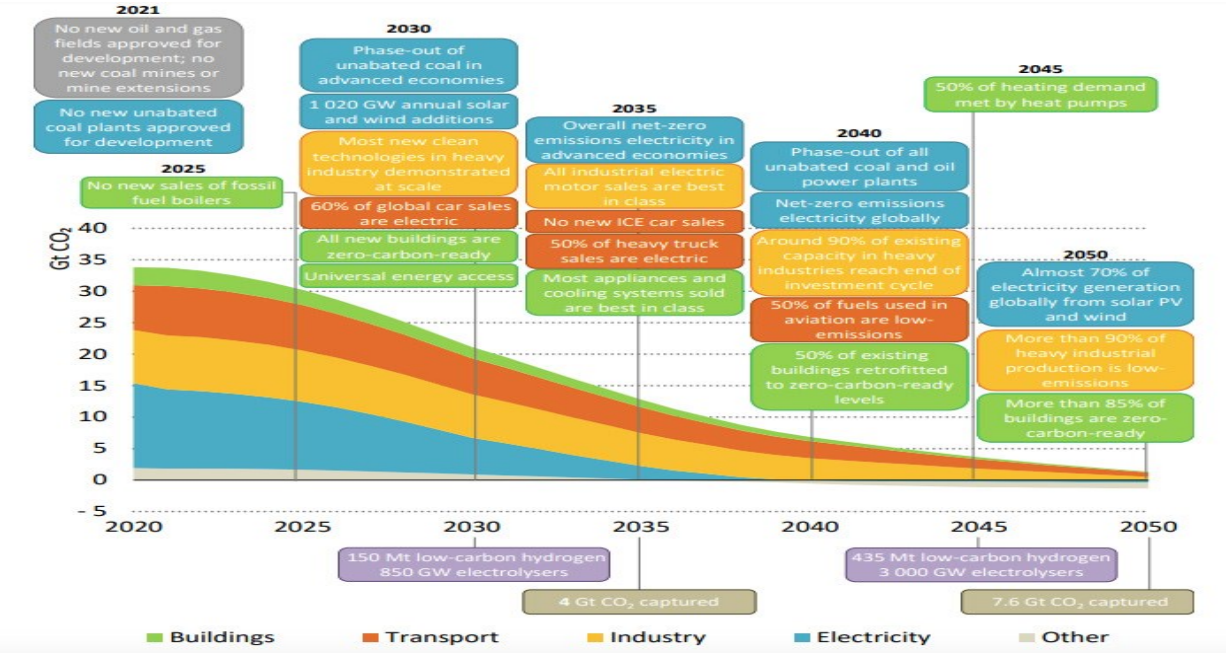
D. Ambitious and Immediate Climate Action

The urgency and scope of climate change response measures are other factors which must necessarily modify how IA is applied to climate change for it to be fit for purpose. The ambition required to address climate change and the urgency with which climate goals must be actualized set climate change apart from other sustainability challenges which traditional IA attempts to address. In its 1.5ºC report, the IPCC concluded with high confidence that global warming is likely to reach the 1.5ºC mark between 2030 and 2052 if emissions continue to increase at the current rate.[85] Mapping out a pathway to stand a chance (albeit narrow) of staying below the 1.5ºC mark, the IEA set out more than 400 milestones that should be achieved to decarbonise the global economy within thirty years.[86] These include not approving any new oil and gas fields or any new

[85] Valerie Masson-Delmotte et al, *Global Warming of 1.5ºC: Special Report* (IPCC, 2019) 4.
[86] IEA, *Net Zero by 2050: A Roadmap for the Global Energy Sector* (Paris: IEA, 2021) 19.

coal mine or coal extension, a $4 trillion investment in clean energy by 2030, phasing out all 'unabated' coal and oil power plants by 2040, and by 2050, ensuring that 85% of buildings globally are zero-carbon ready and 70% and 90% of heavy industrial production is low-emission compliant.[87] The point is that the efforts required to address climate change affect every area of human endeavour and must be carried out by meeting both short- and medium-term objectives.

Figure 13: Key Milestones in the Pathway to Net Zero[88]



The Paris Agreement envisions that all countries will have targets covering all sectors of their economy and all GHGs; speaking to the scope of ambition required to respond to climate change. Parties' successive NDCs to represent a progression reflecting their "highest possible ambitions".[89] Further, while developed countries are admonished to take the lead by undertaking "economy-wide absolute emission reduction targets", developing countries are expected to, over-time, move towards "economy-wide emission reduction or limitation targets".[90] The ambition and urgency climate change demands is, again, not consistent with mainstream IA practice. As in the case of Canada, assessing a project for climate change impact is dependent on whether such activity has

[87] *Ibid* at 20.
[88] *Ibid* at 21.
[89] Paris Agreement, art 4(3).
[90] Paris Agreement, art 4(4).

been designated either in the project list regulation or through the exercise of ministerial power.[91] As already pointed out, Doelle's proposed response to this is developing project lists for sectors key to the transition, and applying a reverse onus approach in requiring all activities in the identified areas to be assessed unless the proponents establish that the activities are not inconsistent with the transition without the need for IA.[92] In addition to the arguments made earlier in this chapter on the corporate IA model for mitigation, I have argued more broadly that every activity with GHG emissions should be deemed harmful. Taken further, while there are indeed sectors arguably more consequential for the transition, as admonished in the Paris Agreement, all sectors must be considered as consequential and mitigation policy measures, particularly IA, must be without sectorial limitation. Contending that such proposition is fundamentally impractical is not without justification. Such view is, however, less justified if IA is considered as a multi-level and multi-scalar construct, entailing more than one level of government, and manifesting at both the governmental and non-governmental scales. Viewed this way, every GHG-emitting activity could be realistically covered in consonance with the required scale of ambition.

Given the central role the global net zero target plays in the overall objective of keeping global temperature under 1.5ºC and what appears to be a consensus by state and non-state entities to pursue the 1.5ºC goal,[93] the net zero language is beginning to appear in IA laws and policies and affiliate instruments. In tandem with its legislated net zero target,[94] Canada's Strategic Assessment of Climate Change "requires proponents of projects with a lifetime beyond 2050 to provide a credible plan that describes how the project will achieve net-zero emissions by 2050".[95] The requirement for a net zero plan does not apply to upstream GHG emissions, and eligible projects that do not have such a plan will not be allowed to proceed.[96] While this provision is unique to Canada's IA regulatory regime,[97] it still falls short of the ambition and urgency required of climate actions. To start with, the 'beyond-2050' clause suggests that if a project's lifetime does not exceed

[91] IAA, s 9(1).
[92] Doelle, *supra* note 7 at 283.
[93] The Glasgow Climate Pact, para. 16.
[94] *Canadian Net-Zero Emissions Accountability Act*, SC 2021, c 22, s 6 (CNEAA).
[95] Government of Canada, *supra* note 23 at 1.
[96] *Ibid* at 11.
[97] As at the time of writing, Canada is the only known country to refer to and develop requirements for net zero plans in an IA Guidance.

2050, it has no need to aim for net zero and, by extension, would not affect the net zero goals of the country. This is manifestly incorrect.

Although the Canadian net zero law aims for 2050, it further provides that "nothing in the Act precludes attaining net-zero before 2050".[98] In other words, 2050 is not sacrosanct. In fact, the earlier 'net zero' is achieved, the better for the climate. However, it is laudable that the technical Guide in respect of the net zero plan mandates that, for eligible projects, the net zero climate plan "must be coherent with the proponent's corporate commitments, if any, and long-term business strategies".[99] This is consistent with the earlier argument that ambitious voluntary climate instruments should be factored into the IA process. It is, however, unclear how a conflict between a proponent's corporate commitments and the Strategic Assessment and technical guide will be resolved. Companies participating in UNFCCC supported *Race to Zero Campaign* are, for example, expected to have targets covering scopes, 1, 2 and 3 emissions, and plans to address them.[100] This is contrary to the explicit provision of Strategic Assessment and technical guide that the net zero plan does not include upstream emissions.

While most net zero plans target 2050, *figure 13* suggests that 2050 should ideally represent a culmination of mitigation efforts executed in intermediate years, and there is no singular target year for every sector. For example, while unabated coal should be phased out in every advanced economy by 2030, the IEA projects that 85% of buildings should be 'zero carbon ready' by 2050. Appreciating the additive nature of 'net zero', the CNEAA requires the Minister to set net-zero consistent national GHG targets every five years beginning from 2030.[101] It is worth noting that this provision is connected to Canada's international obligation to communicate an NDC every five years.[102] Given the IAA's linkage of project climate impact to Canada's international climate commitments, it is arguable that projects should also be required to show how they contribute to these intermediate targets in their climate plans. This, however, does not appear to be the case. The technical guide simply requires that the plan contains "emission reductions at specified intervals up to 2050 and must be aligned with the schedule of the mitigation measures that will be

[98] CNEAA, s 6.1.
[99] Government of Canada, *Technical Guide Related to the Strategic Assessment of Climate Change: Guidance on Quantification of Net GHG Emissions, Impact on Carbon Sinks, Mitigation Measures, Net-Zero Plan and Upstream GHG Assessment* (Ottawa: Government of Canada, 2021) (Technical Guide), 31.
[100] Race to Zero, *supra* note 34.
[101] CNEAA, s 7(1)(4).
[102] Paris Agreement, art 4(9).

implemented".[103] Further, although the Strategic Assessment states that the Minister may include a reporting program as part of the conditions for approval, this requirement is contingent on the Minister's preference rather than mandatory.[104]

It should not be assumed or accepted that net zero is the gold standard of the climate agenda. Net zero is meant to aid an arrival at 1.5°C, which is itself a "societal choice … informed by climate science".[105] It is already established that even the 1.5°C mark has grave consequences for humans and nature. Arguably, therefore, in the same way the 1.5°C mark is a societal choice, net zero is also a political decision. It is not an immutable choice; it is a more convenient choice. At the core of the net zero target is the assumption that emissions can continue insofar they are balanced out by removal. This has made 'carbon offset' the crown jewel of most emitters' climate plans. This is also reflected in the focus of the CNEAA, the Strategic Assessment, and Technical Guide on 'net zero', and the attendant central position occupied by mitigation and offset programs in these instruments. The dangers of anchoring climate plans on net zero are well documented,[106] and this is already informing a rethinking of how the net zero concept is operationalized. The Science Based Targets Initiative (SBTi), for example, differentiates between reducing emissions to 'zero' and neutralizing residual emissions at the net-zero target year.[107] This approach is consistent with the mitigation hierarchy which begins with avoiding generating GHG emissions, followed by minimization of emissions that cannot be avoided, and offsetting emissions that can neither be minimized nor offset.[108]

Table 10: Climate Change and IA Laws

	Canada	South Africa	United States of America
Global and multi-sectoral sources of climate change	Yes	Yes	No
Adaptation and L&D	No	Yes	Yes (No L&D)

[103] Technical Guide, *supra* note 99 at 31.
[104] Government of Canada, *supra* note 23 at 18.
[105] Sam Fankhauser et al, "The Meaning of Net Zero and How to Get it Right" (2022) 12 Nature Climate Change 15.
[106] Corporate Accountability et al, *The Big Con: How Big Polluters are Advancing a "Net Zero" Climate Agenda to Delay, Deceive, and Deny*, (Corporate Accountability et al, 2021).
[107] SBTi, *SBTI Corporate Net-Zero Standard* (SBTI, 2021) 8.
[108] World Business Council for Sustainable Development (WBCSD), *Natural Climate Solutions: The Business Perspective* (Geneva: WBCSD, 2019) 15.

Delayed and cumulative impact (presumption of harm)	No	Partially	Yes
Ambitious and immediate climate action	Partially	Partially (explicit reference to the mitigation pyramid)	Partially

In the analysis above, I identified four key features of climate change and how IA must be tailored towards these features for it to be fit for purpose in the climate change context. While developments in integrating climate change into IA have been dominantly referenced in providing supporting examples above, table 10 has considered developments in other jurisdictions, which like Canada, are major fossil fuel exporting economies. South Africa and the USA approach the subject of measuring and regulating GHG emissions through the IA process differently from Canada's approach. While as already shown above Canada's approach is hinged to its commitment under the Paris Agreement, South Africa's proposed climate change guideline (SA Guideline) only made a passing reference to the Paris Agreement,[109] while no reference was made in USA's Council on Environmental Quality climate change guidance (CEQ Guidance).[110] Under the SA Guideline, the consideration of a development's GHG emissions on the country's emission trajectory and ability to maintain its NDC under the Paris Agreement is not determinative as it is only one of many other impacts required to be considered when assessing for climate change.

The CEQ Guidance explicitly refused to establish any "particular quantity of GHG emissions as "significantly" affecting the quality of the human environment".[111] Instead, agencies are required to conduct quantitative and qualitative analyses of emissions. In doing so, "agencies should not limit themselves to calculating a proposed action's emissions as a percentage of sector, nationwide, or global emissions in deciding whether or to what extent to consider climate change impacts under NEPA".[112] This approach is different from the dominant approaches argued for in CC&IA literature as considered above and a departure from Canada's Paris Agreement centered approach.

[109] Department of Forestry, Fisheries and the Environment, *National Guideline for Consideration of Climate Change Implications in Applications for Environmental Authorisations, Atmospheric Emission Licenses and Waste Management Licenses* (2021) Government Gazette No. 44761, 26.
[110] Council on Environmental Quality, *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews,* (2016) (CEQ Guidance). While the Trump administration withdrew the 2016 Guidance in 2017 and put in its place a 2019 Guidance, the Biden administration rescinded the 2019 Guidance in 2021, and has re-issued the 2016 Guidance, which as at the time of writing was under a revision and update process.
[111] *Ibid* at 10.
[112] *Ibid* at 11.

Importantly, the CEQ Guidance approach avoids Oshawa and Duinker's 'scale trick', as instead of adjudging the significance of emissions by comparison, emissions are in themselves deemed significant. The flaw of this approach, however, is the subjection of the determination of significance to 'rule of reason' which permits agencies to "determine … how to consider an environmental effect and prepare an analysis based on the available information".[113] The danger of this approach was made evident in a recent decision of US District Court for the District of Columbia.[114]

In *Friends of the Earth et al v Haaland* (*Haaland*), the court ordered the vacatur of a lease sale for the exploration and production of oil and gas (lease sale 257) on the Outer Continental Shelf of the Gulf of Mexico. Central to the court's decision is the finding that the relevant agency (Bureau of Ocean Energy Management (BOEM)) "acted arbitrarily in excluding foreign consumption from its emissions analysis".[115] For its No Action Alternative analysis in the Environmental Impact Statement (EIS) for the project, BOEM had relied on the MarketSim model. This model had been impugned in other similar cases for its working assumptions, including that oil consumption will remain static whether or not oil and gas projects proceed. The EIS estimated that depending on the market price of oil, the no-action alternative will reduce oil consumption by "one, four, or six billion barrels of oil".[116] The agency, however, did not include the emissions resulting from the reductions, contending that it did not have "sufficiently reliable information on foreign emissions factors and consumption patterns".[117] Strangely, using the MarketSim model with its assumptions, the agency concluded that the total GHG emissions would be slightly higher in a no action alternative, compared to if the lease sales proceeded.[118] The decision in the *Haaland* case, as well as other recent similar cases like *Sovereign Iñupiat for a Living Arctic et al v Bureau of Land Management* and *Center for Biological Diversity v Bernhardt* also involving oil and gas development projects,[119] not only makes the consideration of downstream (scope 3) emissions

[113] *Ibid* at 6.
[114] *Friends of the Earth et al. v Haaland et al* (2022) 21-2317.
[115] *Ibid* at 27.
[116] *Ibid.*
[117] *Ibid.*
[118] The MarketSim model used in reaching this conclusion assumed that "foreign production will substitute for domestic production and would be more carbon-intensive". *Ibid* at 23.
[119] *Sovereign Iñupiat for a Living Arctic et al v Bureau of Land Management* 982 F.3d (9th Cir. 2020)*; Center for Biological Diversity v Bernhardt* No. 3:20-cv-00290, 2021WL 3667986. These cases, including the *Haaland* decision, are interestingly connected. Although not bound by the decisions reached by the preceding courts, the court in

essential to EIS (which is explicitly excluded in Canada), but also shows the danger of wrong models and their attendant assumptions which agencies have the liberty to adopt and apply under the American system.

The South African and American Guidance address adaptation considerably. The SA Guideline, however, goes further to reflect considerations that could qualify as L&D compliant. In its prescribed categories for mitigation measures, the Guideline provides for "compensation" which should only be considered when other steps (avoidance, minimization, rectification, and reduction) have been completed.[120] The scope of compensation includes "the creation, enhancement or acquisition of environments" similar to those affected by an action and "donation of land or money for a regional programme of habitat creation or enhancement".[121] On adaptation, the SA Guideline and CEQ Guidance recognize that projects could exacerbate the vulnerability of natural and human systems to climate change, and that the development itself could be vulnerable to climate risks.[122] The CEQ Guidance encourages the consideration of "particular impacts of climate change on vulnerable communities" and "potential for disproportionate impacts" in the design and selection of alternatives for projects.[123] It further encourages the consideration of climate change preparedness and resilience.[124]

The CEQ Guidance uniquely typifies the *presumption of harm* approach argued for above. The Guidance recommends that GHG emissions associated with proposed actions be used as "a proxy for assessing proposed actions' potential effects on climate change in NEPA analysis".[125] This is in recognition of the incremental contribution of "every single action to global concentrations".[126] Further to this, proponents cannot hide under the argument that their emissions are only a small fraction of the global emissions when assessed for climate change impacts.[127] However, as already

---

Sovereign Iñupiat relied on the decision of the court in *CBD* (CBD was decided in December 2020), while the court in *Haaland* relied extensively on the decisions in *CBD* and *Haaland.*

[120] SA Guideline, *supra* note 109 at 124.

[121] *Ibid.*

[122] SA Guideline, *supra* note 109 at 29 – 30; CEQ Guidance, *supra* note 110 at 22 – 23.

[123] CEQ Guidance, *supra* note 109 at 24 – 25. The example of chemical facilities which are located beside coastlines making them prone to spills or leakages caused by sea level rise or increased storm surges, thereby, imperiling local communities, was given. This example mirrors the complaint in See *Conservation Law Foundation Inc., supra* note 53.

[124] *Ibid.*

[125] CEQ Guidance, *supra* note 110 at 10.

[126] *Ibid.*

[127] *Ibid,* 11.

noted, the Guidance goes further to subject the determination of the potential significance of projects to agency practice. It is difficult to reconcile these two positions. On one end, impacts are to be adjudged using the emissions as proxy; while on the other, determination of significance will be made through the practice of agencies. Having rightly noted that integral to climate change is the cumulativeness of emissions from various sources regardless the volume of emissions from a singular source and that those emissions are proxies for impact, the subjective attribution of 'significance' to impact in the CEQ Guidance is counterproductive. Simply put, emissions, small or large, are impactful. The analysis should thereafter move to the consideration of alternatives, including the no-project alternative, the extent to which emissions can be avoided, and whether mitigation is desirable in the event of unavoidable emissions.

Other than Canada, none of the countries in *table 10* referenced the global net zero goal in their CC&IA frameworks. The scopes of emissions covered under the CEQ Guidance and SA Guideline are, however, more extensive than what is considered in Canada's CC&IA. The CEQ Guidance requires the consideration and disclosure of reasonably foreseeable direct and indirect emissions. While it is unclear what constitutes "reasonably foreseeable" emissions, there appears to be an emerging convergence in American case law that this necessarily includes downstream emissions.[128] The US Court of Appeals in *Sierra Club et al v Federal Energy Regulatory Commission*, a case where petitioners against a gas pipeline project have, among other things, complained that the agency failed to consider downstream emissions, defined reasonable foreseeable effects as effects that are "sufficiently likely to occur that a person of ordinary prudence would take [them] into account in reaching a decision".[129] The court concluded that it is not only "reasonably foreseeable" that "gas will be burned" in power plants in Florida (the pipeline's destination), but it is the project's entire purpose.[130]

CC&IA is an emerging field of practice, and its contours must necessarily evolve in response to developments in climate science, and the scope of ambition and urgency required to address climate change. Developments are, however, likely to be along the line of the four features identified and discussed above. As seen in case studies considered in *table 10*, current CC&IA

[128] See *Haaland, supra* note 114; *Sovereign Iñupiat for a Living Arctic, supra* note 119; *Center for Biological Diversity, supra* note 119.
[129] *Sierra Club et al v Federal Energy Regulatory Commission*, 867 F.3d 1357,1367 (D.C. Cir. 2017) 19
[130] *Ibid.*

developments have to a different extent embodied the CC&IA features. CC&IA is, however, not only a state construct. International organizations are also deploying impact assessment, in its various expressions, in framing responses to climate change. This is even more so in the assessment of climate response measures; an area many national IA instruments have not substantially engaged. The UNFCCC, particularly, has developed framework(s) for the assessment of response measures over the years. I now turn to the developments in CC&IA in International Climate Law.[131]

5.3 Impact Assessment under International Climate Law

While the incorporation of climate change into IA at the national level is relatively recent, the recognition of the utility of IA under international climate law is not. For example, under the 1992 UNFCCC:

> All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall … Take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change.[132] (Underlining for emphasis)

The above provision is further buttressed by Article 4(8)(h) of the Convention which requires Parties to, in their implementation of climate commitments, take into consideration the impacts of response measures particularly on developing countries and economies vulnerable to those measures, notably, fossil fuel dependent economies.[133]

Subsequent binding multilateral climate agreements – the Kyoto Protocol and the Paris Agreement – also reference impact assessment, albeit in different contexts. The Kyoto Protocol mandates the Conference of the Parties serving as the meeting of the Parties to the Protocol (CMP) to assess the implementation of the Protocol by Parties, the environmental, economic, and social effects of measures taken under the Protocol, and the progress made towards the achievement of its

[131] International Climate Law as used here includes hard and soft instruments in multilateral climate regimes, particularly the UNFCCC and other soft law instruments developed and promoted by non-state bodies.
[132] UNFCCC, art 4(1)(f).
[133] UNFCCC, art 4(10).

objectives.[134] The most explicit reference to impact assessment in the Paris Agreement is in the context of climate adaptation. The Agreement requires Parties to engage in adaptation planning processes and the implementation of actions which may include the "assessment of climate change impacts and vulnerability, with a view to formulating nationally determined prioritized actions, taking into account vulnerable people, places and ecosystems".[135]

The evolution of the provisions on the impact of response measures under the UNFCCC regime has been considered in chapter one. It is, however, worth restating that the inclusion of the response measures provisions in the Convention was a result of horse trading between resource dependent developing states and developed countries. This history has coloured the relevance and application of these provisions over the years, more so as they are considered as used by countries like Saudi Arabia to derail climate negotiations or water down ambitious climate goals. As shown in chapter one and will be seen later in this chapter, like many other components under the UNFCCC system, the response measures provisions have evolved and are currently seen as a more global imperative. Further, it is worth noting upfront that reference to 'assessment' under the UNFCCC system, in practice, means technical desk-based studies. This, however, does not mean that the system cannot accommodate a robust application of the conventional IA system. In fact, the argument here is that to live up to its potential, it must!

Reading the above highlighted provisions together, a picture of the different contours of impact assessment under the UNFCCC regime begins to emerge, including:

i. Assessing the adverse impact of taking climate change (mitigation and adaptation) considerations into account in relevant social, economic, and environmental policies and actions.
ii. Assessing the implementation of commitments under international climate instruments (particularly the Kyoto Protocol) and the effects of implementation measures.
iii. Assessing climate impact and vulnerability with special focus on vulnerable people, places, and ecosystems.

As will be shown in the proposed JTIA framework below, all the above dimensions of CC&IA are crucial. However, in practice, examples of CC&IA which address all these dimensions are extremely rare. The UNFCCC, for example, focuses primarily on the first of the three dimensions – assessment of the impacts of response measures. A careful appraisal of relevant developments

[134] Kyoto Protocol, art 13 (4)(a).
[135] Paris Agreement, art 7(9)(c).

under the UNFCCC even shows a narrower focus on mitigation response measures rather than mitigation and adaptation response measures as stated in article 4(1)(f) of the Convention. The nature of the obligations under the Convention, Protocol, and Agreement is also worth highlighting. While Article 4(1)(f) of the Convention is binding on all Parties to the Convention to the extent that climate change and the impact of response measures be taken into consideration, Article 13(4)(a) only applies to the CMP (not individual Parties), and Article 7(9)(c) of the Agreement is only binding to the extent that Parties "engage in adaptation planning processes and the implementation of actions". In other words, although impact assessment is a clearly preferred instrument for achieving the mandated ends in these provisions, they do not go as far as mandating the conduct of impact assessment itself. This could explain why decades after the Convention came into existence, countries barely employed the IA tool in the design and implementation of climate policies.

After the recognition of the need to consider the impact of response measures in the 1992 Convention, it was not until five years later that the Conference of Parties (COP) return to the subject at COP 3. At COP 3, the UNFCCC Subsidiary Body for Implementation (SBI) was requested to "undertake a process to identify and determine actions necessary to meet the specific needs of developing country Parties … arising from adverse effects of climate change and/or the impact of the implementation of response measures".[136] The issue of the impact of response measures has become a common feature of most COP and CMP resolutions from 1997 to date. While not always explicitly referencing the need for impact assessment, most of these resolutions contain implicit references. For example, at Cancun in 2010, Parties decided to cooperate in enhancing the understanding of economic and social consequences of response measures drawing from information from those affected and evidence of actual positive and negative effects.[137] The assessment and analysis of impacts, and other related items like economic modelling and socio-economic trends and just transition of the workforce and the creation of decent work and quality have, however, been constant features in the work programmes of the Forum on the impact of the implementation of response measures since 2011 when the Forum was established.[138] In 2015,

[136] Decision 3/CP 3, "Implementation of Article 4, paragraphs 8 and 9, of the Convention", FCCC/CP/1997/7/Add.1, para 1.
[137] Decision 1/CP 16, "The Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention", FCCC/CP/2010/7/Add.1, para 92.
[138] Decision 8/CP.17, "Forum and Work Programme on the Impact of the Implementation of Response Measures", FCCC/CP/2011/9/Add. 2, para 1(c)(e)(g), 3.

Parties decided to continue and improve the Forum to provide a platform for Parties to share best practices and case studies and facilitate assessment and analysis of impacts.[139] The UNFCCC secretariat was also requested to prepare a guidance document to assist developing country Parties to assess impacts of the implementation of response measures.[140] To support the work of the Forum, Parties to the Paris Agreement established the Katowice Committee of Experts on the Impacts of the Implementation of Response Measures (Katowice Committee of Experts) in 2018.

Over the years, the Forum on the Impacts of Implementation Measures and more recently the Katowice Committee of Experts (KCE), consistent with their mandates, have published Guidelines, synthesis reports, and technical papers on the assessment of impact measures. While some of these works are general, a few are country specific. The Kyoto Protocol requires Annex I Parties to include in their annual inventory report information showing how they strive to minimize social, environmental, and economic impacts on developing country Parties; and non-Annex I parties are to provide information on specific needs and concerns relating to impacts.[141] As already noted, this narrower aspect of IA of response measures has been the focus of the Forum and KCE. The emphasis on 'developing countries and non-Annex I parties' is representative of the hard differentiation between developed and developing States under the Kyoto Protocol regime. Although a similar form of differentiation is adopted in the Convention, it is not as prescriptive as the version in the Protocol. For example, as seen in article 4(1)(f) of the Convention reproduced above, considering the impacts of response measures with tools like IA applies to all Parties to the Convention and is not restricted to impacts in third-party developing States. Further to their reporting obligation under the Protocol, there is considerable data to appraise third-party impacts of the response measures of developed states. Table 11 provides a summary of the dominant response measures, impacts, and remedies reported by developed States between 2015 and 2019.[142]

---

[139] Decision 11/CP.21, "Forum and Work Programme on the Impact of the Implementation of Response Measures", FCCC/CP/2015/10/Add.2, para 1.

[140] *Ibid* at para 9.

[141] Decision 31/CMP 1, "Matters Relating to Article 3, paragraph 14, of the Kyoto Protocol" FCCC/KP/CMP/2005/8/Add.4, paras 3, 5.

[142] Although there is available and accessible data for the third-party impacts of response measures of developed states from 2010 to 2019, table 10 is limited to measures from 2015 to 2019 as the Paris Agreement was entered into in 2015, and, as at the time of writing, there are no available data for years after 2019. The data are drawn from the synthesis of reports from a range of 17 (in 2015) to 39 (in 2019) countries. Canada is not one of the countries

Table 11: Third-party Impacts of Developed States' Response Measures

Year	Response Measures	Impacts	Remedies/Interventions
2015	Emission reduction fund and trading schemes; Clean Development Mechanism (CDM) projects; investment in renewables and energy efficiency; low emission vehicles; Biofuels; reform of agricultural policies; Labelling; Development of CCS technologies; subsidy reform.	Creation of jobs; infrastructural development; foreign investment; air quality improvement; adverse impact of biofuels on food security and forests; less tension on energy prices; increased demand for raw materials (steel) from developing states; loss of market for fossil fuel producers; loss of jobs.	Adaptation/resilience support; green growth support; green technology development and transfer; aid for trade; development aids, grants, and loans; efforts to eliminate tariffs on green goods; support of nationally appropriate mitigation actions (NAMA); capacity building; initiatives for economic diversification; CDM projects.
2016	Subsidy reform; CCS; renewable energy & energy efficiency; labelling; biomass & biofuels; emissions trading; environmental (carbon) taxes.	Carbon leakage; deforestation & food insecurity; land use change; job creation; foreign investments; decreased fossil fuel demand and tension on prices; imports of low emission vehicles and technologies from developing countries.	Transparency & information exchange; adoption of sustainability criteria (EU); consultation with third-party states; sustainability-friendly technologies & processes; state aid measures; technology development and transfer; capacity development; assistance for economic diversification; project finance; adaptation support; support facility for NDC preparation; multilateral cooperation; concessional loans; oil for development.
2017	Fuel consumption levy; air transport levy; biogas and solar energy solutions; alternative fuels (e.g., hydrogen fuel cells) emission trading; energy efficiency; subsidy reform; Ending financing for overseas greenfield coal power	Land use and land use change and forestry emissions; deforestation; biodiversity losses; land use right infringement.	Support for economic diversification and transition measures; renewable energy projects; private sector financing; sustainability criteria for bioenergy (EU); adaptation/resilience support; climate finance;

considered here as 2012 was the last year it submitted a report under the Kyoto Protocol following the country's withdrawal. The reports have been reviewed for response measures, the impacts of response measures, and the interventions of countries.

	projects; CCS development and promotion; afforestation.		technological cooperation; knowledge transfer; CDM projects; capacity development; Development cooperation projects; private sector investment; oil for development.
2018	Air transport levy; renewable energy & energy efficiency; pollution charges; biomass/biofuels; emission trading scheme; labelling; CCS; subsidy reform; reduction in domestic fuel consumption; circularity; carbon credits (Kyoto Protocol).	Indirect land use change emissions (e.g., more ILUC from biofuels from vegetable oil compared to from starch or sugar); cropland expansion; deforestation.	Climate finance; grants & loans; NDC partnership; development cooperation; humanitarian aid; technological development of non-energy uses of fossil fuels; promotion of renewable energy and efficiency in developing FFDEs; project finance; resilience early warning systems; climate-resilient development strategies; observation systems; joint research; preparation of NDCs; support for climate planning in cities; technology and knowledge transfer; sustainability criteria for biofuels; co-innovation; support for economic diversification; CCS funding; Clean energy for development.
2019	Subsidy reform; excise duties for fossil fuel; biofuels and biomass; emissions trading system; carbon budgets; adaptation strategies to climate change; environmental, natural resources, and vehicle taxes; variation in the consumption of oil and gas; economic instruments for the private sector (e.g., guarantees); carbon neutrality roadmaps; measures in the agricultural sector to reduce CH4 & N2O.	Reduction of GHG emissions; improvement in clean air; incentives for economic diversification; job creation; foreign investment in infrastructure development; reduction in demand for fossil fuels; tension in prices; land use changes; increased deforestation; economic diversification; impacts on foreign trade in raw materials; possible shipment of waste for treatment in developing countries.	Cooperative technology development and transfer; capacity building; climate finance; support for economic diversification; sustainability criteria; private sector financing; early warning systems and other adaptation support; establishment of national reporting system and preparation of NAMA; concessional funds; CDM projects; technical support; oil for development; clean energy for development.

While table 11 is not exhaustive, it is useful in appreciating the response measures of states, the impacts they consider significant, and the interventions made in response to the impacts (particularly, the adverse impacts). The synthesis reports also provide insight into approaches adopted by States in assessing the impacts of response measures. The similarities in the entries for 2015 to 2019 regardless, the few differences are indicative of the need to constantly reconsider response tools to climate change, increase ambition, and broaden coverage. For example, the air transport levy and the development and use of alternative fuels like hydrogen fuel cells did not feature in the reports until 2017, and it was not until 2019 that explicit reference was made (by France) to national and sectoral carbon budgets. Logically, connected to each new measure is its distinct positive and or negative impacts. It is, however, difficult to connect specific impacts to specific measures as only a few reporting countries (e.g., France, Spain, Monaco) drew clear connections between measures and impacts. Mostly, impacts can only be inferred from submitted reports, and when expressly stated, they are often framed prospectively, often, without specific mention of the locus of impacts. This also applies to the interventions. With a few exceptions, interventions are often generally and prospectively couched, without specific reference to where they are or will be implemented. In all the reviewed reports, interventions were framed independent of specific adverse impacts. In other words, most interventions were not designed in response to specific impacts. Beyond the identification of likely impacts, avoidance or mitigatory interventions under IA are essential to follow-up and accountability. When interventions are isolated from impacts, it becomes difficult to appraise the utility of such interventions vis-à-vis identified impacts. Follow-up and adaptive management also become difficult.

The failure of countries to provide place-specific information in respect of the impacts of their response measures and craft impact-specific interventions could be attributed to the difficulty in identifying and connecting these impacts to the specific response measures. This difficulty was highlighted in Japan's 2016 report and Monaco's 2019 report. Monaco, for example, noted that the assessment of potential adverse effects of climate policies is inherently complex and uncertain as the consequences are indirectly and unavoidably linked to the policies implemented in developing countries themselves.[143] Also, using the fluctuations in crude oil prices caused by balance between supply and demand and other factors as examples, Japan argued that "it is

[143] United Nations, *Compilation of Information on the Minimization of Adverse Impacts in Accordance with Article 3, Paragraph 14, of the Kyoto Protocol, 2019*, FCCC/WEB/ART314/2019, 21 – 23.

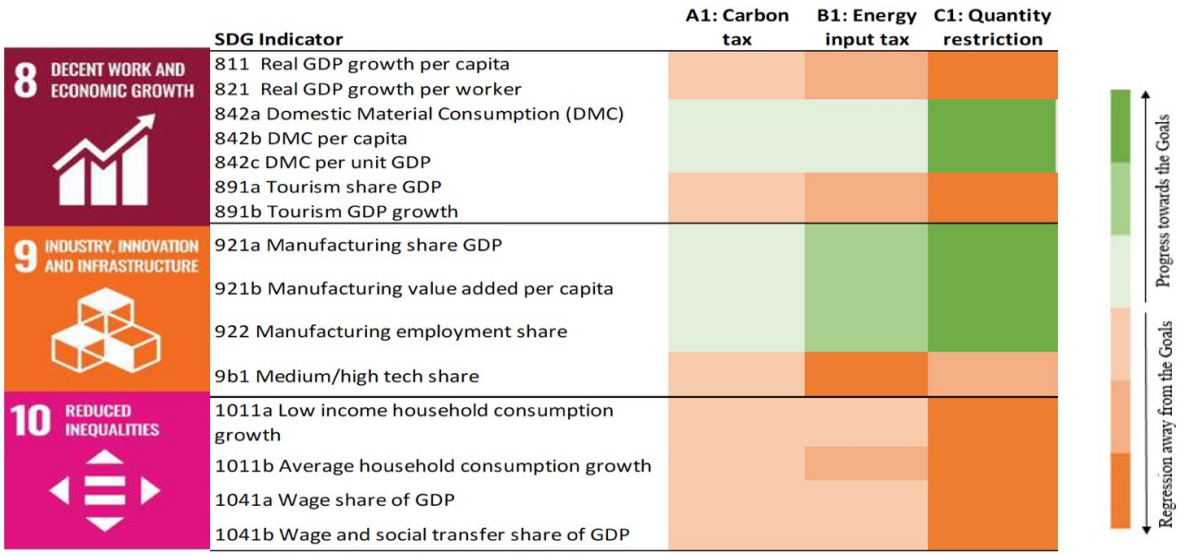
uncertain whether there exists a causal link or, if so, to what extent it results from adverse impacts of climate change policy and measures".[144] Despite this reservation and not identifying any specific impact from its response measures, Japan provided a list of "actions to minimize adverse impacts".[145] Largely, the interventions in table 11 are initiatives taken under the general expectation of support under international climate agreements (the Convention, Protocol, and the Paris Agreement). Avoidance or mitigatory interventions under IA are, however, different from general interventions informed by the expectation of support. Interventions under IA are obligatory and not merely gratuitous. This is more so when IA is part of a permit process and avoidance or mitigatory interventions are conditions to be met either to obtain or retain permits issued or authorizations given.

Given the complexity of assessing the impacts of response measures, the UNFCCC published a Guidance for the assessment of impacts of the implementation of response measures.[146] The Guidance emphasizes the use of quantitative and qualitative models and tools to assess response policies and is invariably very expert-centric. For example, the computable general equilibrium analysis models were used in the 2020 assessment of response measures' impacts in Senegal and Kenya.[147] The study considers the impacts of reducing emissions by 20% through four policy instruments - carbon taxes, energy (input) taxes, quantity constraints, and technology change - in Senegal and Kenya. Sustainable Development Goals (SDGs) 8 (decent work and economic growth), 9 (industry, innovation, and infrastructure, and 10 (reduced inequalities))) were adopted as indicators to measure impacts. The study finds that the response measures have mixed impacts in Senegal and Kenya, with none of the response measures leading to progression towards or regression from any of the SDGs.[148]

---

[144] United Nations, *Compilation of Information on the Minimization of Adverse Impacts in Accordance with Article 3, Paragraph 14, of the Kyoto Protocol, 2016*, FCCC/WEB/ART314/2016, 42 – 43.
[145] *Ibid* at 43.
[146] UNFCCC, *Guidance to Assist Developing Country Parties to Assess the Impact of the Implementation of Response Measures, Including Guidance on Modelling Tools*, (UNFCCC, 2017). See also UNFCCC, *Technical Papers on the Impact of the Implementation of Response Measures – Executive Summary*, (UNFCCC, 2019).
[147] UNFCCC, *Assessing Impacts of the Implementation of Response measures – The Case Study of Senegal and Kenya: A computable General Equilibrium Analysis*, (UNFCCC, 2020).
[148] While showing that the three response measures have net positive effects on SDG 9 (industry, innovation, and infrastructure), they generally lead to regression from the goal to reduce inequalities (goal 10), while there is no substantive difference for the decent work and economic growth goal (SDG 8). In all, the study finds that carbon tax has the least distortions, and that there are necessarily trade-offs as all response measures have mixed impacts on SDGs. *Ibid* at 82-83, 124 – 125.

Figure 14: Impact of Response Measures in Kenya[149]



While the study arguably provides a high-level analysis of response measures and their impacts, the utility of the research outcome is limited. The analyzed response measures are very broad, the choice of a global analysis is suspect given the near impossibility of collecting and synthesizing all relevant data and factors, and the accuracy of the localized findings are also questionable considering the very minimum participation of stakeholders at the local level. The use of SDG indicators to assess the impacts of response measures in the above case studies is useful and will be considered later in this work. While premised on the understanding of the important role played by IA in sound decision making, the UNFCCC Guidance is silent on IA processes within which the use of models and tools are more meaningful and contextualized. Hence, the Guidance fails to address key IA phases that allow for robust assessment. The Guidance is also, at best, a useful tool for transboundary strategic assessment as it fails to address assessment at the project level both at the transboundary and domestic levels. Despite these shortfalls, the Guidance helps with a framework of how to think about the various dimensions of response measures assessment. These dimensions are captured in *table 12.*

Table 12: Elements of Guidance on Assessing Impacts

Elements	**Scope of Elements**
What is to be assessed	Policy initiatives like carbon taxes, subsidies, energy policy reform and green public investment, cap and trade schemes and

[149] *Ibid*

	international offsets, trade-related measures, standards and labelling requirements, technology cooperation. Impact receptors could include the economy, income distribution, employment, environment, health, and food security. Assessment should include both positive and negative outcomes.
When the assessment should occur	Usually undertaken *ex ante* – before the formulation and adoption of the policy initiative. *Ex post* assessment could be undertaken to check and evaluate real impacts of policy initiatives after implementation. It may be requested before or during the negotiation of global climate change initiatives. If cross-border impacts have not been adequately assessed by the implementing country.
Who should be involved	Government and its branches; sectors, firms and individuals directly or indirectly affected by response measures to be assessed; academics, researchers, and experts.
How to deal with assessment results	Undertake ex post assessment after a period of time for implementation. Compare results with estimated impacts in other countries.

A few reporting countries in *table 11,* particularly member states of the European Union, referenced the EU Better Regulation Guidelines (BRG) and Toolbox in respect of the approaches adopted in assessing response measure impacts.[150] Again, these are strategic assessment tools, albeit more comprehensive than the UNFCCC Guidance. The BRG requires the impact assessment of initiatives with significant economic, environmental, or social impacts. This assessment involves the collection and analysis of all relevant evidence including data, expert views, and stakeholder input.[151] The process is expected to produce a final assessment report containing a description of social, economic, and environmental impacts, a clear indication of who will be affected by the initiative and how, and the impacts on SMEs competitiveness.[152] The report should also capture impacts on fundamental rights and relevant SDGs, consideration of the do no significant harm principle, and a detailed description of the consultation strategy and the results.[153]

[150] See for example Estonia and Greece's 2018 report. United Nations, *Compilation of Information on the Minimization of Adverse Impacts in Accordance with Article 3, Paragraph 14, of the Kyoto Protocol, 2018*, FCCC/WEB/ART314/2018, 7, 22.
[151] European Commission, *Better Regulation Guidelines* (Brussels: European Commission, 2021) 30 - 31.
[152] *Ibid* at 35.
[153] *Ibid*.

A major feature of the BRG is the recognition of the multidimensional impacts of policy initiatives, including impacts on 'fundamental rights'. Although the BRG is a general strategic assessment framework, it has been applied in assessing climate response measures in the EU both in its current and preceding forms. There are, however, limitations to adopting general frameworks crafted without substantial consideration of the peculiarities of climate change. Nevertheless, assessments under the BRG are useful examples particularly in the strategic assessment of response measures, but less so in assessing 'transition-relevant' projects. Given that social and human right impacts are at the very core of just transition, appraising how social and human right impact are assessed under the BRG regime provides some insight into the possibilities of assessing just transition using the traditional IA framework, the weaknesses, and strengths of current approaches, and how they can be improved. The last section of this chapter focuses on these issues.

5.4 The Social and Human Rights Dimensions of Climate Change and Impact Assessment

The review of the literature, legislation, and policies on CC&IA above shows that the dominant focus is on the assessment of the impacts of projects on GHG emissions. The consideration of the social cost of carbon when assessing projects has also been proposed and attempted in jurisdictions like the United States. States are also increasingly assessing climate related measures at the strategic level. These strategic assessments are considerably different from developments in project-based assessment as they appear to consider more intently the non-environmental impacts of climate change related initiatives. The EU's recent assessment of its regulation on methane emissions reductions, review of its Effort Sharing Regulation, and improved 2030 climate ambition, and Scotland's strategic assessment of its policy position on unconventional oil and gas in Scotland are examples considered more closely here.

In 2021, the European Commission published its impact assessment report on reviewing the Effort Sharing Regulation (ESR) to align with the new target of reducing the EU's economy wide GHG emissions by 55% compared to 1990.[154] The ESR covers about 60% of GHG emissions in the EU in sectors including transport (except aviation), building, agriculture, and industrial installation, among others.[155] The Regulation sets legally binding minimum contributions for member States

[154] Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 Establishing the Framework for Achieving Climate Neutrality and Amending Regulations (EC) No 401/2009 and (EU) 2018/1999 (European Climate Law), Art 4(1).
[155] The remaining 40% is covered by the EU Emission Trading System.

towards meeting the EU target, emphasising national accountability and flexibility (taking national circumstances into account). The allocation for the previous 40% reduction target ranged between 0% (Bulgaria) and -40% (Luxembourg and Sweden).[156] In assessing the ESR review, three options were compared: Option 1 – keeping the current ESR sectoral scope (with an increase in ESR ambition) in parallel to extending emissions trading; Option 2 – maintaining only the sectors not covered by emissions trading in the ESR (taking out building and transport from the ETS); and Option 3 – phasing out the ESR and replacing it with other policy instruments.[157]

The ESR options were compared considering their potential to ensure environmental integrity, allow for a consistent, fair, and equitable distribution of efforts between member States, and ensure cost efficiency in the distribution.[158] On effectiveness and environmental integrity, option 1 was preferred to other options as it gives member States the strongest incentive to design and adopt national initiatives, thereby supplementing gains from the ETS.[159] In the report, fairness for target setting is determined by considering the GDP per capita of member States with a limited amount of targeted corrections to address cost efficiency concerns. This supposedly helps to take individual state's specific potential and capacity into consideration. Again, option 1 was preferred as the fairest option. In all, option 1 was considered as the most favourable option under the three metrics. Prima facie, the definition of 'fairness' used in comparing policy options under the ESR review assessment is not only narrow, but the GDP-centric approach is fundamentally flawed. In chapter three, a similar problem with the GNI approach used in the World Bank's determination of the exposure and capacity of countries has been criticized, with the more holistic Human Development Index (HDI) approach preferred.

Beyond the GDP-based definition of fairness, a closer read of the 177-page report reveals fragments of just transition related considerations. Under an 'other impacts' sub-section, potential impacts of the transition to climate neutral economies, including risks of premature retirement of productive assets and potentially difficult adjustments in the labour market, were acknowledged.[160]

---

[156] European Commission, *Impact Assessment Report Accompanying Regulation Amending Regulation (EU) 2018/842 on Binding Annual Greenhouse Gas Emission Reductions by Member States from 2021 to 2030 Contributing to Climate Action to Meet Commitments under the Paris Agreement*, SWD (2021) 611, 10.
[157] *Ibid* at 24 – 26.
[158] *Ibid* at 82.
[159] *Ibid* at 84 – 85.
[160] *Ibid* at 75 – 76.

Particularly on fossil related investments, it was noted that such investment will drop sharply.[161] On the positive side of the ledger, household income will increase, air quality and human health will improve, and other secondary effects like increased productivity are likely.[162] The report emphasised the role of the EU Just Transition Mechanism to mobilise investment over the 2021 – 2027 period to benefit territories and peoples hitherto substantially dependent on fossil fuels in Europe, which are most affected "in terms of impact on their economic structure and consequently the social impact".[163] While the explicit consideration of just transition impacts and redress measures in the ESR review assessment report is commendable, the extent to which they are integrated in the report's eventual conclusion is unclear. However, given the broadness of the ESR, its dependence on national entities for implementation, and the flexibility in the choice of implementation policy options, a detailed consideration of just transition related impacts is understandably difficult. More so, there are various subsets of the ESR in respect of which tailored assessment has been conducted. An example is the methane emissions reduction regulation assessment (methane reduction assessment).[164]

Methane emissions are largely from the exploration and use of fossil gas, which unlike coal and oil is recognized in the energy mix of a 'decarbonized' future as a transition fuel. This bias informs a different approach to its assessment both as to the starting point and projected ends. For example, in the methane reduction assessment, by 2050 there will be a consumption of around 100Mtoe of fossil gas in the EU representing a 70% reduction compared to 2015.[165] It was, therefore, concluded that even "a fully decarbonized EU energy sector will still be associated with risks of methane emissions".[166] The modest objective of the proposed methane regulation and the attendant assessment is the reduction of methane emissions from the fossil energy produced and consumed in the EU and across the EU supply chain.[167] The elements of the preferred policy option to reduce methane emissions include - legislatively prescribed monitoring reporting and verification (MRV); leak detection and repairs; rules on venting and flaring in the oil, gas and coal sectors for operating

[161] *Ibid* at 76.
[162] *Ibid* at 76 – 77.
[163] *Ibid* at 81.
[164] European Commission, *Impact Assessment Report Accompanying the Proposal for a Regulation of the European Parliament and of the Council on Methane Emissions Reduction in the Energy Sector and Amending Regulation (EU) 2019/942*, SWD (2021) 459.
[165] *Ibid* at 29.
[166] *Ibid* at 31.
[167] *Ibid* at 36.

and closed mines; and a high methane emitter monitoring tool to incentivize the reduction of methane emissions in imported fuels.[168]

The environmental, social, and economic impacts of the various options were considered albeit at a high level. For example, in assessing the impact of emissions outside EU but linked to EU consumption, the largest oil and gas importing countries to the EU were considered, including Russia, Saudi Arabia, Iraq, Norway, Nigeria, Qatar, Algeria, and the United States. The assessment concludes that "99% … of total 2019 emissions in these key exporting countries can be abated cost effectively from an environmental/social perspective, at costs less than social and environmental costs of methane emissions".[169] Annual benefits including 36,656 prevented deaths, 105,535 avoided asthma-related emergency department visits, 2307 avoided hospitalization, avoided losses of 3,716,883 tons of wheat, soybean, maize, and rice, and avoided 10,253 million hours of work were considered. These amount to about 110,225 million USD in benefits as against 2607 million USD being the cost of measures to achieve socially and environmentally cost-effective methane emission reductions. The estimation of the cost of abatement measures, however, only considers the costs of abatement to companies. Broader social and human rights related costs of abatement measures were not considered.[170] There is also a problem with the conclusions reached through the aggregation of costs. For example, the costs and benefits of methane reduction will not be the same in Nigeria and the United States. As noted in chapter three, the resilience and capacity of States are relevant in determining the transition potential. Nevertheless, the methane emissions reduction assessment provides a useful example of how the social cost of carbon (SCC) approach is deployed in assessing response measures to climate change.

The assessment of EU's improved 2030 climate targets is unique in its explicit consideration of just transition impacts.[171] Recognizing the insufficiency of its 2019 objective to reduce emissions by at least 40% by 2030 compared to 1990 levels, the assessment considers the implications of a higher climate ambition of 50% to 55% GHG reductions by 2030. Comparing options including a

[168] *Ibid* at 86 – 86.
[169] *Ibid* at 75.
[170] The report, however, briefly notes that although there is likely impact of methane reduction measures on energy prices, they "are likely to be small given the small amount of total costs of those measures at all levels of abatement costs compared to the vastly greater amount spent on energy". *Ibid* at 76.
[171] European Commission, *Impact Assessment Report Accompanying the Document – Stepping up Europe's 2030 Climate Ambition – Investing in a Climate-neutral Future for the Benefit of our People (EU)* SWD (2020) 176.

baseline option, 50% reduction option, and 55% reduction option, the following just transition related issues were taken into consideration:[172]

- Contribution to economic growth and prosperity taking the COVID-19 crisis into consideration
- Achieving the objectives in a socially just manner, leaving no one behind
- Consistency with a secure, affordable, and sustainable energy system
- Avoidance of the risk of carbon leakage
- Contribution to technological progress in the EU and earning early leadership in clean technologies
- Broad contribution to sustainable transition including the protection and restoration of ecosystems
- Ensuring the actors' confidence and strengthening synergies across policy areas.

While the assessment concluded that there would be a relatively limited impact of increased climate ambition, it recognized significant repercussions on the sectoral composition of GDP and the direct effects of the repercussions on the labour market.[173] Workers and communities connected to the fossil fuel industry will particularly be adversely affected. For example, there is an expected job loss of 50% in the coal industry by 2030.[174] While there will be net job gains depending on carbon revenues recycling to support green investment, there is still bound to be regional shifts in employment as newly created employment will potentially not occur in the same places industries are being transitioned from.[175] There are also projected impacts on households. Estimated changes are projected to significantly affect lower income earners than the top income earners.[176] Increased costs could, however, be repaid, in part, through eventual savings on energy expenditure. But again, low-income households might not benefit from energy savings as much as households with higher disposable income and with the capacity to invest in energy efficiency and renewable energy generation.[177]

While the EU's assessments of climate policies both at the macro (improved climate ambition and ESR) and micro (methane emission reduction) levels are heavily model-dependent, they are good examples of how conventional IA processes apply to transition policies. The assessments delineate scope, identify baseline conditions, consider alternatives, identify impacts, recommend preferred

[172] *Ibid* at 18.
[173] *Ibid* at 84.
[174] *Ibid* at 85 – 86.
[175] *Ibid* at 87.
[176] *Ibid* at 89.
[177] *Ibid* at 91.

options, and proffer generic mitigatory measures. Except for the methane reduction assessment, most of the assessments focused entirely on impacts within the EU. As noted, the most robust consideration of just transition occurred in the assessment of the EU's improved climate ambition. The seven issues listed above which have been considered, among others, in the assessment are particularly useful in identifying factors useful in a just transition sensitive assessment. Again, these factors were applied in a strategic assessment and must be retooled to apply in a project-specific context. The factors also go beyond the jobs-centered notion of just transition, addressing issues (even if in economic terms) like community vitality, household wellbeing, and ecological integrity. Although not explicitly noted, there are traces of the effects of this assessment on the design and content of the EU's 2021 Just Transition Fund Regulations which among other things requires member states to assess transition challenges as part of their territorial just transition plan.[178]

Public participation in the conduct of the above assessments is noteworthy. Consultation for the ESR assessment entailed an inception IA consultation which focused on the definition of the problem and possible solutions. Over 90% of the about 100 responses received were from within the EU while less than 10% were from non-EU countries. An online survey-based Open Public Consultation (OPC) involving over 45000 respondents was conducted afterwards. About 98% of the respondents were from within the EU, while 2% were non-EU based. The entire consultation process spanned about 3 months. This timeline is just a month less that the duration of the consultation for the improved climate ambition assessment. Fewer stakeholders were, however, consulted (3915 respondents) in the OPC. Unsurprisingly, over 95% of the respondents in the online survey-based consultation were from within the EU. Consultation for the methane emission reduction assessment involved about 760 participants in three subject-specific (energy sector; methane measurement, reporting, verification, and abatement; opportunities and barriers in waste and agriculture through biogas production) online workshops. The OPC which was conducted through online questionnaires and email submissions occurred within three months. Follow-up questionnaires on costs and administrative burden connected to implementing the methane regulation was sent to Oil and Gas Methane Partnership (OGMP) companies.

[178] *Regulation (EU) 2021/1056 of the European Parliament and of the Council,* OJEU L 231/1, art 11(2)(c).

Although the methane reduction assessment is the only assessment to explicitly consider impacts on third-party states, the respondents were made up of only 1% non-EU Citizens. Also, in respect of the follow-up questionnaire, Morocco was the only participating non-European country. The stakeholder make-up for all the assessments is similar. They were primarily made up of companies, business associations, EU citizens, NGOs, public authorities, and academic/research institutions. Except for the climate ambition assessment, companies and business associations dominate consultations in terms of the number of participants. While the proposed measures have varying implications on different communities, there is no indication that affected communities participated in the consultation. Further, while the participation of EU citizens was referenced, there are no disaggregated data on the 'citizens' who participated. Absence of disaggregated data makes it difficult to determine how vulnerability-sensitive the assessments were. Although there were campaigns led by associations and NGOs, they appear to have been either generic or targeted at Industry-groups and other NGOs. Arguably, the end-product of the IA process and the preferred options are reflective of the consultation process. Although all the assessments include sections on social and economic impacts and as in the climate ambition assessment, a section on just transition impact, the narrower concerns of companies (e.g., the impact of response measures on the operations and competitiveness of companies) dominate the assessments.

Scotland is another jurisdiction with experience in conducting robust strategic assessments of its response measures. In 2019, the Scottish government published its policy on not supporting the development of onshore unconventional oil and gas (UOG) in Scotland.[179] The country's UOG deposits are mostly located in former coal and oil shale fields in its central belt, Scotland's most densely populated region. Prior to the publication of the policy and after declaring a moratorium on UOG development in 2015, the Scottish government commissioned several assessments between 2016 and 2019. The commissioned assessments include a strategic assessment, climate change assessment, health impact assessment, economic impact assessment, and business and regulatory impact assessment (BRIA). The strategic assessment drew from the other commissioned studies (except the BRIA which was conducted after the strategic assessment). The assessment was scoped to address effects on air, water, soil, biodiversity, flora and fauna, cultural and archaeological heritage, landscapes and geodiversity, material assets and population and

[179] Scottish Government, *Scotland's Onshore Unconventional Oil and Gas Policy* (Scottish Government, 2019).

human health.[180] A business as usual option, pilot project option and preferred policy position option were considered in the assessment. The assessment also considered cumulative, secondary, and synergistic effects. It is important to note the pre-assessment rationale for the Scottish government's preferred policy option. Although the Scottish government recognized the important role of gas in the transition, it considered the UOG industry as inimical to its ability to meet established GHG emissions targets and the objectives of protecting and enhancing the environment.[181] While negative impacts were found under the business as usual and pilot project options, the preferred policy option was deemed to have significant positive environmental effects across all the strategic assessment topic areas.[182]

The consideration of the impacts of UOG development or non-development on cultural heritage, population and human health, the economy, and businesses is most relevant in this section. The impacts of the BAU and pilot project options ranged from negligible to significant impacts, while the preferred policy option was almost entirely positive except for issues where impacts were unknown (e.g., odour nuisance). On population and human health, the strategic assessment noted the increase in the population of older people in the central belt and the potential adverse impacts of UOG on the wellbeing of this demographic and others.[183] While there are indications that the population of the central belt are generally opposed to UOG development, the consultation process for the strategic assessment is unclear. The strategic assessment output, however, suggests that the assessment was carried out in a very expert-centric manner. However, in 2017, the government organized a public consultation (Talking Fracking) involving over 60,000 respondents. About 99% of the respondents were opposed to fracking. In addition, the public was given an opportunity to provide comments on the strategic assessment and partial BRIA in 2018.

The Strategic Assessment did not address the adverse effects of a 'no development' scenario or the impacts of alternative developmental pathways. This is largely because the impacts of the project on the 'economy' and businesses were the subjects of other assessments. The Economic Impact Assessment carried out by KPMG shows that developing UOG would by 2062, on average, yield about £4.4 billion in investment (£2.4 billion in Scotland), £1.4 billion in tax receipts, £1.2

[180] Land Use Consultants (LUC), *Environmental Report for SEA of Preferred Position on Unconventional Oil and Gas in Scotland* (LUC, 2018) 5.
[181] *Ibid* at 6.
[182] *Ibid* at 10.
[183] *Ibid* at 8.

Billion in gross value added, 1,400 Scottish jobs, and £217 million in community benefits payments.[184] While failing to include a detailed analysis of externalized costs, the economic assessment appears to provide counter-narratives to the narratives contained in strategic assessment on broader socio-ecological impacts of UOG development. For example, referencing a 2015 report from the National Assembly for Wales, it was noted that UOG could reduce UK's carbon emissions as it is considered by some to be a low carbon fuel and it has lower emissions when compared to LNG imports (given the emissions from transportation vessels). On likely health impact, the economic assessment noted that "undesirable impacts would only occur from exposure to very high concentrations of the substance which is something that could be controlled … limited/mitigated with robust regulation".[185]

One needs to look further into yet another assessment, the Health Impact Assessment (HIA) which appears to have enjoyed the most extensive participation of stakeholders, to have a more detailed appreciation of the position of communities that could be affected by UOG development. Take for example, the counter-position on likely health impact in the economic assessment. The HIA noted that:

> The community stakeholders expressed great anxiety about risks to human health and disruption to local communities associated with UOG, a sense that these risks are not fully comprehended and a lack of trust in the ability of regulators to prevent these. Conversely, the industry stakeholders expressed confidence that adverse health impacts could and would be prevented by regulation.[186]

The considerable participation of community stakeholders in the HIA and their concerns presents what looks like a reverse just transition scenario. A conventional just transition scenario often plays out in the context of existing fossil fuel related operations being exited, scaled down, or 'greened'. Projected impacts in these conventional scenarios naturally include effects on communities which have built their economy around the resource projects, impacts on workers and their families, population loss, and abandoned un-reclaimed facilities. The reverse just transition scenario which applies in respect of projected or proposed developments, as in the Scottish UOG case study, turns the conventional argument on its head and uses those same

[184] KPMG, *Economic Impact Assessment and Scenario Development of Unconventional Oil and Gas in Scotland* (KMPG, 2016) 6.
[185] *Ibid* at 35 – 37.
[186] Health Protection Scotland, *A Health Impact Assessment of Unconventional Oil and Gas in Scotland* (Glasgow: HPS, 2016) 38.

arguments as reasons not to proceed with the projects. For example, the community stakeholders in the HIA note the possibility of a 'boomtown' scenario where there are influxes of workers and services, overwhelming burden on social structures, and a bust when extraction ceases, and workers leave.[187] Further, they argue that benefits accrued from the industry will be lost upon stoppage of operations, environmental damage will remain, and the most disadvantaged in the community will bear the adverse consequences of the 'bust'.[188] Other identified health impacts include construction-related injuries and chemical exposure of UOG employees; alcohol, drug and sexual health problems given the influx of mobile male workforce; and psychosocial health impacts (stress, anxiety etc.).

After the extensive assessment process spanning over four years, multiple assessment reports, and various workshops and consultations, Scotland affirmed its no-UOG development policy option. In the final policy statement, the tension between economic imperative and community interests is evident. While not disavowing the national economic importance of UOG development, the policy highlights the position of communities against the economic argument in the face of the risks and disruptions on matters like transport impacts, pollution risks, and overall effects on their general health and wellbeing.[189] The policy further notes that there are no strong responses or possible interventions to address communities' concerns. The policy concludes that although the consideration of future applications cannot be foreclosed, the government does not anticipate the grant of new UOG licenses in Scotland.[190]

The comprehensive approach to the assessment of UOG policy and the decision in favour of ecological and human wellbeing present a model for decision making in respect of sustainability transition. However, the assessments were diverse and disparate. The failure to carry out the assessments in an integrated manner is, in part, responsible for contradictory and conflicting findings (e.g., findings in the economic impact assessment and strategic assessment). Nevertheless, the UOG case study provides a useful answer to the criticism that the urgency required to address climate change makes impact assessment processes, which are generally time-intensive, undesirable. By placing a temporary prohibition (moratorium) on the development of UOG while

[187] *Ibid.*
[188] *Ibid* at 38 – 40.
[189] Scottish Government, *supra* note 179 at 8.
[190] *Ibid* at 9.

carrying out a detailed assessment, Scotland proceeded precautionarily to ensure ecological integrity while it investigates more thoroughly the likely impacts of a permanent ban. In terms of participation, the HIA led by Health Protection Agency, a public entity, clearly involved more community stakeholders than other consultant-led studies like the strategic assessment and economic impact assessment.

In all, the UOG case study provides useful lessons on strategic decision making in respect of new fossil fuel development during the transition and in the post-carbon world. It also provides some nuance on how to gauge the role of fossil fuel in the transition's energy mix. For example, Scotland made a choice between domestic unconventional oil and gas and other forms of fossil fuel including imported fuel. While there were reasonable arguments that imported fossil had similar or slightly more emissions when freight emissions are included, global projections on the oil and gas market, broader ecological effects of UOG exploration, and the social effects of such exploration made the development of UOG undesirable. Now and in the coming years, countries will be compelled to make similar decisions. The choice will be whether to make such decision by fiat with a climate justification or more robustly with careful consideration of implications while still respecting ecological integrity. The latter route is the preferred path. Although the policy position of the Scottish government is not an absolute ban, the process involving over 60,000 respondents and importantly, communities in the areas of prospective UOG projects not only allowed for meaningful participation but also provided learning opportunities to those who participated.

The examples considered so far under this section address the direct and indirect consideration of just transition in strategic assessments. Examples of how this is done at the project level are few and far between. Nevertheless, there are emerging potentials. The emergence of the social cost of carbon (SCC) is an example. SCC monetarily estimates the quantifiable costs and benefits of carbon emissions.[191] Given its dependence on models for calculation (e.g., Integrated Assessment Models (IAMs) and Policy Analysis of the Greenhouse Effect (PAGE)), SCC has been criticized for the uncertainty of modelling parameters, absence of transparency, and the inadequacy of captured climate damages.[192] More so, there is a fundamental dysfunctionality and ethical

[191] David Wright & Meinhard Doelle, "Social Cost of Carbon in Environmental Impact Assessment" (2019) 52:3 UBC Law Review 1007 at 1020.
[192] *Ibid* at 1021.

challenge in attempting to put a dollar sign on vital life components whether it is an ecosystem with inherent worth, specific ecological components of religious or cultural significance, the intergenerational value of nature, or basic human essentials like health and community. Nevertheless, the use of discount rates in SCC is relatively useful in infusing intergenerational considerations into just transition assessment. In the climate context, discount rates consider the price to be paid in the present, to allow for benefits in the future, or vice versa. Wright and Doelle note that "SCC estimates decrease as discount rates increase because a higher discount rate assumes increasing wealth in future generations and … suggests that today's less wealthy population should therefore not pay today".[193]

SCC has been deployed in crafting climate change policies as seen in the EU's assessment of its methane reduction regulation.[194] There are, however, fewer examples of how it has been used in respect of project decision making. Wright and Doelle have shown how SCC can be applied in Canadian project impact assessment processes.[195] Using a hypothetical LNG project case study and Canada's central SCC estimate of $40.7 per tonne of carbon, they conclude that such a project with 1MT of direct emissions, 6MTs of upstream emissions, and 3MTs of avoided downstream emissions, could yield a net benefit of $81.4 million, and a net cost of $168.8 million.[196]

The price put on a unit of carbon emission purportedly factors in 'global' costs and benefits. The assumption is that a common estimate can be arrived at in respect of climate damages across the world. For example, the 'price' of drought in Africa is the same as in Asia and North America. Of course, this is patently flawed. Going back to the LNG hypothetical, the 3MTs in avoided downstream emissions simply frames the avoided emissions as a 'benefit' having displaced the more emission intensive coal in another country. If the loss of jobs, displacement of families and communities, land grab and biodiversity loss from the construction of pipelines are considered, it becomes less likely that downstream impacts will yield net benefits. Again, as seen in the case of Canada's strategic assessment on climate change, the scope of GHG emissions that will be

[193] *Ibid*.
[194] For more on how SCC has been applied in Canada and the United States, see David Wright, "Carbonated Fodder: The Social Cost of Carbon in Canadian and U.S. Regulatory Decision-Making" (2017) 29 Georgetown Envtl Law Review 513 at 532 – 544. Recently, a United States Court recently issued a preliminary injunction against an Executive Order requiring the consideration of SCC (Executive Order 13990). It held, in part, that the Executive Order "contradicts Congress' intent regarding legislative rulemaking by mandating consideration of global effects". See State of Louisiana et al v Biden et al, (2022) Case No. 2L21-CV-01074 at 33.
[195] Wright and Doelle, *supra* note 191 at 1033 – 1062.
[196] *Ibid* at 1037.

considered in the assessment process is a political decision. For instance, if determined that only direct and downstream emissions will be considered, an SCC analysis of the LNG hypothetical will only show a net benefit which could then inform a decision in favour of an LNG project. In all, while SCC analysis might be narrowly useful in assessing purely economic losses, its utility in aptly capturing other dimensions of climate impacts is quite limited.

The consideration of social and human right considerations when assessing for climate change impacts is still very limited. This is not to say that it is non-existent. The United States Guidance on Climate Change, for example, requires that agencies "incorporate environmental justice principles into their programs, policies, and activities … and consider whether the effects of climate change in association with the effects of the proposed action may result in a disproportionate effect on minority and low-income communities".[197] As in the Scottish case study, the implications of provisions such as this in the context of new or prospective projects leading to a reverse just transition scenario are not very difficult to visualize. It becomes somewhat more complex in respect of existing fossil fuel-based projects and the more conventional just transition related questions raised. In any case, both the reverse and conventional just transition scenarios as well as the distinct just transition realities which arise in initiatives and projects to transition out of the fossil economy and those that characterise transitioning into the non-fossil economy, require a well-articulated and carefully designed impact assessment framework. Designing this framework – the just transition impact assessment framework – is the focus of chapter six.

[197] Council on Environmental Quality, *supra* note 110 at 23.

CHAPTER SIX
THE JUST TRANSITION IMPACT ASSESSMENT FRAMEWORK: PRINCIPLES AND APPLICATION

6.1 Introduction

While the subjects of just transition and impact assessment have been considered in the previous chapters of this thesis, this chapter explicitly lays out the components of the just transition impact assessment (JTIA) framework and shows how the framework can apply in practice. Primarily, the framework consists of general principles to ensure that the evaluation and eventual decisions made in respect of transition related activities are consistent with the vision of justice described in chapters two and three of this thesis. Transition activities are, however, diverse. The EU taxonomy Regulation, for example, recognizes three broad categories of activities – low carbon activities, transitional activities, and enabling activities.[1] Elsewhere, the Institute for Human Rights and Business (IHRB) distinguishes between transitioning out of the fossil economy and transitioning into the green economy.[2] The categories of transition activities by the EU and the IHRB both acknowledge the reality of the continuity of certain fossil-based activities even as the world moves into a non-fossil fuel world. In chapter four of this thesis, a more explicit classification has been adopted - transition-related fossil-based activities and non-fossil-based activities.[3] While appreciating the distinctions between the various transition-related activities, the JTIA principles proposed here are meant to apply generally, except otherwise stated.

The JTIA framework is a normative framework rather than a regulatory framework. In other words, rather than proposing rules and institutions for JTIA, it proposes standards for evaluating and determining 'good' and 'bad' transition decisions, and for catering to justice concerns at the

[1] Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the Establishment of a Framework to Facilitate Sustainable Investment, and Amending Regulation (EU) 2019/2088, arts 10(1), 10(2), and 16. Low carbon activities include renewable energy, energy efficiency, clean climate mobility, negative emission technologies etc. The Regulation recognizes economic activities for which there are no technologically and economically feasible low-carbon alternative as transitional activities, if such activities support the transition to a climate-neutral economy, has emission levels corresponding to sectoral or industrial best performance, does not hamper the development and deployment of low-carbon alternatives, and does not lead to a lock-in of carbon-intensive assets. Enabling activities are economic activities which contribute substantially to environmental objectives by directly enabling other activities provided that such economic activities do not lead to lock-in assets that undermine long-term environmental goals and has substantial positive environmental impact based on life-cycle considerations.
[2] IHRB, "Just Transitions for All: Business, Human Rights, and Climate Action" (November 2020) online: <https://www.ihrb.org/uploads/reports/Just_Transitions_For_All_-_Business%2C_Human_Rights%2C_and_Climate_Action_-_IHRB_Nov2020.pdf >, 22.
[3] See table 9, chapter 4 of the thesis.

assessment and decision-making stage. The JTIA is not designed to be another mode of impact assessment to be conducted independently or outside of conventional IA processes. Rather, the framework is most meaningful when applied within impact assessment processes for transition activities at the strategic and project levels. While the examples considered in the chapter are largely based on state-led assessment processes, the framework is also applicable within other non-regulatory impact assessments. Framing the JTIA as transcending formal regulatory processes is important as regulatory IA does not only screen out most cumulatively consequential activities, but it is also, generally, late in its application. Corporations and institutions, however, have internal assessment processes outside regulatory IA within which just transition impacts could and should be considered. The principles of the JTIA framework could be applied within such internal assessment processes.

In part two, the JTIA principles are developed using the discourses on just transition and impact assessment in the preceding chapters of this thesis. This includes the characteristics of just transition in the domestic and global contexts, the various modes and dimensions of impact assessment and their relevance to just transition, and the distinct features of climate change and impact assessment (CC&IA). The implications of the framework for the key stages of IA – conception and design of transition activities, screening, scoping, evaluation, consideration of alternatives, decision making, and follow-up – are considered in part three. Climate-change-based transition decisions are taken at multiple levels ranging from the global to the local. Arguably, there is a default tiering of decision making that actuates global climate governance.[4] The alignment of policies and decisions at the various levels of decision making is essential for the efficient, effective, and equitable attainment of global climate policies.[5] Potentially, through the

[4] Martin Jänicke describes a multi-level system of global climate governance which, at the vertical level, includes the global, regional, national, provincial, and local. Each level has sub-sets which relate horizontally (e.g., cooperation amongst municipalities). Horizontal sub-sets also include corporations, sectors, communities, civil societies, and individuals. See Martin Jänicke, "The Multi-level System of Global Climate Governance – the Model and its Current State" (2017) 27 Environmental Policy and Governance 108 – 121.

[5] Dorch and Flachsland argue that "the uncoordinated fragmentation, with counteracting effects of policies and actions, poses a fundamental challenge to the environmental and economic performance of a polycentric approach". See Marcel Dorsch and Christian Flachsland, "A Polycentric Approach to Global Climate Governance" (2017) 17:2 Global Environmental Politics 45 at 60. While arguing for the management of fragmentation within the polycentric global governance rather than seeking to reduce fragmentation, Pattberg et al reference studies showing that fragmentation leads to inefficiency and ineffectiveness. They also argue that fragmentation and diversification of the system could potentially exacerbate injustices. See Philipp Pattberg et al, "20 Years of Global Climate Change Governance Research: Taking Stock and Moving Forward" (2022) 22 International Environmental Agreements 295 at 301, 303.

concept of tiering, IA could be a useful tool for the alignment of transition policies and activities. Hence, part three also includes the consideration of how the JTIA principles operate both at the strategic and project levels. While the Framework developed here adopts the anti-trade-off starting point of Robert Gibson's sustainability assessment criteria,[6] like the sustainability assessment criteria, it is conceded that trade-off becomes unavoidable in certain decision-making situations.[7] With the aid of a few examples in part four, I highlight different modes of just transition inspired conflicts and consider how trade-off could be managed, particularly when climate measures seem to conflict with broader ecological goals.

6.2 Guiding Principles for Just Transition Impact Assessment

The central argument of this thesis is that human and ecological wellbeing is the ultimate end of just transition, and impact assessment is a useful tool in arriving at this objective. In chapter four, the potential and limitations of various modes of IA as vehicles for just transition have been highlighted, while the fledgling field of climate change and impact assessment (CC&IA) has been re-envisioned using a just transition lens in chapter five. The question of how to explicitly assess for whether proposed transition activities (policies and projects) align with just transition remains. Put differently, what are the primary criteria that transition activities should satisfy to be considered just transition compliant? Gibson, in his formulation of the sustainability assessment criteria, notes that assessments are exercises in evaluation and decision making are underpinned and guided by criteria of some sort, even if the criteria are often implicit.[8] He points out that these criteria determine preferred objectives, surveyed and selected options, and effects which are adjudged desirable, acceptable, or intolerable.[9] As for sustainability assessment, Gibson's argument applies to just transition impact assessment. It is reasonable to suppose that there is, at least, a subliminal desire by decision makers not to design or implement transition activities which

[6] Under Gibson's sustainability assessment criteria, there should be an attempt to meet all sustainability requirements as a set of interdependent parts with mutually supportive benefits. See Robert Gibson, *Sustainability Assessment: Criteria and processes* (Oxon, Earthscan: 2005) 113 – 114.

[7] Gibson argues that while "it is reasonable to be generally hostile to trade-offs and compromises", "preparations for sustainability assessment must anticipate unavoidable trade-offs and provide guidance for dealing with them". See *Ibid* at 123.

[8] *Ibid* at 87. While Gibson's criteria are the most known criteria for sustainability assessment, other criteria have been proposed by IA scholars. For example, Pope et al argue that sustainability discourses are underpinned by the pragmatic integration of development and environmental goals, the limitations on human activities, a process of directed change or transition, and enhancing resilience and justice. See Jenny Pope et al, "A Conceptual Framework for Sustainability Assessment" in Angus Morrison-Saunders et al eds, *Handbook of Sustainability Assessment* (Cheltenham: Edward Elgar, 2015) 38.

[9] *Ibid* at 89.

are unjust or foster injustice either substantively or procedurally. The question is, however, how are just ends defined and how do they inform decision making?

The principles proposed below are not exhaustive criteria for just transition impact assessment. However, they capture the vital elements of a forward-looking yet pragmatic idea of what just transition should be. This vision of just transition has been spelt out in the ten characteristics of just transition in chapter two (table six) and is reproduced below for ease of reference. The just transition characteristics and the JTIA principles through which the characteristics can be operationalized draw from the transformative and proactive visions of just transition described by Goddard and Farrelly, Morena et al, and Mertins-Kirkwood[10]. While transcending the scope of the more widely recognized workers-centric requirements of the ILO Guidelines for just transition,[11] the vision of just transition adopted here satisfies the four pillars of the ILO's Decent Work Agenda - social dialogue, social protection, rights at work, and employment.[12] Also, international human rights law, the Sustainable Development Goals (SDGs), and the principle of differentiation under international climate law are key building blocks of the principles proposed below. Each of these building blocks has been addressed in the foregoing chapters. While insufficient when considered solitarily, a combination of the building blocks not only helps in framing a more fulsome understanding of just transition, but more importantly, provides authoritative justifications for the JTIA principles. Further, it is arguable that adopting the human rights language, the SDGs, and the notion of differentiation in grounding the JTIA principles make them more likely to be adopted and applied given that public and private entities have to various extents, endorsed these building blocks under different international instruments. Also, except for the principle of differentiation, human rights and the SDGs are already being recognized as relevant to the practice of impact assessment.[13]

---

[10] George Goddard & Megan Farrelly, "Just Transition Management: Balancing Just Outcomes with Just Processes in Australian Renewable Energy Transitions" (2018) 225 Applied Energy 110 – 123; Edouard Morena et al, *Mapping Just Transition(s) to a Low-Carbon World* (United Nations Research Institute for Social Development, 2018) 11 – 15; and Hadrian Mertins-Kirkwood, *Making Decarbonization Work for Workers: Policies for a Just Transition to a Zero-carbon Economy in Canada* (Canadian Centre for Policy Alternatives, 2018) 8 – 11.

[11] ILO, *Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All* (Geneva: ILO, 2015).

[12] *Ibid* at 4.

[13] For human rights and impact assessment, see generally Nora Götzmann, ed, *Handbook on Human Rights Impact Assessment* (Cheltenham: Edward Elgar, 2019); and for the SDGs and IA, see Angus Morrison-Saunders et al, "Gearing up Impact Assessment as a Vehicle for Achieving the UN Sustainable Development Goals" (2020) 38:2

'Just' Characteristics of Just Transition (Table 6, Chapter Two)

Objective	a. The realization of combined capabilities and enrichment of human and ecological wellbeing is the central objective of just transition.
Demands	b. Fossil fuel dependent communities must have sufficient resources to guarantee the realization of combined capabilities and wellbeing. c. Just transition includes ensuring that existing injustices to the environment, culture, and people are redressed and that sustainability initiatives do not re-invent previous injustices or create new ones.
Subjects	d. Just transition prioritises the most vulnerable. e. Vulnerability includes social and ecological vulnerability. f. Socially and ecologically vulnerable subjects must be both locally and globally scoped.
Process	g. A multipartite approach should be taken to identify participants for social dialogue. h. Social dialogue should aim to achieve participatory parity and parity-impeding norms and structures should be identified and removed. i. Sustainability processes must entail a strong recognition of diverse forms of rights and holders of rights, and values and identities, particularly those of marginalized and vulnerable people. The scope, mode and pace of transition must be diversity sensitive but also responsive to the urgency of far-reaching climate actions. j. A toolbox approach should be taken to determine the aim of a social dialogue process (information, consensus and/or consent).

The influence of Gibson's criteria for sustainability assessment on the principles proposed here is worthy of emphasis. Like the sustainability assessment criteria, the JTIA principles are underpinned by arguments from literature, theories, and greening and planning initiatives.[14] Gibson's criteria include substantive and process elements ranging from broad normative concepts like socio-ecological system integrity to more process related ideas like socio-ecological civility and democratic governance. The inclusion of inter- and intra-generational equity in the criteria is particularly relevant here given the centrality of justice to this work.[15] Similar to the sustainability assessment criteria, the principles articulated here are connected, must necessarily be read as a single narrative, and are tentative in the sense that there is no assumption of conclusiveness or completeness. Borrowing Gibson's words, the JTIA principles are "largely for illustrative

Impact Assessment and Project Appraisal 113 – 117; Theo Hacking, "The SDGs and the Sustainability Assessment of Private-sector Projects: Theoretical Conceptualisation and comparison with Current Practice Using the Case Study of the Asian Development Bank" (2019) 37:1 Impact Assessment and Project Appraisal 2 - 16.

[14] Gibson, *supra* note 6 at 95.

[15] *Ibid.* See also Lydia Lamorgese and David Geneletti, "Equity in Sustainability Assessment: A Conceptual Framework", in Morrison-Saunders et al, eds, *supra* note 8 at 57 – 76.

purposes".[16] They will look different in practice depending on the context, in the same way sustainability assessment criteria have been applied differently in several jurisdictions.[17] As noted in chapter four of this thesis, however, the sustainability assessment criteria have been designed to apply to broadly defined sustainability concerns. Just transition is, arguably, a subset of the broader concept of sustainability. Hence, while the sustainability assessment criteria can be generically applied to just transition, more specific principles framed with explicit consideration of just transition concerns are required. These principles are laid out in *table 13* and discussed below.

Table 13: Principles of Just Transition Impact Assessment

i.	Adopt ecological and human wellbeing as the objective of transition activities.
ii.	Ensure that transition decisions are sensitive to vulnerability.
iii.	Consider the principle of differentiation in decision making.
iv.	Ensure that life cycle, cumulative, and transboundary impacts are considered.
v.	Adopt a rights-based approach to social dialogue and ensure participatory parity.

A. Adopt Ecological and Human Wellbeing as the Objective of Transition Activities

Impact assessment regimes are designed with specific objectives in focus. For the Canadian Impact Assessment Act, it is contribution to sustainability;[18] for the American National Environmental Protection Act, it is primarily the encouragement of productive and enjoyable harmony between humans and the environment;[19] while the EU Environmental Impact Assessment Directive emphasizes the assessment of projects which are likely to have significant effects on the environment.[20] As in the more specific context of climate change and impact assessment, objectives also range from narrow goals like adhering to international obligations,[21] to more broadly framed objectives like the consideration of climate change impacts in EIA processes.[22]

[16] Gibson, *supra* note 6 at 95.
[17] See generally Robert Gibson ed., *Sustainability Assessment: Applications and Opportunities* (Abingdon, Oxon: Routledge, 2017); Alan Bond et al, "Sustainability Assessment: The State of the Art" (2012) 30:1 Impact Assessment and Project Appraisal 53 – 62.
[18] *Impact Assessment Act,* SC 2019, c 28, s 6(1)(a) (IAA).
[19] *The National Environmental Policy Act, 1969* (as amended), s 2.
[20] Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the Assessment of the Effects of Certain Public and Private Projects on the Environment, art 1(1).
[21] IAA, s 6(1)(a).
[22] Department of Forestry, Fisheries and the Environment, *National Guideline for Consideration of Climate Change Implications in Applications for Environmental Authorisations, Atmospheric Emission Licenses and Waste Management Licenses* (2021) Government Gazette No. 44761, 10.

These objectives are, however, either excessively broad and difficult to scope or too narrow, thereby leaving out essential goals. For example, sustainability could be all things to all people, lacking discernible scope and contents.[23] Arguably, adopting ecological and human wellbeing as the primary objective of transition activities, on the one hand, departs from the broader and more contested goal of sustainability, and at the same time helps escape the danger of framing 'transition activities' as an end in themselves.

Identifying 'wellbeing' as a crucial goal of impact assessment is not novel. The IAA, for example, emphasizes the contribution to the social and economic wellbeing of the people of Canada in its definition of sustainability.[24] Also, in their Paris to Project research, Gibson et al highlight the need to define the scope of assessment considerations to include "all factors that may affect lasting wellbeing, and their interactions".[25] Arguably, the various modes of IA (e.g., social impact assessment, human rights impact assessment, health impact assessment etc.) address different aspects of wellbeing. References to 'wellbeing' in IA, however, have been largely perfunctory, without explication on what wellbeing means in IA and how IA can facilitate wellbeing. Psycho-social impact assessment (PSIA) is perhaps the mode of IA which most frontally engages with the subject of wellbeing. While the notion of wellbeing here exceeds what the proponents of PSIA have construed wellbeing to entail (lifescape – how people experience their worlds, lifestyle – patterns of daily activities, and lifestrain – mental health),[26] the PSIA discourse is nevertheless useful and will be drawn from later.

It is crucial to unbundle the concepts of ecological wellbeing and human wellbeing for clarity on how they apply (or should apply) within IA. Ecological wellbeing is not commonly used in sustainability literature. It is more common to find similar terms like ecological integrity,

---

[23] Pope et al note that, in reality, "sustainability as a concept is ambiguous, ambivalent and essentially contested … different processes in different jurisdictions conducted by different organisations are likely to reflect quite different conceptualisations of sustainability". See Pope et al, *supra* note 8 at 21. See also Philip Loring, "Threshold Concepts and Sustainability: Features of a Contested Paradigm" (2020) 5 FACETS 182 – 199.

[24] IAA, s 2.

[25] Robert Gibson et al, *From Paris to Projects: Clarifying the Implications for Canada's Climate Change Mitigation Commitments for the Planning and Assessment of Projects and Strategic Undertakings* (Waterloo: 2019) 143.

[26] Will Rifkin et al, "Psycho-social Impact Assessment" (Draft tips on PSIA published and distributed at the IAA 2022 Conference, Vancouver, British Columbia, Canada). Edelstein's description of psycho-social impacts is broader. He describes it as human effects from anticipated or actual changes to the environment including impacts on quality of life, psycho-social wellbeing, relationships and ability to enjoy ones' home, property, and the environment. See Michael Edelstein, "Promoting a Sustainable Transformation through Psycho-social Impact Research" (May 25, 2019), paper presented at EDRA 50, online: <https://cuny.manifoldapp.org/read/promoting-a-sustainable-transformation-through-psycho-social-impact-research/section/7810a41d-827a-4042-a872-62fbea18b012>.

ecological resilience, and socio-ecological wellbeing.[27] These concepts are, however, either heavily anthropocentric in their definitions or too contested to be meaningfully applied or enforced. Take ecological integrity, which is the most far-reaching of these concepts and has been adopted in various international conventions and domestic laws,[28] for example. Bridgewater et al argue that ecological integrity is inherently temporary rather than static as it is "measured at a point in time, not at some artificial, imagined, Arcadian state".[29] For Rohwer and Marris, the notions of naturalness, wholeness, and continuity through time by which ecological integrity is defined are not consistent with the dynamism and complex interconnections which characterize ecosystems.[30] Fluker attempts to capture the contesting definitions of ecological integrity using the natural ecological integrity (ecological integrity through the absence of humans) and socio-ecological integrity (ecological integrity contingent on humans) classification.[31]

In this thesis, the wellbeing of an ecological system is sound if it is in its known best state of health, rich in diversity, and resilient to change. Adopting diversity and resilience as the primary characteristics of ecological wellbeing affirms the inherent worth of ecosystems, decouples ecological value from utility, and avoids the vagueness and contestations that attend concepts like ecological integrity. Ecological wellbeing also goes beyond ensuring that ecosystems have the

---

[27] Ecological integrity is generally traced back to Aldo Leopold's statement that "a thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community". See Aldo Leopold, *A Sand Country Almanac* (Oxford: Oxford University Press, 1949) 224 – 225. Ecological resilience has been defined as "the amount of disturbance that an ecosystem could withstand without changing self-organized processes and structures". See Lance Gunderson, "Ecological Resilience – In Theory and Application" (2000) 31 Annual Review of Ecological System 425. Socio-ecological wellbeing has been defined as entailing the capacity of an ecological subsystem to absorb disturbances, the existence of a social subsystem in ways that human needs are met, and how both subsystems interact with each other. See Irene Brueckner-Irwin et al, "Applying a Social-ecological Wellbeing Approach to Enhance Opportunities for Marine Protected Area Governance" (2019) 24:3 Ecology and Society 7.

[28] The Rio Declaration, for example, admonishes states to "cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the health and integrity of the Earth's ecosystem …" See Rio Declaration, principle 7. See also the Convention on the Conservation of Antarctic and Marine Living Resources, 20 May 1980, 1329 UNTS 47, preamble (entered into force 7 April 1982). Canada's National Parks Act makes the maintenance or restoration of ecological integrity the first priority of the Minister responsible for the Parks Canada Agency in the management of Canadian Parks. See the *Canada National Parks Act*, SC 2000, c 32, s 8(2).

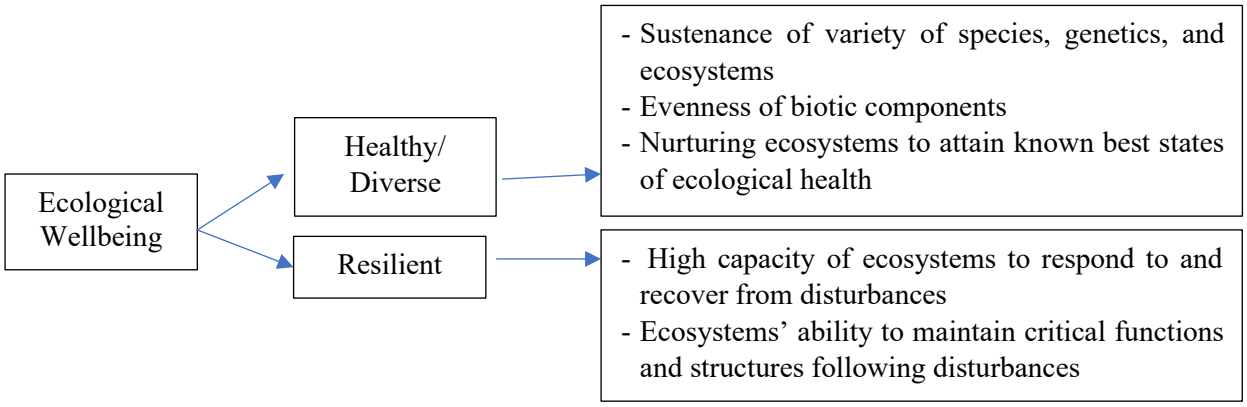
[29] See Peter Bridgewater et al, "Ecological Integrity: A Relevant Concept for International Environmental Law in the Anthropocene" (2015) 25:1 Yearbook of International Environmental Law 61 at 73.

[30] They argue that "any impression of "wholeness" is an artifact of the brevity of human lives and the shallowness of our historical records". See Yasha Rohwer and Emma Marris, "Ecosystem Integrity is Neither Real nor Valuable" (2021) Conservation Science and Practice 1 – 11. They further argue that if ecological integrity as a concept must be adopted, its most plausible definition is the specific relationships that exist among specific components at any specific moment. They conclude that "ecosystems do not need to be considered as wholes with integrity to be valuable". *Ibid* at 7, 9.

[31] Shaun Fluker, "Ecological Integrity in Canada's National Parks: The False Promise of the Law" (2010) 29 Windsor Rev of Legal & Soc Issues 89 at 93 – 99.

capacity to respond to adverse change, but also emphasizes that such systems thrive. But what do healthy, resilient, and diverse ecosystems look like? There is an abundance of literature on ecological resilience and biodiversity to identify what should be the key characteristics of these components of ecological wellbeing.[32] Figure 15 contains a summary of these features.

Figure 15: Features of Ecological Wellbeing



The argument has already been made that climate change induced transition must not be narrowly framed as simply searching for non-GHG emitting or intensive development pathways as done in most CC&IA regimes. Climate change is a sub-set of a larger global ecological crises, and an isolated approach in addressing climate change could exacerbate or create other ecological problems. Examples of how response measures like renewable energy technologies or electronic vehicles could open new frontiers of ecological problems have been referenced in previous chapters. In its recent report, UNEP recommends that considering the interconnected nature of climate change, loss of biodiversity, and pollution – which it describes as the triple planetary crisis, it is essential that the problems are addressed together.[33] Focusing on ecological wellbeing when making transition related decisions necessarily raises the bar on objectives and informs a more transformative set of considerations. For instance, the objective ceases to be simply how can emissions be reduced by X percentage, to how does the reduction of emissions by X percentage

[32] The Convention on Biological Diversity (CBD) defines biological diversity as "the variability among living organisms from all sources including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems". See CBD, art 2. For more on biodiversity and ecological resilience, see

[33] As an example, it notes that "large-scale afforestation schemes that replace native vegetation with monoculture crops to supply bioenergy can be detrimental to biodiversity and water resources". See UNEP, *Making Peace with Nature: A Scientific Blueprint to Tackle the Climate, biodiversity and Pollution Emergencies* (Nairobi: UNEP, 2021) 107.

impact the sustenance, evenness, and nurturing of ecosystems?[34] The conversation moves away from how we avoid bad to how can we do good? It is, therefore, not enough that a hydroelectricity dam project will replace a coal powered plant, thus leading to net emission reduction. Assessment practitioners and decision makers are compelled to consider the implications of the hydroelectricity dam on the wellbeing of ecosystems.

The argument here is not that global climate goals are irrelevant when ecological wellbeing is in focus. Global climate goals like the 1.5ºC target are targeted towards ensuring that the ecosystem maintains critical functions and structures. However, climate goals in an ecological wellbeing analysis are simply an initial step in a multi-layered process. This process does not conclude simply with a determination that a hydroelectric dam project is more desirable because it displaces a coal power plant. It goes further to compare alternatives. Hence, even if multiple sources of energy could be considered renewable, they do not necessarily equally guarantee the wellbeing of the ecosystem. Generally, low-carbon alternatives should be adjudged considering their impacts on ecological diversity and resilience. An option that contributes to the nurturing of an ecosystem to its known best state of health should be preferred to an option which only guarantees that an ecosystem can maintain critical functions or recover when disturbed. An option that meets the minimum climate mitigation target but leads to low resilience and adversely impacts ecological diversity should be avoided.

Although there is truth to the argument that the SDGs are exceedingly anthropocentric,[35] some of the goals, targets, and indicators are useful in crafting metrics with which ecological wellbeing can be measured when assessing the impacts of transition activities. Goal 14 on oceans, sea and marine resources, and goal 15 on terrestrial ecosystems are particularly relevant.[36] Whether activities prevent or reduce marine debris and nutrient pollution (target 14.1), strengthen the resilience of

[34] The example has been made of how the choice of native vegetation for large-scale reforestation projects could help address climate change, and at the same time combat biodiversity loss, land degradation and water security. See UNEP, *Ibid.*

[35] See Sam Adelman, "The Sustainable Development Goals, Anthropocentrism and Neoliberalism" in Duncan French and Louis Kotzé, eds., *Sustainable Development Goals: Law, Theory and Implementation* (Cheltenham, Edward Elgar: 2018) 15 – 40; Louise Kotzé, "The Anthropocentric Oncology of International Environmental Law and the Sustainable Development Goals: Towards an Ecocentric Rule of Law in the Anthropocene" (2018) 7 Global Journal of Comparative Law 5 – 36.

[36] Goal 13 on climate change has not been highlighted as it is considered too high level and misses out on essential elements of ambitious climate actions. The world has moved far from the understanding that informed the crafting of goal 13 in 2015. The 1.5 goal is, for example, no longer a fringe goal and NDCs are not sufficient indicators of ambition anymore.

marine and coastal ecosystems (target 14.2), and minimize and address ocean acidification (target 14.3) are, for example, very relevant in the assessment of ocean-based negative emission projects like ocean carbon sequestration and enhanced weathering and alkalinization. Targets 15.1 – 15.5 on the conservation and restoration of terrestrial and inland freshwater ecosystems, sustainable management and restoration of forests, restoration of degraded land and soil, conservation of mountain ecosystems and their biodiversity, and protecting and preventing biodiversity loss and the extinction of species are also very useful. At the minimum, transition activities must be considered in the light of these targets. The SDGs and targets are certainly not the most ambitious biodiversity benchmarks. The proposed post-2020 Global Biodiversity Framework to the Convention on Biological Diversity (CBD), for example, does not only focus on avoiding and reversing biodiversity loss, but further aims to achieve biodiversity net gain for a nature positive world by 2030.[37] The target of the transition must not be simply to avoid the worst impacts of climate change, but to take the world back to paths consistent with sustainability. However, the wellbeing of ecosystems rather than the continued capacity of an ecosystem to provide services is the emphasis here.

Even when it is determined that a transition related activity supports ecological wellbeing, the impact of such activities on human wellbeing must be assessed. The difficulty, and at times, the undesirability of measuring wellbeing, particularly quantitatively, were highlighted in chapter two. Yet, a system through which the impacts of transition activities on human wellbeing can be assessed and addressed is essential. The point has been made that, but for the direct engagement with the subject of human wellbeing in Psycho-social impact assessment (PSIA), IA generally addresses wellbeing through the proxies of social and human rights related IA modes. In his work on sustainability assessment and the SDGs, Theo Hacking drew a connection between different modes of IA and specific SDGs.[38] But one must be careful not to essentialize the SDGs, particularly in the bid to provide useful assessment metrics for human wellbeing. Adelman's criticism of the SDGs is again useful here. He notes that while Goals 1 and 10 seek to eradicate poverty and reduce inequality respectively, the causes of inequality like free trade and inequalities hardwired into the global economy are left unaddressed and no one escapes poverty on $1.25 per

[37] The 2030 mission is still in draft and there are other alternate framings that do not include the phrasing "biodiversity net gain for a nature positive world". See CBD, *Report of the Open-ended Working Group on the Post-2020 Global Biodiversity Framework on its Third Meeting (Part II)*, (29 March 2022) CBD/WG2020/3/7, 4.
[38] Hacking, *supra* note 13 at 7.

day.[39] He argued further that "the problem is not a lack of wealth but how it is distributed, and the SDGs offer no conception of distributive justice – nor for that matter, environmental or climate justice".[40]

Nevertheless, as low as the bar set by the SDGs might be, they provide a common language through which state and non-state entities craft and articulate their vision of sustainability transition. At the risk of sounding cliché, it is arguable that although the SDGs do not reflect where the world should be, it certainly moves the globe from where it was pre-2015. In any case, it appears that most criticism of the SDGs either consider the goals devoid of their targets and their indicators or outside the context of other incremental state and non-state sustainability aligned initiatives. It is worth repeating that as shown in chapter five, the use of the SDGs in assessing climate change response measures is not new.[41] The argument here is that while not enough, the SDGs, their targets, and indicators are useful in appraising wellbeing when just transition is being considered. This becomes even more useful when relevant goals are interpreted through and backed with the moral and legal force that underpins human rights.[42]

Using the SDGs interpreted through the lenses of human rights as proxies for human wellbeing is consistent with the capability approach to justice argued for in this thesis; an approach to justice which emphasises ends rather than only means. The SDGs are useful, albeit imperfect, in articulating those ends. Indeed, adopting the focus of the capability approach on the advancement of capability to fulfil human functioning, aims in part, "to ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment".[43] Jan-Emmanuel De Neve and Jeffrey Sachs, have in their works, highlighted the connection between the SDGs and what

[39] The SDGs measure poverty as people living on less than $1.25 a day. See Adelman, *supra* note 35 at 37. See also Ariel Salleh, "Climate, Water, and Livelihood Skills: A Post-development Reading of the SDGs" (2016) 13:6 Globalizations 952 – 959; Heloise Weber, "Politics of 'Leaving No One Behind': Contesting the 2030 Sustainable Development Goals Agenda" (2017) Globalizations 1 – 16.
[40] *Ibid.*
[41] UNFCCC, *Assessing Impacts of the Implementation of Response Measures – The Case Study of Senegal and Kenya: A computable General Equilibrium Analysis*, (UNFCCC, 2020).
[42] 90% of the SDG targets are said to be embedded in human right treaties, making the implementation of treaties crucial to the attainment of the targets. See The Universal Rights Group et al, "Human Rights and the SDGs: Pursuing Synergies" (2017) online: <https://www.universal-rights.org/wp-content/uploads/2017/12/RAPPORT_2017_HUMAN-RIGHTS-SDGS-PURSUING-SYNERGIES_03_12_2017_digital_use-2.pdf>; See also, Markus Kaltenborn et al, eds, *Sustainable Development Goals and Human Rights* (Cham, Switzerland: Springer, 2019).
[43] United Nations General Assembly, *Transforming our World: The 2030 Agenda for Sustainable Development* (2015) A/RES/70/1, 2.

they describe as subjective human wellbeing.[44] They note that human wellbeing is at the core of the SDGs,[45] and except for Goal 12 (responsible production and consumption) and Goal 13 (climate action), they find a strong positive correlation between the SDGs and wellbeing.[46]

Goals 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11 are particularly useful here. The most relevant targets and indicators for each of these goals are highlighted in *table 14*. Not all targets and indicators are, however, useful or in fact desirable for the purposes of JTIA. For example, targets like reducing the population of persons living in poverty by half by 2030 (target 1.2) are neither useful nor desirable. To start with, on what basis does one justify the condition of the 50% left in poverty. More so, if SDGs were construed as human rights, e.g., no poverty as the right to an adequate standard of living,[47] the idea that it is considered satisfactory for anyone to remain impoverished becomes even more untenable since human rights are inherent and a utilitarian approach to welfare is generally frowned at. Quantitative indicators and targets like reducing poverty by 50% and their reliance on indicators like population living below the international poverty line of $1.25 per day are not included in table 14. Indicators considered as not suitable for *ex ante* assessment like the use of statistics of deaths from disaster (indicator 1.5.1) have also not been included. Further, targets considered to be already subsumed in broader targets are excluded.

Table 14: Relevant SDGs, Targets, and Indicators for JTIA

SDGs	Targets	Indicators
1. No poverty	1.3. Social protection systems and measures for all 1.4. Equal rights to economic resources, access to basic services, ownership and control over land and other forms of	- Disaggregated data on population covered by social protection systems - Population with access to basic services

[44] Jan-Emmanuel De Neve and Jeffrey Sachs, "The SDGs and Human Well-Being: A Global Analysis of Synergies, Trade-offs, and Regional Differences" (2020) 10:1 Scientific Reports 1 – 11; Jan-Emmanuel De Neve and Jeffrey Sachs, "Sustainable Development and Human Well-Being" in John Helliwell eds., *World Happiness Report* (New York: Sustainable Development Solutions Network, 2020) 112 – 127. Subjective wellbeing is based on self-evaluations by respondents as against cumulative assessment of indicators like health and education (objective wellbeing) applied in the Human Development Index.

[45] De Neve and Sachs, *ibid* at 2.

[46] *Ibid* at 2 - 3. Explaining why SDGs 12 and 13 are negatively correlated with human wellbeing, De Neve and Sachs point at trade-offs necessary to meet SDGs 12 and 13 which invariably have serious socio-economic consequences and as such, "negatively impact well-being levels, particularly those of the most vulnerable". *Ibid* at 8 – 9.

[47] Article 27(1) of the Convention on the Rights of the Child, for example, provides that "States Parties recognize the right of every child to a standard of living adequate for the child's physical, mental, spiritual, moral and social development". This transcends 50% poverty reduction target in Goal 1. See also Universal Declaration of Human Rights, art 25; International Covenant on Economic, Social and Cultural Rights, art 11.

	property, natural resources, new technology and financial services 1.5. Resilience of the poor and vulnerable to climate-related extreme events and other shocks and disasters 1.a. Significant mobilization of resources for developing countries	- Population with secure tenure rights to land and perceive land rights as secure
2. Zero hunger	2.1. End hunger and ensure access to safe, nutritious, and sufficient food 2.2. End all forms of malnutrition specifically for children under 5 years, adolescent girls, pregnant and lactating women, and older persons. 2.4. Ensure sustainable food production and resilient agricultural practices	- Prevalence of undernourishment and food insecurity in the population - Prevalence of stunting and malnutrition among children under 5 years, and anaemia among women aged 15 – 49 - Proportion of agricultural area under productive and sustainable agriculture
3. Good health and wellbeing	3.3. End epidemics, neglected tropical diseases, and other communicable diseases 3.4. Reduce premature mortality from non-communicable diseases and promote mental health and well-being 3.5. Prevent and treat substance abuse 3.6. Reduce deaths and injuries from road traffic accidents 3.8. Access to quality essential health-services 3.9. Reduce deaths and illnesses from hazardous chemicals, pollution, and contamination 3.d. Strengthen capacity for early warning, risk reduction, and management of health risks	- Suicide mortality rate, maternal and child mortality rate - Coverage of essential health services - Health worker density and distribution
4. Quality education	4.1. Free, equitable, and quality primary and secondary education 4.3. Equal access for all to affordable and quality technical, vocational, and tertiary education 4.4. Increased number of youths and adults with relevant skills	- Children and young people in school and completion rate - Participation of youth and adults in formal and non-formal education by sex - Population with proficiency in functional literacy

5. Gender equality	5.1. End all forms of discrimination against all women and girls 5.2. Eliminate all forms of violence against all women and girls in all spheres 5.4. Recognize and value unpaid care and domestic work 5.5. Ensure women's full and effective participation and equal opportunities for leadership	- Time spent on unpaid domestic and care work - Women in managerial positions
6. Clean water and sanitation	6.1. Universal and equitable access to safe and affordable driving water 6.2. Adequate and equitable sanitation and hygiene for all 6.4. Water-use efficiency 6.b. Participation of local communities in improving water and sanitation management	- Bodies of water with good ambient water quality - Level of water stress
7. Affordable and clean energy	7.1. Universal access to affordable, reliable, modern energy services	- Population with access to electricity and primary reliance on clean fuels and technology
8. Decent work	8.5. Full and productive employment and decent work for all women and men with equal pay for work of equal value 8.6. Reduce number of youths not in employment, education, or training 8.7. Eradicate forced labour, modern slavery, human trafficking, child labour, etc. 8.8. Protect labour rights and promote secure working environments for all	- Unemployment rate by sex, age, and persons with disabilities - Average hourly earnings of female and male employees
9. Industry, innovation, and infrastructure	9.1. Quality, reliable, sustainable, and resilient infrastructure	
10. Reduced inequalities	10.2. Empower and promote social, economic, and political inclusion 10.3. Ensure equal opportunity and reduce inequalities of outcome 10.a. Implement the principle of special and differential treatment for developing countries	

11. Sustainable cities and communities	11.1. Access to adequate, safe, and affordable housing and basic services 11.2. Access to safe, affordable, accessible, and sustainable transport systems for all 11.3. Enhance inclusive and sustainable urbanization; participatory, integrated, and sustainable human settlement planning 11.4. Strengthen efforts to protect and safeguard cultural and natural heritage 11.7. Provide access to inclusive and accessible green public spaces 11.a. Positive economic, social, and environmental links between urban, peri-urban and rural areas	- Existence of direct participation structure in urban planning and management - Built-up area of cities that is open space for public use - Policies responding to population dynamics, territorial development, and increased local fiscal space

It has been argued in this thesis that just transition is not synonymous with jobs transition. Jobs and the interest of workers are a piece of the pie but not the entire pie. In considering whether a transition activity is just transition compliant from the viewpoint of human wellbeing, the SDGs, targets, and indicators in table 14 should be considered in their entirety. They should also be interpreted in the light of existing hard and soft international instruments, particularly instruments with greater ambition. The Office of the United Nations High Commissioner for Human Rights (OHCHR) provides a useful list tying each SDG to related human rights and the treaties guaranteeing them.[48] As noted above, the provisions of these treaties are more authoritative tools in defining how each of the goals should be appraised. Take for example, Goals 9 and 10 for which none of the indicators are found useful for the purposes of JTIA. The OHCHR list ties Goal 9 on industry, innovation, and infrastructure to the right to enjoy the benefits of scientific progress and its application,[49] right to access to information,[50] right to adequate housing,[51] and the equal rights of women to financial credit and rural infrastructure[52].

[48] OHCHR, "Sustainable Development Goals", online: <https://www.ohchr.org/sites/default/files/Documents/Issues/MDGs/Post2015/SDG_HR_Table.pdf>.
[49] UDHR, art 27; ICESCR, art 15(1)(b).
[50] UDHR, art 19; ICCPR art 19(2).
[51] UDHR, art 25; ICESCR, art 11.
[52] CEDAW, art 13(b), 14(2).

Although the realization of human rights is identified as one of the objectives of the SDGs,[53] goals, targets and indicators are generally not couched using the language of rights. For example, none of the rights identified by the OCHCHR for Goal 9 were identified in the SDG's targets and indicators. Goal 10 on reduced inequality has also been tied to the right to equality and non-discrimination, the right to participate in public affairs, the right to social security, the promotion of conditions for international migration, and the right of migrants to transfer their earnings and savings. Also, the SDGs become further enriched and more contextually appropriate for Indigenous peoples when interpreted through the lens of Indigenous rights including those recognized in UNDRIP.[54] Requiring that the impact of transition decisions be assessed using table 14 will require extensive data and as in Scotland's assessment of its policy on unconventional oil and gas, it will be time demanding. PSIA's lifescape, lifestyle and lifestrain classification is, arguably, a simpler framework for assessing transition impacts on wellbeing. It is, however, not as useful in identifying specific wellbeing issues for consistent and comprehensive assessment. The lifestrain subset of the PSIA is nevertheless useful, more so as its focus on the psychological strain caused by transition decision is not adequately captured in table 14.

The assessment of the lifestrain impacts of decisions on people and communities is the most important contribution of PSIA to the IA scholarship and the notion of wellbeing under the JTIA framework. Transcending easily discernible social, economic, health and cultural impacts, PSIA considers the meaning individuals give to those impacts. It creates frameworks to assess the responses of trust, fear, or uncertainty of individuals to disruptions, and the consequential psycho-social effects. Rifkin et al note that although psycho-social disruptions are often overlooked by organizations and policy makers, such disruptions affect physical wellbeing (e.g., psychological distress), project acceptance, capacity to adapt to changes, and community wellbeing (e.g., family relations and community support networks).[55] These impacts are all too familiar in transition discourse. The concerns of respondents in respect of Canada's transition from coal referenced in chapter two, ranging from potential lost access to basic services to depopulation of communities and loss of families and social connections, exemplify some of the impacts addressed by the

[53] United Nations General Assembly, *supra* note 43, preamble.
[54] According to the United Nations Permanent Forum on Indigenous Issues (UNPFII), 73 of the 169 SDG targets have substantial links to UNDRIP. See UNPFII, "Indigenous Peoples and the 2030 Agenda", online: <https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2016/10/Short-flyer_UNPFII-Substantive-Inputs-2017.pdf>.
[55] Rifkin et al, *supra* note 26.

PSIA.[56] An expanded reading of goals 3 and 11 could potentially incorporate the consideration of lifestrain impact in a JTIA framework which uses the SDGs to delineate human wellbeing. Target 3.4 already has tangential reference to mental health and wellbeing, and goal 11 could benefit from the recognition and protection of family contained in article 10 of the International Covenant on Economic, Social and Cultural Rights (ICESCR).

B. Ensure that Transition Decisions are Sensitive to Vulnerability

A major difference between the capability approach to justice and other theories of justice is that the capability approach does not take a generic approach to diagnosing injustice and positing solutions. It goes further to seek to understand and address unique conditions, at the individual or collective level. Transition activities will impact people, communities, and ecosystems differently. The most vulnerable will be the most adversely impacted by projects not well thought out, in the same way they will be most impacted by the refusal to act.[57] The works of Fineman and Harris on socially embedded and ecological vulnerability were drawn from in chapter two to conclude that the minimum indicators of vulnerability are social and ecological disadvantages which induce or exacerbate fragility particularly in the face of turbulence from change or change *simpliciter*.[58] Identifying and attending to these social and ecological disadvantages when designing and deciding on transition activities are key to arriving at vulnerability-sensitive transition decisions. This is particularly important in ensuring that transition activities do not perpetuate or exacerbate existing injustices and create new ones. Ecological vulnerability is captured, in part, by the discourse above on ecological wellbeing. Although addressing social vulnerability is a component of attending to human wellbeing considered above, it requires more detailed attention given the unique nature of the transition and its implications for already disadvantaged societies and individuals.

Vulnerability, as described above, implies an existing condition of disadvantage. This perspective is consistent with the literature on climate and social vulnerability. In the context of climate change, for example, Ana Nunes finds that people with human capital, financial assets, physical

[56] The Task Force on Just Transition for Canadian Coal Power Workers and Communities, *What We Heard from Canadian Coal Power Workers and Communities* (Ottawa: Government of Canada, 2019) 18.
[57] See generally Environmental Protection Agency (EPA), *Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts* (EPA, 2021).
[58] See generally Martha Fineman, "Vulnerability and Social Justice" (2019) 53:2 Valparaiso University Law Review 341 – 369; Angela Harris, "Vulnerability and Power in the Age of the Anthropocene" (2014) 6:1 Washington and Lee Journal of Energy, Climate, and the Environment 98 – 161.

assets, place-based assets, and social assets have low vulnerability and high resilience in extreme heat and cold temperatures.[59] Similar findings have been made in respect of social vulnerability to large infrastructure projects. In their proposal of a social vulnerability approach for social impact assessment using a hydroelectric project in Chile as an example, Climent-Gil et al show how structural vulnerability at the macro, meso, and micro levels combine with exposures to project impacts to produce acquired vulnerability.[60] Drakes and Tate reached a similar conclusion, noting that susceptibility and resistance to hazards are influenced by what they describe as the determinants of social vulnerability - demographics, land tenure, living conditions, socioeconomic status, health, risk perception and exposure.[61] The United States Environment Protection Agency in its work on social vulnerability to climate change measured vulnerability using race and ethnicity, income, education, and age, finding for example that Black and African American individuals are 40% more likely to live in areas with the highest projected increases in mortality rates due to extreme climate events.[62]

As seen above, there is no shortage of research on vulnerability in the context of natural hazards, and more recently, climate change. Scholarship on vulnerability in the context of the transition is a rarer find. As established in the preceding chapters, the transition will not be without cost, and if deliberate attention is not paid to the issue of vulnerability, there is the likelihood that existing injustices and disadvantages will be further enshrined or even worsened. Avoiding the entrenchment and complication of vulnerabilities and in fact, retooling the transition to address existing vulnerabilities is at the core of JTIA's second principle. The question remains how vulnerability is identified and addressed when transition activities are being considered and decided upon. Answering this question becomes even more complicated considering that a transition policy or project could deepen local social vulnerability on the one hand, while mitigating climate change at a global level on the other hand. Also, a transition policy could improve resilience locally, while worsening social vulnerability in socio-economically exposed jurisdictions. While the issue of conflicting interests and trade-offs will be addressed later, the

[59] See Ana Raquel Nunes, "Exploring the Interactions Between Vulnerability, Resilience, and Adaptation to Extreme Temperatures" (2021) 109 Natural Hazards 2261 at 2277.
[60] Emilio Climent-Gil et al, "The Social Vulnerability Approach for Social Impact Assessment" (2018) 73 Environmental Impact Assessment Review 70 – 79.
[61] Oronde Drakes and Eric Tate, "Social Vulnerability in a Multi-hazard Context: A Systematic Review" (2022) 17 Environmental Research 1 – 2.
[62] EPA, *supra* note 57 at 4, 6.

fundamental principle established here stays true – the most vulnerable must be protected when transition activities are being designed, considered, and decided upon.

The question on the identification of the most vulnerable specifically in the context of transition activities, is a complex issue that must necessarily be place-based. As such, while particularized metrics like race, age, education, and income as used by the EPA above might apply to the United States, they might not apply in other jurisdictions where race does not play as important a role as it does in the United States. Other metrics like gender and disability which are not included in the EPA's factors might be more relevant in such jurisdictions. Yet, guidance on vulnerability identification is needed. To this end, I find a modified version of multi-level social vulnerability approach (SVA) proposed by Climent-Gil et al useful given its high-level construct which recognizes vulnerability as a multi-level reality while also permitting place-based analysis. The modified version of the SVA in *figure 16* retains the macro-, meso-, and micro- level structure proposed by Climent-Gil et al but reconstitutes the make-up of each level for greater clarity and more apt application for transition decisions.

Figure 16 – Modified Social Vulnerability Approach

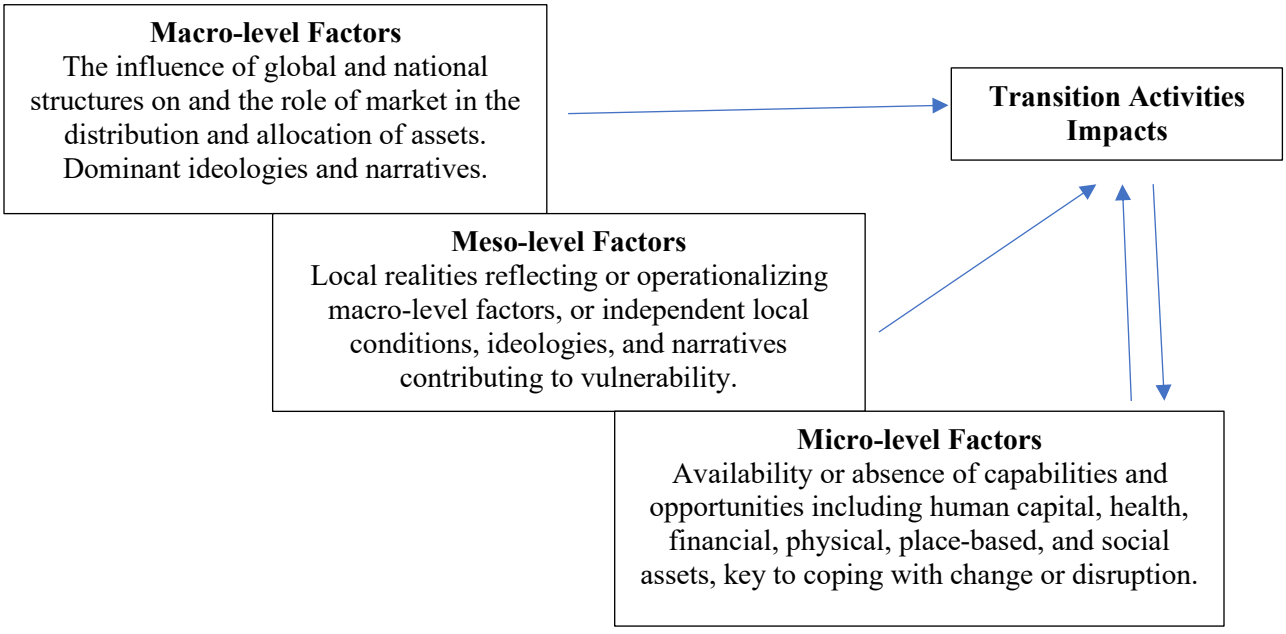


Figure 16 is useful in ensuring that vulnerability, in its complex sense, is considered when designing and making decisions on transition activities. It departs from the focus on identity groups as done in the EPA example. Rather, the framework accommodates what Fineman describes as

'lack of opportunities' categories.[63] This approach makes it possible to capture individuals and groups of persons genuinely vulnerable to the adverse impacts of the transition other than workers. It also captures the individual and institutional components that Fineman posits as vital to a vulnerability analysis.[64] Hence, drawing attention to the societal structures that birthed current states of inequities and disadvantages. Erik Wright describes such structures as active mechanisms of social reproduction and intergenerational reproduction of social status which sustain institutions which are responsible for social harms and oppression.[65] He notes that "in the absence of some active process of social reproduction, the people harmed by the existing social arrangements would resist these harms and challenge the institutions in the ways that would result in their transformation".[66] Kyle Whyte's work on Indigenous peoples and climate injustice is a quintessential representation of these mechanisms of social reproduction.[67] He describes climate vulnerability as "an intensification of colonialism".[68] This manifests in settler caused developments that exacerbate vulnerability,[69] western immobile structures and developments that

[63] Martha Fineman, "The Vulnerable Subject: Anchoring Equality in the Human Condition" (2008) 20:1 Yale Journal of Law & Feminism 1 at 4. See also Martha Fineman, "The Vulnerable Subject and the Responsive State" (2010) 60:2 Emory Law Journal 251 at 266 – 269.

[64] Fineman, "The Vulnerable Subject: Anchoring Equality in the Human Condition", *Ibid* at 10.

[65] Erik Olin Wright, *Envisioning Real Utopias* (London: Verso, 2010) 17 – 18, 191 – 192. See also Carmen Gonzalez and Athena Mutua, "Mapping Racial Capitalism: Implications for Law" (2022) 2 Journal of Law and Political Economy 127 – 201.

[66] *Ibid* at 17.

[67] Whyte argues that "climate injustice emerges as … part of a cyclical history of disruptive anthropogenic environmental change caused by settler and other colonial institutions that paved the way for extractive industries and deforestation. Colonial institutional strategies that historically made it harder for Indigenous groups to adapt to climate change from the 1500s to the mid-1800s, continue to complicate abilities to adapt to accelerating climate change today. We will understand the nature of climate injustice against Indigenous peoples better – and perhaps its solutions too – the more we see it as more like the experience of déjà vu". Kyle Whyte, "Is It Colonial Déjà Vu? Indigenous Peoples and Climate Injustice" in Joni Adamson & Michael Davis, *Humanities for the Environment: Integrating Knowledge, Forging New Constellations of Practice* (London: Routledge, 2016).

[68] Kyle Whyte, "Indigenous Climate Change Studies: Indigenizing Futures, Decolonizing the Anthropocene" (2017) 55:1/2 English Language Notes 153 at 156.

[69] Karletta Chief, for example, gives the example of how the building of a dam and high demand for water by settlers changed the relationship of the Pyramid Lake Paiute Tribe to fish, and exacerbated drought. See Karletta Chief et al., "Indigenous Experiences in the Us with Climate Change and Environmental Stewardship in the Anthropocene," V. Alaric Sample and R. Patrick Bixler ed., in *Forest Conservation and Management in the Anthropocene: Conference Proceedings* (Fort Collins, CO, USA: US Department of Agriculture, Forest Service. Rocky Mountain Research Station, 2014) (Cited in Whyte, *Ibid*)

undermine resilience,[70] and climate displacement worsened by a tokenistic approach to self-determination.[71]

The impacts of transition activities are primarily shaped by macro and meso level factors, while the eventual downstream experience of impacts is further mediated by existing micro-level factors. However, transition activities also directly create new adverse downstream realities, described by Climent-Gil et al as 'acquired vulnerability'. At the very least, the proponents of transition activities must be conscious of the acquired vulnerability that emanates from the impacts of transition activities. For this to be done, baseline understanding of micro-level factors is necessary, and at the minimum, baseline conditions of the most vulnerable – persons with the least opportunities and capacities – must not be worsened. Beyond project assessment, strategic assessment is an essential tool for the proactive identification and resolution of macro and meso factors responsible for micro-level vulnerabilities. This is important if the transformational potential of the transition is to be realized and if systems that could make transition activities new domains of injustices are to be reformed.

C. Consider the Principle of Differentiation in Decision Making

The common but differentiated responsibilities and respective capabilities in the light of different national circumstances (CBDR) principle, as a central principle of international climate law and governance, was extensively explored in chapter three. As noted, the principle is made up of the notions of historical responsibility, capability, circumstances, and vulnerability. The last notion has been discussed above, while the other three are the more widely recognized elements of the CBDR principle. While CBDR is more traditionally applied to interstate relationships, its underlying emphasis on the recognition of differentiated responsibilities, capacities, and circumstances must necessarily be integrated into national IA processes to arrive at just ends. Differentiation is an alien concept in IA and has been left unaddressed in the scholarship of climate change and impact assessment. The unique nature of climate change, its history, and present and future dynamics, however, compel the integration of differentiation into IA taking cognizance of

[70] Marino shows that the previous flexibility of Indigenous people in responding to environmental shift is undercut by "relatively immobile infrastructure and development" requiring people to "stay in place in order to carry out their daily lives". See Elizabeth Marino, "The Long History of Environmental Migration: Assessing Vulnerability Construction and Obstacles to Successful Relocation in Shishmaref, Alaska" (2012) 22 Global Environmental Change 374.

[71] See Whyte, *supra* note 68 at 155.

the three core components of historical responsibility, capability, and circumstances. I address each of these briefly below.

As noted in chapter three, historical responsibility borrows from the reasoning that underpins another fundamental principle in international environmental governance, the polluter pays principle, which in essence mandates that polluters should take responsibility for pollution. This necessarily includes past pollution, or more specifically in the context of climate change, past emissions.[72] While it is debatable to what extent states' climate commitments through their NDCs reflect their historical responsibilities, it seems clear that such reflection is expected by law. Commitments under the Paris Agreement are expected to be implemented to reflect equity and the CBDR principle,[73] and successive NDCs are also required to align with the principle.[74] It is, in part, for this reason that a longer peaking period is allowed for developing countries,[75] and developed countries are expected to take the lead in undertaking economy-wide absolute emission reduction targets.[76]

The commitment to differentiation, however, appears not to play a role in the design and implementation of states' climate measures, particularly measures with transboundary impacts which is addressed more fulsomely below. Take for example, Europe's Carbon Border Adjustment Mechanism, which in theory is to address the problem of carbon leakage caused by "less stringent environmental and climate policies … in non-EU countries".[77] In the inception impact assessment of the mechanism, while 24 of 219 responses were received from third countries, there is no evidence that other countries (particularly developing countries) were deliberately engaged considering that the policy affects such countries directly.[78] More relevantly, there was no consideration of the implications of differentiated responsibilities (anchored on historical

[72] See Alexander Zahar, "The Polluter Pays Principle and its Ascendancy in Climate Change Law" (2020) 114 National Taipei University Law Review 129 – 180; Mizan Khan, "Polluter-Pays-Principle: The Cardinal Instrument for Addressing Climate Change" (2015) 4 Laws 638 – 653.
[73] Paris Agreement, art 2(2).
[74] *Ibid* at art 4(3).
[75] *Ibid* at art 4(1).
[76] *Ibid* at art 4(4).
[77] European Commission, "Carbon Border Adjustment Mechanism: Questions and Answers" (14 July 2021) online: <https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_3661>.
[78] European Commission, *Proposal for a Regulation of the European Parliament and of the Council Establishing a Carbon border Adjustment Mechanism*, (14 July 2021) COM(2021)564, 5.

responsibilities) in the impact assessment.[79] Instead, the preferred (CBAM) policy option emphasised the need for a system based on actual emissions on imported goods which ensures "a fair and equal treatment of all imports".[80] Understandably, the language of fair and equal treatment was adopted to ensure compliance with expectations under the World Trade Organization (WTO) rules. However, 'equal treatment' negates the very idea of differentiated treatment under the Paris Agreement. Differentiated responsibilities in the strategic assessment of transition policies or programmes do not disapply a policy like CBAM. It only means that countries will not be unfairly treated equally. Policies like CBAM should apply differently to a country like the United States considering its massive carbon footprint, as against underdeveloped and developing countries with historically low carbon footprints. This is important given the potential of the CBAM resulting in discrimination against producers from less developed countries and the reinforcement of trade barriers between the west and developing economies.[81]

Historically differentiated responsibilities also apply to corporations. In chapter five, I discussed the concept of corporate determined contributions (CDCs). CDCs, whether mandated by national laws or voluntary, are primarily focused on addressing current and future emissions. The Heede report, for example, attributes more than half of global industrial GHGs since 1988 to just 25 corporate and state producers, while 100 companies are deemed responsible for 52% of emissions since the industrial revolution.[82] Suncor and Husky are two companies with the highest GHG emissions intensity.[83] In 2020, Suncor began the assessment process to obtain approval for the Suncor Base Extension Project which will sustain the supply of bitumen to existing upgraders at its base plant.[84] The project construction is planned to commence in 2026 and its footprint will cover approximately 30,000 hectares.[85] The tailored impact assessment statement Guidelines for

[79] However, issues noted by some respondents included the "distributional impact in affected sectors and across countries, especially developing economies…". *Ibid.*
[80] *Ibid* at 9.
[81] See arguments on differentiation and CBAM in chapter three.
[82] Richard Heede, *Carbon Majors: Accounting for Carbon and Methane Emissions 1854 – 2010 – Methods and Results Report* (Snowmass, Colorado: Climate Mitigation Services, 2014) 2, 5.
[83] *Ibid* at 6.
[84] Impact Assessment Agency of Canada, "Suncor Base Mine Extension Project", online: <https://iaac-aeic.gc.ca/050/evaluations/proj/80521?culture=en-CA>.
[85] *Ibid.*

the project replicate the requirements of the strategic assessment on climate change (SACC),[86] invariably not factoring in Suncor's historically intensive GHG emissions.

Historical emissions matter as an issue of justice and effective climate change mitigation.[87] Suncor's past emissions should be a relevant factor in determining whether to allow the Suncor Base Extension Project. Arguably, this falls under a cumulative assessment of the emissions of entities. Entities that have emitted more over time, should reasonably have higher obligations in respect of current and future projects. In practice, however, this could be difficult given the complex relationship among corporations. For example, should Suncor's historical emissions have any impact on the assessment of a proposed project by any of its subsidiary companies or a company it has interest in? The answer is yes. The GHG protocol shows how this is possible. The protocol recognizes the equity share and control approaches as ways companies can account for their emissions.[88] Under the control approach, the company is completely responsible for operations over which it has financial and operational control, while its responsibility depends on its share of equity under the equity share approach.[89]

Differentiation based on capability is also an essential layer of the CBDR principle. Capability is generally measured by the financial and technological capacity to mitigate and adapt to climate change.[90] To a degree, this is already being considered in the CC&IA. In Canada, for example, proponents of projects which are recommended to undergo the (climate change) impact assessment phase are required to conduct a Best Available Technologies/Best Environmental Practices (BAT/BEP) determination process.[91] The process includes technical and economic feasibility assessment of mitigation technologies and practices. Some of the considerations for technical feasibility include whether a technology or practice can be reasonably integrated into existing

---

[86] Impact Assessment Agency of Canada, *Suncor Base Mine Extension Project: Tailored Impact Assessment Guidelines Pursuant to the Impact Assessment Act* (Ottawa: IAAC, 2021) 62 – 64.
[87] Lukas Meyer argues, in part, that historical emissions matter insofar the consequences impact currently living and future people. See Lukas Meyer, "Why Historical Emissions Should Count" (2013) 13:2 Chicago Journal of International Law 597 – 614.
[88] WRI/WBCSD, *The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard* (Geneva: WRI/WBCSD, 2004) 16 - 19.
[89] *Ibid.*
[90] Rowena Maguire, "The Role of Common but Differentiated Responsibility in the 2020 Climate Regime" (2013) 4 Carbon and Climate Law Review 260 at 262.
[91] Government of Canada, *Technical Guide Related to the Strategic Assessment of Climate Change: Guidance on Quantification of Net GHG Emissions, Impact on Carbon Sinks, Mitigation Measures, Net-Zero Plan and Upstream GHG Assessment* (Ottawa: Government of Canada, 2021) (Technical Guide), 22.

infrastructure, spacing availability, and proposed mode of operation, and whether there are specific regional conditions or limitations that impact the feasibility of a technology or practice.[92] The estimated costs, revenue, profits, and production forecasts of a technology or practice, and the associated economic risks vis-à-vis the overall economic impact of the project are also considered.[93]

The above are examples of capability-based differentiation as the technical and economic feasibility assessment could lead to different outcomes and decisions for different projects. However, as in the Canadian example, there are questions on whether the criteria for determining economic and technical feasibility are not too broad, making it easy for proponents to avoid taking necessary measures, not because they are 'impossible' but because they are 'difficult'. Measures that will have real impact in addressing climate change will necessarily be difficult. Capability-based differentiation viewed through a justice lens highlights the question of whether there are opportunities and resources for capability. Differentiation is justified to the extent that those opportunities and resources exist. This, in part, justifies why more can be required of a sector with proven and available mitigation practices and technologies as against sectors with unproven practices and technologies.[94] It also justifies why climate policies and decisions should not apply equally across society without consideration of how much communities are informed about climate change, and how much resources are available to communities to give effect to climate change related measures.

Different circumstances also inform differentiated treatment. There is no clear-cut understanding of what 'national circumstances' entails under the Paris Agreement. What is clear is that it was added to the already existing CBDR principle in 2015 and it is meant to be distinct from 'respective capabilities' which has been part of the CBDR principle since 1992. Rajamani construes 'national circumstances' as introducing a dynamic understanding of the CBDR principle, and since circumstances evolve, so should the interpretation of the principle.[95] While including indices covered by historical responsibilities and capabilities, Voigt and Ferreira identify other criteria like

[92] *Ibid* at 25.
[93] *Ibid* at 26.
[94] It, however, does not justify the failure or refusal of companies to invest in climate friendly innovations and practices despite having the capacity and resources to.
[95] Lavanya Rajamani, "Ambition and Differentiation in the 2015 Paris Agreement: Interpretative Possibilities and Underlying Politics" (2016) 65:2 Intl and Comparative Law Quarterly 493 at 508.

current and future emissions, population size and other demographic criteria, opportunity costs etc., as some of the wider array of criteria for appraising national circumstances.[96] Other relevant criteria include ecological features of various places, vulnerability to the adverse effects of climate change,[97] and socio-political dynamics. Circumstance-based differentiation is as relevant in domestic decision making as it is in inter-state climate governance. The closure of mines in communities made up of a younger population, non-fossil industries, and connected to major urban centers should be different from the closure of mines in communities with aged and diminishing populations, less diverse economies, and isolated from urban centers. Renewable energy requirements in locations with abundant relevant natural resources (e.g., sunlight, wind etc.) should be different from jurisdictions without those resources. Communities with extreme cold or heat should not be required to use electricity in the same way as communities without those challenges.

The point here is that differentiation is vital to JTIA. It is not just to ignore differences in history, capabilities, and circumstances in designing and deciding on transition related activities. Differences do not excuse failure to take far-reaching and ambitious actions. They only mean that while all actions must contribute to meaningfully addressing climate change, they should not be expected to be the same. Dynamic and difference-accommodating climate governance is one of the geniuses of the Paris Agreement and is equally relevant in domestic climate governance more so in highly diverse and complex societies. Although this might provide freeloaders increased opportunities to greenwash or cop-out, a carefully designed framework attentive to these possibilities could go a long way in ensuring just and cooperative decision making.

D. Ensure that Life Cycle, Cumulative, and Transboundary Impacts are Considered

The consideration of lifecycle, cumulative, and transboundary impacts is vital to the intergenerational and intragenerational equity dimensions of the JTIA. This entails the consideration of the implications of transition related activities on justice considerations (described in principle one at every stage) from the cradle to grave of an activity. Take for example, a solar project like the 10MW Awasis Solar Project in Saskatchewan. In determining that the project is not likely to cause significant adverse environmental effects, Natural Resources Canada

[96] Christina Voigt and Felipe Ferreira, "'Dynamic Differentiation': The Principles of CBDR-RC, Progression and Highest Possible Ambition in the Paris Agreement" (2016) 5:2 Transnational Environmental Law 283 at 294.
[97] This is one of the dominant contexts in which the term 'circumstance' was traditionally used in the climate regime. See for example UNFCCC, art 3(2).

considered the impacts of the project on the rights of Indigenous peoples, and its effects on the biophysical environment.[98] The impacts of the project, however, transcend the factors considered. As noted in the previous chapters, major solar projects are particularly resource intensive and when decommissioned, such projects have an immense effect on the environment and people. Considering the lifecycle just transition impact will entail the consideration of upstream sources of mineral resources used in the production of panels, how they were produced, and the impacts of the production on human rights. This is not the traditional focus of IA, as it emphasises future impacts rather than supply chain impacts. Paying attention to supply chain impacts is, however, important to safeguard the transition from reproducing injustices. A human right due diligence (HRDD) orientation is useful here.

Under HRDD laws, companies are generally obligated to identify and report on actual and potential adverse human rights and environmental impacts of their operations, the operations of their subsidiaries, and the supply chain operations of companies they have a business relationship with.[99] This requirement is, however, often required for the entire operations of companies after a prescribed period of time.[100] IA, more effectively, allows for the consideration and mitigation of these impacts at the level of projects, hence, giving effect to the objectives of HRDD laws in the context of the transition earlier and more proactively. The point is that there is already an increasing global acceptance of the need to consider companies' supply chain impacts through HRDD, and IA can leverage this development to ensure that projects are not just assessed based on future impacts of the project narrowly defined, but also the supply chain impacts of transition activities. End-use and end-of-life impacts are also important lifecycle considerations in JTIA. This necessarily means the consideration of scope 3 emissions, restoration of ecosystems when fossil fuel facilities are decommissioned, and responsible and human rights consistent end-of-life management of transition related activities, particularly the use of climate technologies.

---

[98] Impact Assessment Agency of Canada, *Notice of Determination for the Awasis Solar Project* (13 December 2021)

[99] See for example, French Duty of Vigilance Law (2017) (Unofficial English Translation) online: <https://respect.international/wp-content/uploads/2017/10/ngo-translation-french-corporate-duty-of-vigilance-law.pdf>, Art. L. 225-104-4. – I; German Supply Chain Due Diligence Act, 2021 (see summary Robert Grabosch, "The Supply Chain Due Diligence Act" (December 2021), online: <https://library.fes.de/pdf-files/iez/18755.pdf>); European Commission, Proposal for a Directive of the European Parliament and of the Council on Corporate Sustainability Due Diligence and Amending Directive (EU) 2019/1937, COM (2022) 71 Final, art 6(1).

[100] In the UK, for example, specified corporations are required to prepare a slavery and human trafficking statement for each financial year of the organization. See Modern Slavery Act, 2015 c 30, s 54(1).

In chapter four, the point was made that a cumulative mindset to just sustainability transition compels an understanding of the current state of socio-ecological disrepair and the possibility of transition activities worsening an already dire situation. Transition activities are not carried out in a vacuum. They occur within a context of serious biodiversity crisis, racial injustice, and social inequality. Arnold et al make the point that assessing cumulative social effects require conversations outside IA processes about social systems, socioeconomic conditions, inequities, and how they relate to developmental activities.[101] The strategic assessment of transition activities is one domain where such discourse can hold. While the consideration of cumulative environmental effects is well recognized and developed in IA, there are limitations in the understanding and practice of cumulative social effects assessment.[102] The Canadian IAA requires the consideration of cumulative effects likely to result from a designated project in combination with other physical activities that have been or will be carried out.[103] It is important to note that the IAA has referenced cumulative effects *simpliciter.* Effects, according to the Act, include changes to the environment, health, social, or economic conditions and the impacts of the changes.[104] The description of cumulative effects in the IAA is limited as it is linked solely to "physical activities" given that there are relevant effects not necessarily traceable to physical activities. It is, however, cognizant of the fact that impacts cannot be accurately assessed when considered only within the narrow context of individual activities.

The British Columbia Supreme Court in the Yahey decision held that government has the responsibility to consider the cumulative impacts of all developments on the meaningful exercise of Indigenous rights.[105] As shown in chapter four, the court did not distinguish between climate friendly and non-climate friendly projects. In fact, it listed hydroelectricity infrastructure as well as oil and gas as examples of projects and developments that have cumulatively adversely impacted on the Indigenous rights of the Blueberry River First Nations.[106]

In the Statnett SF case, where an Indigenous group had challenged the licence issued for the construction of the Roan and Storheia windfarms, the Norwegian Supreme Court concluded that

[101] Lauren M. Arnold et al, "Assessing the Cumulative Social Effects of Projects: Lessons from Canadian Hydroelectric Development" (2022) 69 Environmental Management 1035 at 1045.
[102] *Ibid* at 1035.
[103] IAA, s 22(1)(ii).
[104] IAA, s 2.
[105] *Yahey v. British Columbia* 2021 BCSC 1287 at para 3.
[106] *Ibid.*

the projects infringed on the cultural rights of the Sami people, in part, considering that the people's culture was already vulnerable.[107] Hence, the existing state of the Sami people was relevant in determining that the adverse impact of the projects were significant. Understandably, it might be difficult to measure how some specific transition activities contribute to social impacts like gendered impacts, increased sexual violence, mental health, community depopulation, and cultural regression.[108] Nevertheless, it is important to pay attention to the possibility of such impacts, and the understanding of baseline social conditions and the existence of strategic assessments setting pressure thresholds will be useful in assessing and addressing such cumulative impacts.

Attending to the transboundary impacts of transition activities is equally important. Climate change is inherently a transboundary phenomenon, so are the implications of response efforts. While all climate mitigation efforts or the absence thereof impact the global climate positively or negatively, other transboundary impacts manifest differently depending on the climate-related measure. For example, placing a moratorium on support for oversea exploration of fossil fuels has a more direct transboundary consequence than demand side mitigation measures like domestic emissions standards. Even in respect of demand-side measures, however, as seen in the EU's assessment of its methane emissions reduction Regulation and the impact of emissions outside the EU but linked to EU consumption,[109] there are possibilities of transboundary impacts. Given this inherent transboundary nature, the likely transboundary impacts of transition activities should be inquired into when transition activities are being assessed.

It is patently unjust to ignore the adverse impacts of activities simply because they do not fall within the artificial boundaries of a jurisdiction. The illegalization of transboundary environmental harm and the requirement for transboundary environmental impact assessment in customary international law, as argued in chapter four, clearly apply to the environmental dimension of just transition. For example, adaptation measures in one country (e.g., building flood barriers) which causes maladaptation in another country (e.g., flooding) is unlawful under customary international

[107] Statnett SF v Sør-Fosen Sijte et al, HR-2021-1975-S, (case no. 20-143891SIV-HRET), (case no. 20-143892SIV-HRET) and (case no. 20-143893SIV-HRET), paras 35, 141.
[108] Arnold et al, *supra* note 101 at 1046.
[109] European Commission, *Impact Assessment Report Accompanying the Proposal for a Regulation of the European Parliament and of the Council on Methane Emissions Reduction in the Energy Sector and Amending Regulation (EU) 2019/942*, SWD (2021) 75.

law (CIL).[110] While it is less clear if this applies to non-environmental impacts,[111] the rationale is the same. As far as they can assess and control, states should ensure that activities carried out within their jurisdiction do not have adverse transboundary non-environmental impacts. This promotes a non-insular approach to the design of transition activities.

E. Adopt a Right-based Approach to Social Dialogue and Ensure Participatory Parity

Social dialogue is the most consistent feature in just transition frameworks and scholarship.[112] The argument has been made that countries with reinforced social dialogue structures are able to make decisions by consensus and better cope with the socioeconomic impacts of crises.[113] Social dialogue, however, does not have a singular meaning. Based on the Arnstein citizen participation ladder, social dialogue could potentially entail informing, consultation, partnership, delegated power, and citizenship control or consent.[114] It is often unclear what form of participation is meant when social dialogue is used in just transition frameworks. For example, the ILO Guidance admonished governments to actively promote and engage in social dialogue at all stages of policy design, implementation, and evaluation to forge consensus on pathways towards environmental sustainability.[115] For the World Benchmarking Alliance (WBA), the key objective of social dialogue is the exchange of information to achieve a degree of consensus and meaningful negotiation.[116] It is, however, settled in just transition frameworks that social dialogue should be, among other things, based on fundamental rights (primarily, work-based rights).[117]

The level and degree to which communities and individuals should be involved in the design of transition activities is contested. The rule of thumb seems to be that people are most interested in

[110] As held in the Pulp Mills case, a state "… is obliged to use all means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another State". See *Case Concerning Pulp Mills on the River Uruguay (Argentina v Uruguay),* Judgment, ICJ Reports 2010, para 101.
[111] An argument has been made in chapter four that a relatively tenable argument can be made that transboundary impacts can be construed more broadly under CIL than under the Espoo Convention to include non-environmental.
[112] See ILO, *supra* note 11 at paras 17 - 18; UNFCCC, "Just Transition of the Workforce, and the Creation of Decent Work and Quality Jobs – Technical Paper", online: <https://unfccc.int/sites/default/files/resource/Just%20transition.pdf>, 50 – 52; Nick Robins et al, *Climate Change and the Just Transition: A Guide for Investor Action* (Grantham Research Institute on Climate Change and the Environment, 2018) 16; World Benchmarking Alliance, *Just Transition Methodology* (WBA, 2021) 16 – 20.
[113] UNFCCC, *ibid* at 50.
[114] Sherry Arnstein, "A Ladder of Citizen Participation" (1969) 35: 4 Journal of American Institute of Planners 216 at 217.
[115] ILO, *supra* note 11 at para 17(a).
[116] WBA, *supra* note 112 at 16
[117] See ILO, *supra* note 11; WBA, *Ibid*.

participating in decisions that affect them most directly. This, in part, means people are more likely to be interested in participating more in project-level activities as against strategic activities. In their study of sustainable energy transition decisions in Groningen, the Netherlands, Perlaviviute and Squintani find that respondents expressed a higher preference to be involved in decision making on projects and less in decision making on regional strategies and visions.[118] Studies like the one referenced appear to conclude that for strategic decision making, the public is satisfied with lower-level engagement like information gathering or dissemination. Care must, however, be taken not to have a default low-public engagement approach to strategic response measures. The level of participation required should be a function of the type of strategic initiative. For example, there is a difference between a strategic assessment that is meant to have direct implications for project assessment like Canada's SACC and the thermal coal strategic assessment, and more high-level assessments on Canada's improved NDC or post-2050 climate projections. Arguably, greater engagement is needed in strategic assessment with direct local impact.

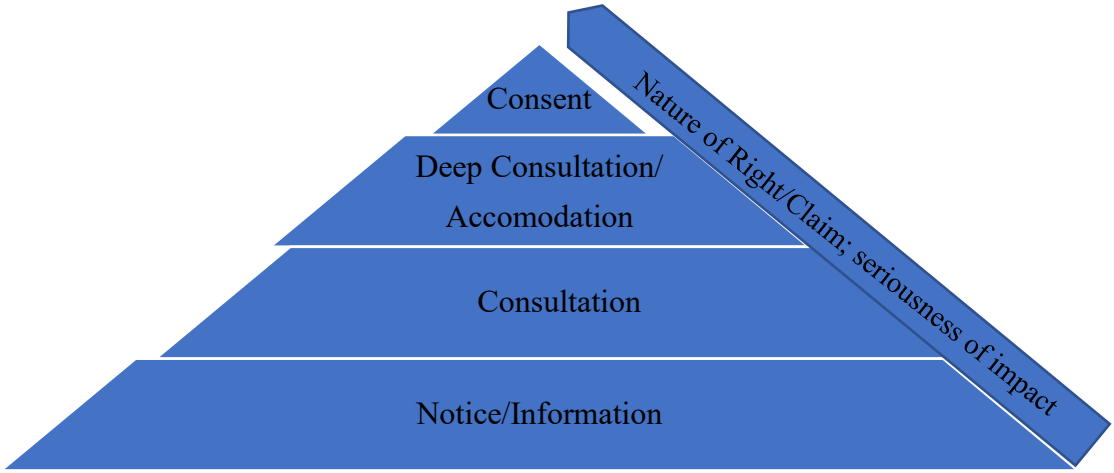
A right-based approach to social dialogue allows for the multipartite tool-box approach argued for in chapter two. The idea of the toolbox approach is that contrary to Arnstein's criticism of seemingly lower-tier participation like information and the preference for higher level participation like citizenship control, the various dimensions of participation are useful depending on the potential impact of transition activities and the extent to which rights are implicated. Put simply, the extent to which the rights of communities and individuals are impacted should determine the level at which they are engaged. For example, as in the Sami herders' case, the direct adverse impact of the development of a windfarm on cultural rights does not merely trigger a duty to give information, or merely consult. Also, transition activities that will lead to forced relocation or appropriation of property trigger more than merely giving notice, information, or consultation. In all these cases, consent is vital. This conclusion is relatively straightforward in the Indigenous rights context given the clarity of international instruments like the United Nations Declaration on the Rights of Indigenous People (UNDRIP).[119]

---

[118] Goda Perlaviciute & Lorenzo Squintani, "Public Participation in Climate Policy Making: Toward Reconciling Public Preferences and Legal Frameworks" (2020) 2 One Earth 341 at 343. In the context of climate adaptation, Few et al find that respondents had the perception that climate change requires "planning driven by the strategic, technical and financial capabilities of central government". See Roger Few et al, "Public Participation and Climate Change Adaptation: Avoiding the Illusion of Inclusion" (2007) 7 Climate Policy 46 at 52.

[119] UNDRIP, A/RES/61/295, 2007, arts 10, 32.

Figure 17: Pyramid of Indigenous Participation in Canada



While Indigenous rights are *sui generis,* lessons on how to use rights in determining the level and manner of social dialogue can be drawn from Canadian jurisprudence on the graduation of the duty to consult. A pictorial interpretation of this hierarchy is provided in *figure 17.* The decision of the Supreme Court of Canada in the *Haida* case is most instructive on the concept of the spectrum of duties.[120] The court considered the degree to which government must consult on the strength of an Indigenous claim, the extent of a right, and the degree of an infringement. At one end of the spectrum where the claim is weak or unproven, the right is limited, and infringement is minimal, is the duty to give notice, disclose information, and discuss issues relating to the notice.[121] At the other end of the spectrum where a claim is established, a right is of high significance, and there is a high risk of non-compensable damage, there is a duty to obtain consent.[122] In between these ends, are consultation and deep consultation and accommodation, which again, depend on claims, rights, and the seriousness of an infringement. As the court noted in the Haida decision, a layered approach to social dialogue does not suggest watertight compartments,[123] and it will not always be clear where specific instances fall. This approach is, however, useful in ensuring that rights are considered more so in the complex context of climate change and the range of interventions

[120] *Haida Nation v British Columbia (Minister of Forests)* 2004 SCC 73 (the Haida Decision), para 43 – 50. See also *Tsilhqot'in Nation v British Columbia* 2014 SCC 44 at para 91.
[121] *Ibid* at para 44.
[122] *Ibid* at para 24. See also *Delgamuukw v. British Columbia* [1997] 3 SCR 1010, para 168.
[123] The Haida Decision, *supra* note 120 at para 43.

needed. This is consistent with what has been described elsewhere as a flexible view of participation.[124]

Even if a rights-based approach to social dialogue is taken, the problem of power imbalance in social dialogue remains. This is a problem that just transition frameworks and literature fail to engage with. This might be due to the emphasis on workers that are mostly represented by unions which serve as counterweights to corporations and governments in bipartite or tripartite transition negotiations. Various stakeholders and right-holders, however, do not enjoy the protection that unions provide. A good example are informal workers. As shown in *figure 1* (chapter 1), there are multiple rights- and stakeholders implicated by the transition other than workers (particularly workers in the formal sector). Hence, participation in respect of the decision processes for transition activities should necessarily be multipartite. In such a multipartite process involving diverse parties and diverse interests, the reality of power imbalance and the possibility of involvement without inclusion is high. Fraser's theory of participatory parity provides some useful insight on how to address the issue of power in transition decision making. According to Fraser, at the minimum, two conditions must be present for participatory parity to exist: the distribution of resources to ensure participants' independence and voice (objective condition) and institutionalized patterns of cultural value that equally respect all participants and ensure equal opportunity for achieving social esteem (intersubjective condition).[125] Fraser notes that participatory parity, as a remedy for social injustice, requires recognition and respect for the common humanity of all (universalist recognition) as well as the recognition of distinctiveness (recognition of specificity).[126]

While there are already examples of minimal operationalization of Frasers's participatory parity theory (e.g., provision of financial support for participation in IA), a fulsome realization of the equal autonomy and status equality that participatory parity envisions remains illusory, and some have in fact argued that it is near impossible.[127] An in-depth consideration of the theory of participatory parity and its criticisms is outside the remit of this chapter. The theory is, however,

[124] Leah Sprain, "Paradoxes of Public Participation in Climate Change Governance" (2016) 25:1 The Good Society 62 at 66.
[125] Nancy Fraser, "Recognition Without Ethics" (2001) 18:2/3 Theory, Culture & Society 21 at 29.
[126] *Ibid* at 30.
[127] See Chris Armstrong & Simon Thompson, "Parity of Participation and the Politics of Status (2009) 8:1 European Journal of Political Theory 109 – 122.

helpful in framing a response to the power imbalance problem in the decision-making process for sustainability transition. Gwendolyn Blue et al have, for example, spelt out the practical implications of the theory for planners in the context of climate change.[128] Blue et al propose that planners can require appropriate procedures to ensure the representation of all relevant people and perspectives at the appropriate scale; ensure all perspectives, rather than just the dominant ones, are recognized and valued; and remediate economic disparities and correcting other structural inequities and inequalities.[129] For a start, it is important that proponents and regulators coordinating participatory engagements are cleareyed and conscious of the problem of power and commit to addressing political, cultural, social, and economic barriers to participatory parity.

It is worth repeating that the principles above are by no means exhaustive. They are minimum expectations to be considered and given effect to when transition activities are assessed. In formulating these principles, transition activities have not been differentiated. This is not for lack of awareness of the existence of the unique nature of different transition activities (for example, activities pertaining to transitioning out of the fossil economy and transitioning into the non-fossil economy) and different transition related industries. However, there is no end to the dichotomization of transition-related activities, and it will be impossible to capture all. These principles are construed as minimum common denominators which address similar fundamental issues across the board. Hence, diverse examples pertaining to different activities and industries are referenced above. Subsequent parts of this chapter focus on issues relating to the operationalization of the above principles. This includes a general visualization of how they fit into traditional IA process, the issue of tiering, and the knotty subject of trade-offs.

6.3 The JTIA Principles: Tiering and Application

In this section, I consider how the JTIA principles espoused above apply in practice. The exercise here is, in part, hypothetical as there are no known examples where these principles have been applied as a collective. There are, however, examples where impact assessment has been deployed in decision making in the transition context; some of which have been referenced in previous chapters. Given that coal is the quintessential example of a source of energy that must be transitioned from, the example here focuses on Canada's policy statement on thermal coal and how

[128] Gwendolyn Blue et al, "Justice as Parity of Participation: Enhancing Arnstein's Ladder Through Fraser's Justice Framework" (2019) 85:3 Journal of the American Planning Association 363 – 376.
[129] *Ibid* at 373.

it has played out at the project level in the assessment of the Vista coal mine expansion project. Apart from providing a factual template for envisioning how the JTIA principles apply, these examples help highlight the importance of tiering in IA to sustainability transition planning and decision making.

The subject of tiering was briefly introduced in chapter four. The relationship and linkage between different levels of planning and decision making is at the core of tiering. The idea, according to Arts et al, is that assessments should be attuned to preceding assessments.[130] Efficiency, improvement of plans and projects, early and high-level assessment, prevention of foreclosure of assessing essential issues, and engagement with the complexity of planning and decision making are considered as some of the advantages of tiering.[131] Arguments have, however, been made against a simplistic linear notion of tiering given the more complex relationship between various tiers of planning.[132] For example, there are instances that information from project assessments inform strategic planning. Arts et al also point out that the assumption that information endlessly cascades down the planning tiers is incorrect as information from impact assessment has limited shelf life.[133] However, strategic assessment is not only meant for the collection of high-level information which will subsequently serve as feeds for project-level assessment.[134] Strategic assessment, essentially, provides a high-level vision of sustainability, strategic development options, and guidelines for implementation.[135] Such vision, depending on the degree of specificity and detail, could be contained in policies, programmes, and plans. It can also be produced at multiple levels ranging from the global stage to local communities. Framed this way, the primary

[130] Jos Arts et al, "Planning in Tiers? Tiering as a Way of Linking SEA and EIA" in Barry Sadler et al, eds, *Handbook of Strategic Environmental Assessment* (Oxon, New York: Earthscan, 2011) 415 at 418.
[131] Miguel Coutinho et al, "Impact Assessment: Tiering Approaches for Sustainable Development Planning and Decision-making of a Large Infrastructure Project" (2019) 37:6 Impact Assessment and Project Appraisal 460 at 461 – 462.
[132] Mikael Hildén et al, "Views on planning and expectations of SEA: the case of transport planning" (2004) 24:5 Environmental Impact Assessment Review 519 at 528.
[133] Arts et al, *supra* note 130 at 419 - 422.
[134] Arts et al define tiering as "the deliberate, organized transfer of information and issues from one level of planning to another, which is being supported by EAs". *Ibid* at 417. See also Riki Therivel and Ainhoa González, ""Ripe for Decision": Tiering in Environmental Assessment" (2021) 87 Environmental Impact Assessment Review 1.
[135] Maria do Rosário Partidário, *Strategic Environmental Assessment Better Practice Guide – Methodological Guidance for Strategic Thinking in SEA* (Portuguese Environmental Agency, 2012) 11. The US Council on Environmental Quality (CEQ) defines tiering as "the coverage of general matters in broader environmental impact statements … with subsequent narrower statements or environmental analyses … incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared". See CEQ, *Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act*, (2020) online: <https://www.govinfo.gov/content/pkg/FR-2020-07-16/pdf/2020-15179.pdf>, 43376.

contribution of strategic assessment to project assessment is a vision that supports sustainability alignment.

In Canada, there has been an implicit attempt to tier the assessments of transition decisions. The SACC is relatively representative of such attempts.[136] In 2019, a strategic assessment of thermal coal mining in Canada further to the Impact Assessment Act was announced.[137] The scope of the strategic assessment was expected to include the environmental and health impacts of thermal coal mining and end use of thermal coal, market analysis of projected demand for thermal coal, and the impact of the use and export of thermal coal on Canada's international commitments and initiatives.[138] Its objective was to "guide decision-makers on how new thermal coal mine projects will be considered under the Impact Assessment Act".[139] In conducting the assessment, a committee of government officials led by Environment and Climate Change Canada were to consult with key stakeholders including Indigenous groups, provinces, and territories, give opportunity for the public to comment, and publish a final strategic assessment. The strategic assessment process was, however, cancelled in 2021, as a policy statement which was described as addressing the primary objective of the strategic assessment was published.[140] Despite the jettisoning of the strategic assessment process, the policy document is still expected to serve the strategic purpose of guiding decision makers "on how new thermal coal mine projects will be considered".[141] However, as I will argue later, the failure to follow through with the strategic assessment process is a major *faux pas* reducing the just transition utility of the policy statement.

[136] The characterization of the SACC as 'strategic' is questionable as it is more of a regulatory guideline than an actual strategic assessment articulating vision and objectives for addressing climate change and providing alternate pathways for arriving at set goals. The SACC is consistent with s 95(2) of the IAA which allows the Minister to deem assessments that provide guidance on the consideration of Canada's climate change commitment in IA as a strategic assessment.

[137] The IAA construes strategic assessment narrowly as an assessment of policy, plan, or program relevant to conducting impact assessment or the assessment of any issue relevant to impact assessment. See IAA, s 95(1).

[138] Government of Canada, "Draft Terms of Reference for Conducting a Strategic Assessment of Thermal Coal Mining", online: <https://www.canada.ca/en/environment-climate-change/corporate/transparency/consultations/draft-terms-reference-conducting-strategic-assessment-thermal-coal-mining.html>.

[139] *Ibid.*

[140] Government of Canada, "Strategic Assessment of Thermal Coal Mining", online: <https://iaac-aeic.gc.ca/050/evaluations/proj/81576>.

[141] *Ibid.*

Adopting the words of the IAA,[142] the policy statement concludes that the continued mining and use of coal for energy production does not align with Canada's domestic and international climate change commitment.[143] By reason of the statement, proposed new thermal coal projects or expansions not listed in the Physical Activities Regulations will be designated under the Minister's discretionary authority under section 9 of the IAA.[144] The advantages of phasing out coal as highlighted in the Policy include clean air, eliminating 12.8 million tonnes of carbon pollution from the atmosphere in 2030, avoidance of 260 premature deaths, 40,000 asthma episodes and 190,000 days of breathing difficulty for Canadians.[145] It concludes by committing to putting the protection of coal workers and coal communities at the center of the transition.[146] An important point to note is that the policy statement, at best, raises the bar for the assessment of thermal coal projects rather than outrightly disapproving such projects.[147]

The termination of the strategic assessment process makes it difficult to appraise in detail the degree of consistency of the policy statement on thermal coal mining and the JTIA principles. The assumption in replacing the strategic assessment process was that the policy statement which provides guidance for subsequent project assessments renders the strategic assessment redundant.[148] But a strategic assessment transcends its product. It is an opportunity to draw on and learn from diverse knowledge and lived experiences, pay attention to interests and rights, and

---

[142] The IAA requires consideration of the extent to which a project hinders or contributes to Canada's ability to meet its commitments in respect of climate change. See IAA, s 22(1)(i).

[143] Government of Canada, "Statement by the Government of Canada on Thermal Coal Mining", (11 June 2021) online: <https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/electricity-generation/statement-government-canada-thermal-coal-mining.html>.

[144] The Physical Activities Regulations require the assessment of a coal mine with production capacity of 5000 t/day or more and if the expansion of an existing coal mine would result in an increase of 50% or more and the total coal production capacity would be 5000 t/day or more after the expansion. See Physical Activities Regulations, SOR/2019-285, ss 18(a), 19(a).

[145] Government of Canada, *supra* note 143.

[146] *Ibid.*

[147] According to Canada's former Minister of Environment and Climate Change, Jonathan Wilkinson, while projects cannot be prevented from coming into the system, the bar in terms of approval will be very high. See Kelsey Rolfe, "Coalspur: The Canary in Canada's Thermal Coal Mines as Ottawa sets High Bar for New Projects", *Financial Post* (23 June 2021) online: <https://financialpost.com/commodities/energy/vista-mine-owner-preparing-to-restart-operations-while-working-through-ccaa-proceedings>. This is unlike the Scottish UOG policy which while not foreclosing the consideration of future applications, sent the signal to future applicants that the Scottish government does not anticipate the grant of new UOG licenses. See Scottish Government, *Scotland's Onshore Unconventional Oil and Gas Policy* (Scottish Government, 2019).

[148] "This policy statement addresses the primary objective of the Strategic Assessment of Thermal Coal Mining, which was to "guide decision-makers on how new thermal coal mine projects will be considered under the Impact Assessment Act," as per the draft Terms of Reference (published in July 2020). Therefore, in light of this latest announcement, the Strategic Assessment of Thermal Coal Mining is no longer needed and has been cancelled." Government of Canada, *supra* note 140.

collectively envision a future. Hildén et al make the case that many actors should be involved in strategic acceptance to ensure acceptance at the project impact assessment level.[149] The process is as important as the product. In any case, when placed against the JTIA principles, the policy statement contains elements tangentially touching on human and ecological wellbeing, particularly the atmospheric and health impacts of coal mining and use. Reference to the transition of coal workers and communities also touches on the principles of wellbeing and vulnerability. There is a paucity of details on what the policy means by putting the transition of coal workers and communities "front and center" and what this means for project assessment.

The Vista coal mine expansion project provided the first opportunity to apply the thermal coal policy statement. Vista coal mine is in Yellowhead County, Alberta, Canada. The location of the mine is about 10km east of Hinton (phase II is about 3.5km of Hinton), a small town of about 10,000 people, and about 40km from Jasper National Park.[150] Coalspur Mines (Operations) Ltd, owner of the Vista mine, is a subsidiary of Vista Energy Holdings LLC, a US-based company. While the first phase of the project produces about 5 million tonnes per annum, the second phase is expected to increase the capacity by 4.2 million tonnes per annum, potentially making the mine one of the largest in the history of Canada. Hinton is a resource-dependent town, which is shifting to tourism given its proximity to the Jasper National Park. The mine employs about 300 – 350 workers; one of the largest employers in Hinton, and local businesses rely on it for a considerable part of their income.[151] It is estimated that if the expansion is allowed, 370 additional fulltime jobs and 2000 spin-off fulltime and part-time jobs will be created in Hinton and other surrounding communities.[152] Coalspur also has impact and benefits agreements (IBAs) with eight First Nation and Métis groups, and mutual aid and service agreements with local first responders (fire departments and emergency medical services).[153] The mine has an estimated mine life of 30 years. Produced thermal coal from Vista is exported to international markets including Japan, South

[149] Hildén et al, *supra* note 132 at 528.
[150] The Jasper National Park is the largest national park in the Canadian Rockies and part of UNESCO's Canadian Rocky Mountain Parks World Heritage Site. See Parks Canada, "Jasper National Park", online: <https://www.pc.gc.ca/en/pn-np/ab/jasper>.
[151] Drew Anderson, "This Alberta Coal Mine is Back from the Brink of Financial Ruin – but it comes at a cost", *The Narwhal* (12 February 2022) online: <https://thenarwhal.ca/alberta-vista-coal-mine-turnaround/>.
[152] *In the Matter of the Compromise or Arrangement of Coalspur Mines (Operations) Ltd., Affidavit of Michael Beyer sworn 19 April 2021,* Court File Number: 2101/05019, Court of Queen's Bench of Alberta (Beyer's affidavit), paras 38 – 39.
[153] *Ibid* at para 40(a), (b).

Korea, and Taiwan to be burned for electricity.[154] Like in similar transition instances, concerns have been expressed about the lack of plans to aid the transition of Hinton, surrounding communities, and their working population.[155]

The assessment process of the Vista expansion project has been chequered. The project proposal was initially submitted to the Alberta Energy Regulator (AER), which concluded that the project qualifies as a mandatory activity for assessment under Alberta's Environmental Assessment (Mandatory and Exempted Activities) Regulation in 2018.[156] In 2019, environmental non-governmental organizations (ENGOs) and others petitioned the Canadian Minister of Environment and Climate Change to designate the expansion project for assessment. The Minister, on the advice of the Impact Assessment Agency of Canada, decided not to designate the project more so given that the project was already undergoing a provincial assessment.[157] A request to reconsider was made by the ENGOs, Indigenous communities (Louis Bull Tribe and Stoney Nakoda Nations), and others in 2020 considering Coalspur's new application to the AER for the Vista Coal Underground Test Mine. Although the proponent, with agreement by the Agency, argued that the Test Mine and Phase II Expansion Project were not the same and, therefore, should not be designated by the Minister, the Minister proceeded to designate.[158] The designation order was challenged severally by Coalspur and the Ermineskin Cree Nation (Ermineskin) a member of the Four Nations of Maskwacis, Alberta's largest Indigenous nation. Ermineskin is one of the Indigenous groups with whom Coalspur had entered an IBA. Ernineskin argued that the Crown breached its duty to consult as the designation will adversely impact "Aboriginal and Treaty rights including economic opportunities created by its contractual relationship with Coalspur pursuant to the 2019 IBA".[159] The court concluded that the IBA contains valuable economic rights and benefits

---

[154] *Ibid* at para 44.

[155] Anderson notes that respondents in Hinton expressed concerns for the impact of the closure of the Mine on the town's economy, value of their homes, security, and the need for jobs. See Anderson, *supra* note 138. Michael Beyer, the CEO of Coalspur's parent company, Vista Energy in his affidavit in support of an application for the arrangement/compromise of Coalspur's debts, in arguing for the benefits of the Vista mine to Hinton and surrounding communities, highlight the stoppage of operations in mines in the area between 2014 and 2019, resulting in 19% drop in employment opportunities in the area. See Beyer's Affidavit, *supra* note 152 at para 37.

[156] See Alberta Energy Regulator, "Environmental Impact Assessment Report Required for Vista Project – Phase II", online: <https://open.alberta.ca/dataset/ab136e20-299b-4bc0-ac76-0c6f946b0eb4/resource/ba2a0d31-0ac3-4c1b-8d2f-9589da0dcaea/download/eia-report-required-coalspur-vista-project-phase-ii.pdf>.

[157] Impact Assessment Agency of Canada, "Minister's Response", (20 December 2019) online: <https://iaac-aeic.gc.ca/050/evaluations/document/133222>.

[158] *Coalspur Mines (Operations) Ltd. v The Minister of Environment and Climate Change and ors.,* Memorandum of Fact and Law of the Applicant, Court File No. T-1008-20, (4 February 2021).

[159] *Ermineskin Cree Nation v The Minister of Environment and Climate Change and ors.,* 2021 FC 758, para 6.

closely related to and derived from their Aboriginal rights, and that the Minister indeed breached the rights of the Ermineskin Cree Nation by failing to consult it and only consulting the Indigenous groups who requested the Designation Order.[160]

In 2021, the mine expansion project and the underground test mine project were re-designated for separate assessments.[161] Among other considerations, the Minister stated that he took into account the policy statement on future thermal coal mining projects and project expansions, and international and domestic climate change and coal-transition commitments.[162] Reasons for the designation include the quantum of potential production (although lower than the threshold stated in the Physical Activities Regulations), direct and cumulative impacts on fish and fish habitat and other valued ecosystem components, impacts on Indigenous peoples' health, water quality, social wellbeing, cultural heritage, traditional practices and other land use rights.[163] Importantly, in advising the Minister, the IAAC drew from the recovery strategies for the rainbow trout and bull trout which were not available for previous designations.[164] Hence, allowing the agency to conclude that both proposed projects may cause adverse effects to fish and fish habitats.[165] Referencing the SACC and the policy statement on thermal coal, the IAAC noted that "the activities associated with the physical activities will result in increases to GHG emissions both in Canada and internationally", hence, hindering the attainments of commitments in respect of global decarbonization.[166]

I have provided extensive detail on the Vista expansion project to show the complexity involved in the assessment of projects in the context of climate-related transition. It also manifests how higher-level assessments and policy statements inform the decision whether to assess transition-relevant projects, particularly when such activities are not required to be assessed in extant legislation. This is an example of tiering in the climate change context, albeit, not in the fullest

[160] *Ibid* at paras 10 – 11, 103 – 129.
[161] Government of Canada, "Order Designating Physical Activities", (29 September 2021) online: <https://iaac-aeic.gc.ca/050/evaluations/document/141457>.
[162] Government of Canada, "Minister's Response", (29 September 2021) online: <https://iaac-aeic.gc.ca/050/evaluations/document/141492>.
[163] *Ibid.*
[164] Impact Assessment Agency of Canada (IAAC), *Analysis Report: Whether to Designate the Vista Coal Underground Mine and Vista Mine Phase II Expansion Physical Activities in Alberta Pursuant to the Impact Assessment Act (Ottawa: IAAC, 2021)* 8.
[165] *Ibid.*
[166] *Ibid* at 16, 18.

sense of what tiering entails. For example, the IAAC, without the need for independent and project-specific justifications, simply drew from the policy statement and SACC in concluding that the expansion project may lead to unacceptable adverse environmental impacts and will inhibit the attainment of Canada's climate commitments. However, the policy statement falls short of the comprehensiveness required of a tiering-useful strategic instrument. Whereas the policy statement contained just enough to assist in screening a project for designation, it lacks details which could guide subsequent phases of the assessment process like scoping, consideration of alternatives, identification of mitigation options, and follow-up.[167]

To transition in a manner that is just and consistent with the climate emergency, what then should the Canadian thermal coal strategic assessment have entailed? First, it would have articulated a vision for ecological and human wellbeing as it pertains to coal mining, the ecosystem they impact, and the communities that are most impacted by them. Reference to the contribution of coal to climate change, toxic pollution, and the avoidance of premature deaths and breathing ailments in the policy statement is a miniature rendering of this focus. A deeper engagement would have been helpful in appreciating the extent to which coal mining has contributed to ecosystem loss in Canada, future development scenarios and effects on biodiversity, and projected production from existing and planned mines and the overall scopes 1, 2, and 3 emissions (including potential transboundary impacts). The possibility, costs, and limitations of the restoration of existing and prospective thermal coal mine sites in Canada should also have been considered in the strategic assessment. As shown in the analysis of the JTIA principles, human wellbeing transcends physical health, which was briefly referred to in the policy statement. Table 14 highlights how various SDGs attend to key dimensions of wellbeing, and a strategic assessment on coal could provide a panoramic view of how the continuation of coal mining impacts these wellbeing indicators. Unlike the exclusive focus of the policy statement on the adverse impacts of mining, a just transition informed strategic assessment will engage with the adverse impacts of ending mining in communities previously dependent on it. Again, the SDGs in table 14 are useful indicators in

[167] The unhelpful terseness of Canada's one-page policy statement without any supporting strategic assessment becomes more glaring when compared to Scotland's 304-page strategic assessment on its policy on unconventional oil and gas – one of the several strategic-level assessments it commissioned as shown in chapter five. In the strategic assessment, Scotland, in detail, laid out baseline conditions, and showed the impacts of UOG development on air, water, soil, climatic factors, biodiversity, cultural and archaeological heritage, landscapes and geodiversity, material assets, population and human health, mitigation, and monitoring. See Land Use Consultants (LUC), *Environmental Report for SEA of Preferred Position on Unconventional Oil and Gas in Scotland* (LUC, 2018).

addressing these transition-related impacts in a strategic assessment. It could provide a picture of possible lost economic opportunities, sustainability-aligned replacements, possibilities for communal renewal, and support structures for lifestrain impacts.

A strategic assessment of thermal coal should also pay attention to vulnerability and differentiation. It is here that macro-level factors responsible for micro-level vulnerability in coal communities can be addressed.[168] Take for example, the issue of stranded assets and the unique vulnerability of unprotected local creditors in bankruptcy proceedings. Vista coal mine, for example, had been in troubled financial waters prior to embarking on the expansion project.[169] In 2021, the company filed for creditor protection under the Companies' Creditors Arrangement Act.[170] Coalspur owes around 60 small local businesses about $5 million. These creditors are, however, unsecured creditors, way down the priority rankings of the Bankruptcy and Insolvency Act (BIA).[171] In the event of bankruptcy, therefore, there is a high likelihood that these small businesses might not be repaid. The conventional legal structure for bankruptcy and insolvency is in favour of major secured lenders and investors in stranded assets. With its decision in the Orphan Wells case concluding that priority rankings in the BIA does not displace the need to comply with local rules on reclamation,[172] the Supreme Court of Canada shows that existing legal structures for bankruptcy and insolvency which would apply to the management of stranded assets are not immutable and can be interpreted to accommodate vulnerability. A strategic assessment for thermal coal which addresses vulnerability at the macro-level could help identify laws and policies which support dominant forces and put already vulnerable communities and individuals at the disadvantage. Such analysis is critical in ensuring that the transition does not foster the inequality already rife in society.

---

[168] In what they describe as transitions SEA, Nwanekezie et al argue for a strategic assessment that focuses on the institutional and policy contexts surrounding the development of strategic initiatives. According to them, "it focuses on institutions or structures that will have to be reshuffled, reformed, destabilized or created to enable transition and the distribution of opportunities and risks for different actors". Kelechi Nwanekezie et al, "Transitions-based Strategic Environmental Assessment" (2021) 91 Environmental Impact Assessment Review 1 at 4.

[169] Sharon Riley, "The Inside Story of an Alberta Coal Mine Devastated by a Financial Crisis", *The Narwhal* (24 June 2021) online: <https://thenarwhal.ca/alberta-coal-mine-vista-coalspur-finances/>.

[170] Companies' Creditors Arrangement Act, RSC 1985, c C-36.

[171] Bankruptcy and Insolvency Act, RSC 1985, c. B-3, s 136.

[172] The SCC in Orphan Wells held that "bankruptcy is not a licence to ignore rules, and insolvency professionals are bound by and must comply with valid provincial laws during bankruptcy. They must, for example, comply with non-monetary obligations that are binding on the bankrupt estate, that cannot be reduced to provable claims, and the effects of which do not conflict with the *BIA*, not- withstanding the consequences this may have for the bankrupt's secured creditors". See *Orphan Well Association v Grant Thornton* [2019] 1 SCR 150, para 160.

Communities are not equally vulnerable to the impacts of transitioning away from thermal coal. A strategic assessment can survey and highlight the unique features of major coal mining regions in Canada, the different prospects for alternative sustainability-aligned economic activities, and ownership interests in the mines. Given that the policy statement leaves some room for the approval of some thermal coal projects, the differentiated histories, capacities, and circumstances of mines and host communities can be useful in subsequent project-specific decisions. Ownership, for example, is a legitimate differentiating factor. Subject to other factors (mitigation, ecosystem fragility, economic alternatives etc.), the ownership interests of Indigenous communities in existing or proposed coal mines as against ownership by a multinational coal company with historically high carbon footprint, is a valid consideration in the assessment of projects. Strategic assessment is also an ideal place to identify and consider the cumulative, transboundary, and life cycle impacts of alternate scenarios in respect of the Canadian thermal coal industry. Importantly, the regional dimension of strategic assessment is useful in capturing regional impacts of coal mining and the transition from coal and mapping out sustainability aligned regional development pathway which transcends local, provincial, and even national boundaries. The thermal coal strategic assessment would also benefit immensely from robust, extensive, and transnational public participation. A combination of online consultation, invitation of comments from ENGOs, experts, and industry, and, importantly, direct engagement with carefully constituted focus groups in mining communities is vital to arriving at an inclusive and robust policy on thermal coal.

A strategic assessment of Canada's thermal coal policy as described above will not only assist with proceeding at the project-assessment level efficiently, but it would potentially facilitate a less acrimonious assessment process as experienced in the Vista coal mine example. For example, strategic assessment is considered useful in determining whether a project should be designated for assessment in Canada.[173] Although the Vista expansion assessment is still at the early phase, the current trajectory does not indicate that just transition impacts would be meaningfully considered and addressed. In the Ernineskin case, the Vista expansion project was screened for assessment without the engagement of a community whose Indigenous right is directly impacted by mining activities, more so in the light of the existing IBA between the proponent and the

[173] In making its recommendation to the Minister on designation, the Agency may consider "relevant regional or strategic assessments". See IAAC, "Operational Guide: designating a Project under the Impact Assessment Act", (19 May 2022) online: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/designating-project-impact-assessment-act.html>.

community. While in many cases, the screening determination of whether or not to consider a project for assessment will be informed by the Physical Activities Regulations in Canada, there will be many more instances requiring a determination to designate transition-related projects like the Vista expansion example for assessment. The basic message of the court decision in Ermineskin is that right-holders are relevant even at the earliest phase of a transition-related project assessment. Arguably, the IAA recognizes this, albeit non-mandatorily.[174]

The JTIA principles apply in each phase of the project assessment process from the planning stage to the follow-up phase. This applies to fossil-based and non-fossil-based transition activities. However, some of the principles might be more relevant than others depending on the phase of assessment and nature of activity. In the subsequent paragraphs, I highlight how some of the principles apply to each phase of the assessment process beginning with the wellbeing principle. Ecological and human wellbeing, as described above, should be at the forefront of proponents' conceptualization and design of transition activities. This necessarily requires identifying and involving right-holders and stakeholders, paying attention to power dynamics, and ensuring a consultative structure that amplifies the voices of the most vulnerable at the planning phase. It also means understanding existing ecological and human vulnerabilities and ensuring that projects not only do not foster these vulnerabilities but, when possible, assist in decreasing vulnerabilities and facilitating resilience. The principle of differentiation also plays a role in the planning phase of project design. It begins with situating the climate impacts of a project within the broader context of the proponent's overall historical, current, and future emissions.

It is appreciated that impact assessment, generally, does not concern itself with impacts not connected with specific projects. However, this is one of the instances where, as argued in chapter five, conventional IA is misaligned from climate realities. The climate impacts of today are necessarily products of the activities of the past, and future impacts will be birthed by past and present activities. Since historical activities cannot be divorced from climate impacts, therefore, IA must accommodate historical activities. Already, the consideration of cumulative impacts in IA necessarily recognizes existing stressors. The historical responsibility dimension of the principle

[174] The IAA provides that the Minister, in designating a project, may consider the adverse impacts of a physical activity on the rights of Indigenous peoples including Indigenous women. IAA, s 9(2). The Operation Guide also notes that the Agency may seek information and further input from, among others, "potentially affected Indigenous groups (depending on the project-specific circumstances)". See IAAC, *Ibid.*

of differentiation simply takes the rationale of cumulative assessment further by considering the 'cumulative' climate impacts of proponents. The bottom line is that proponents should consider and design projects with the consciousness of their historical climate impacts, including their historical emissions and their contribution to socio-ecological vulnerabilities to climate impacts. The consideration of historical responsibility in the design of projects will benefit immensely from a holistic corporate climate strategic assessment which audits not just current and future emissions, but also captures the historical contributions of the proponent to climate change.

Like other projects, the screening and scoping phases of the assessment of transition activities are essential to the quality of the eventual outcomes. The question of whether to assess transition-related activity should not simply be a question of what is pre-designated in a Regulation. The important question is whether such activity, *prima facie*, adversely impacts human and ecological wellbeing. In the Vista expansion example, the determination of the Minister was in the affirmative. While it is hard to criticize the conclusion of the Minister, as shown above, the designation process was flawed. As seen in the extant example, 'wellbeing' is not an entirely cookie-cutter construct and what might be considered to facilitate wellbeing by some, might be deemed as anti-wellbeing by others. This is a common conflict scenario in respect of transition activities and will be attended to below. However, for now, the rule of thumb is that potentially non-compensable and unreversible impacts should be prioritised over compensable and reversible impacts. In the Vista expansion example, on one hand were the economic interests of the Ernineskin First Nation protected by the IBA which were not conclusively abrogated by the mere designation of the project, while on the other hand were potentially irreversible impacts on marine life and habitat, flora and fauna, and the health and social wellbeing of various Indigenous communities if the project was allowed to proceed without assessment. It was reasonable to prioritise the latter set of potentially irreversible impacts over the potentially compensable impacts Ermineskin complained about. Vulnerability is another vital consideration for screening. Beyond the direct impact of a project on wellbeing, a project with the prospect of increasing vulnerability and diminishing resilience should be considered for assessment. For example, the endangered status of the rainbow trout (Athabasca population) and the threatened status of the bull trout and their habitats were considered in the Vista determination.

As described in chapter four, scoping is a substantive, spatial and temporal concept by which significant issues for assessment are identified, area of coverage is delineated, and timeframe is

defined. The JTIA principles are engaged more fulsomely at this phase. Snell and Cowell speak of a general disinclination to consult the wider public at the scoping stage due to efficiency concerns.[175] Failure to engage at this stage, however, often inhibits the identification and consideration of novel and complex issues and the accommodation of the subjective judgment that risk assessment, value appraisal, and boundary delimitation entails.[176] In Canada, the identification of issues considered to be relevant for assessment is required to be informed by inputs from the public, relevant jurisdictions, and affected Indigenous groups.[177] It is expected that as the Vista expansion assessment proceeds, it will benefit from the meaningful engagement of the public at the scoping phase. However, opportunities to participate do not automatically translate into the identification of the most critical issues to the wellbeing of people and nature, particularly the most vulnerable.[178] Under the JTIA principles, a rights-based approach to social dialogue and participatory parity is required. For the Vista expansion assessment, this means that individuals and groups whose rights will be potentially impacted by the approval or disapproval of the project are engaged on issues they consider most important. While not all issues raised will make it into the final assessment process, the bias should be to scope in rather than scoping out.

To ensure parity as much as possible, it is important to understand the existing power structure and put measures in place to flatten the engagement field and amplify the voice and interests of the most vulnerable. It is important to emphasize that parity does not necessarily mean evenness of engagement. As noted above, the nature of right and the magnitude of harm are relevant in informing the prioritization of voices. In the Vista example, the prominence of local businesses and their economic interests while relevant enough to ensure their inclusion do not confer priority. Comparatively, Indigenous communities whose proven rights are more directly impacted, at times irreversibly, deserve priority. The determination of priority even goes further, as there could be particularly vulnerable and disadvantaged communities (e.g., Indigenous women) within Indigenous groups which, by definition, are at risk of greater harm and are therefore deserving of priority.

---

[175] Tim Snell and Richard Cowell, "Scoping in Environmental Impact Assessment: Balancing Precaution and Efficiency" (2006) 26 Environmental Impact Assessment Review 359 at 369, 374.
[176] *Ibid* at 362.
[177] IAA, s 11, 12, 14(1).
[178] As noted by Snell and Cowell, "social scoping cannot easily transcend the play of power in determining which knowledges count, who can be involved, at what stage and how". See Snell and Cowell, *supra* note 175 at 362.

The Vista expansion assessment will likely go through the various IA stages prescribed by the IAA. This includes the preparation and provision of impact studies on scoped issues within three years,[179] and the impact assessment review and finalization of the IA report by the agency within 300 days or panel within 600 days of publication of a notice of determination of satisfaction with proponents' impact studies.[180] While an agency assessment is fundamentally different from a panel review as the latter is a more extensive process,[181] both processes must mandatorily provide opportunities to the public to participate meaningfully.[182] Although used frequently in the IAA, the Act contains no definition of meaningful participation. The IAA public participation framework, however, describes meaningful participation as entailing the provision of opportunities, information, and capacity to "members of the public who wish to participate", allowing public perspectives to inform and influence decision-making, and ensuring that participants see that their input was considered.[183]

The provision of information and capacity to aid meaningful participation and reflect public inputs in final decisions are certainly essential components of meaningful participation. They, however, by themselves do not address the critical issues of power imbalance, vulnerability, and differentiation. The emphasis of the Gender Based Analysis Plus (GBA+), which is a factor required for consideration by the IAA during assessment,[184] on disaggregated data and in-depth analysis of differentiating characteristics is highly useful in addressing issues like vulnerability and differentiation and actuating the relevant JTIA principles.[185] However, like any analytical tool, the GBA+ is only as good as the indicators for which disaggregated data are collected. For example, if quality education (SDG 4) or quality infrastructure (SDG 9) is not an indicator for GBA+, no disaggregated data can be collected on them. Also, GBA+ by itself does not address the

[179] IAA, s 19(1).
[180] *Ibid* at s 19(4), 28(2), 37(2).
[181] *Ibid* at s 54.
[182] *Ibid* at s 27, 51(1)(c).
[183] IAAC, "Framework: Public Participation Under the Impact Assessment Act", online: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/framework-public-participation.html>.
[184] IAA, s 22(1)(s).
[185] IAAC, "Guidance: Gender-based Analysis Plus in Impact Assessment", online: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/gender-based-analysis.html>.

issue of power and social hegemony.[186] For example, disaggregated data on Indigenous women as a distinct group do not necessarily address the power imbalance within that group. Only constant vigilance and sensitivity to the manifestation of inequality and imbalance throughout an assessment process can usefully ensure that silenced voices are amplified and empowered.

Findings from an impact assessment process are not synonymous with decisions made in respect of those decisions. In Canada, decisions are either made by the Minister or the Governor-in-Council.[187] Depending on the extent to which significant adverse effects are in the public interest,[188] the Minister or Council can allow a project with conditions or disallow it.[189] Factors for determining public interest under the Act are: the extent to which the project contributes to sustainability, significance of direct and incidental effects, mitigation measures, impact on Indigenous group, and effect on Canada's ability to meet environmental obligation and climate change commitments.[190] There is no obligation that the Minister or Council accept or give effect to the findings of the agency or a review panel. While the conditions for determining public interest are listed, they are undefined, value-laden, and are subject to the discretion of the decision makers.[191] Further, there is no requirement for public participation in the decision-making phase.[192] It is also questionable how the 'public' is defined in the unique context of an intrinsically global phenomenon like climate change. Is the 'public' in the Vista expansion project, a project expected to produce immense emissions with climate impacts beyond Canada, limited to Canadians? There is, arguably, nothing in the IAA which constrains public participation to Canadians or individuals

[186] As argued by Hoogeveen et al, GBA+ analysis which focuses on the collection of sex-disaggregated data "runs the risk of reifying status quo gender relations and ignoring relational aspects of gender, power and the ideology and how patterns of subordination are reproduced". See Dawn Hoogeveen et al, "Sex, Mines, and Pipelines: Examining 'Gender-based Analysis Plus' in Canadian Impact Assessment Resource Extraction Policy" (2021) 8 The Extractive Industries and Society 1 at 3.
[187] IAA, s 60(1)(a), 62.
[188] *Ibid.*
[189] *Ibid* at s 64(1) – (4), 65(1) – (2).
[190] *Ibid* at s 63 (a) – (e).
[191] Jason Unger, "Transparency and Accountability in Decision Making: Does the Impact Assessment Act Support Credible Decision Making?" in Meinhard Doelle and A. John Sinclair eds., *The Next Generation of Impact Assessment: A Critical Review of the Canadian Impact Assessment Act* (Toronto: Irwin Law, 2021) 412 at 428 – 429.
[192] The IAA public participation Guidance suggests that public contributions during the impact assessment phase represent participation during the decision-making phase. It, however, further highlights the public's role of providing comments on potential amendments to decision statements when such statements are published. See IAAC, "Guidance: Public Participation under the Impact Assessment Act", online: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/guidance-public-particaption-impact.html#a5-4>.

physically resident in Canada. Hence, there is an argument to be made for the possibility of trans-boundary participation under the IAA.

Rights-focused and parity-sensitive social dialogue is as vital at the decision-making phase as it is at every stage of the assessment process. Particularly, at this phase, highly subjective and value-laden decisions are made, and trade-offs are decided. As it is in Canada, the assessment phase primarily identifies impacts, and the public primarily provides "input and comments" in that information gathering exercise.[193] It is at the decision-making phase that values are assigned to findings, essentials are traded-off, decisions are made, and conditions for projects are determined. The roles of right-holders and stakeholders at this phase are different from their roles during the assessment phase. Again, the degree of public input at the decision-making phase should be informed by hierarchy of interests and rights in *figure 15*. There are indeed instances, as established by the Supreme Court, where consent is vital.[194] In those instances, it is arguable that the power to make decisions on whether a project will proceed lies with the right-holders.[195]

The preliminary findings at the screening phase of the Vista assessment have indicated what is likely to be more extensively laid out in the final assessment report. For the project to proceed, a determination that the project is in public interest must be made. The JTIA principles are useful in providing greater clarity to and transition-aligned interpretation for the otherwise vague factors listed in section 63 of the IAA. For example, contribution to sustainability can be more clearly interpreted as whether a project supports ecological and human wellbeing as described above. This is particularly important in the transition context. Considering that the description of human wellbeing in this work is rights-based, decision-makers are not allowed to simply give weight to some adverse impacts while neglecting others. If for example, the Vista expansion project is rejected, there is need for mitigatory measures for the impacts of such decision on the rights of Indigenous persons and others impacted. This is again alien to conventional IA which only requires mitigation if a project is allowed to proceed. While an easy conclusion can be reached that the disapproval of the project is positive for the climate and the environment, when Indigenous groups like the Ermineskin have rights which they consider to be adversely impacted, measures to

[193] IAAC, *Ibid.*
[194] See Haida Decision, *supra* note 120.
[195] The argument is not that Indigenous groups have the power to veto projects under Canadian law. Even in instances where consent is required, the Crown can proceed with projects insofar the infringements are considered adequately justified by the court. See for example the decision of the SCC in *R v Sparrow* [1990] 1 SCR 1075.

ameliorate impacts should be put in place even if those rights cannot be fully respected. The principles of vulnerability and differentiation are also vital to reaching a just decision. Leaving no one behind is the simplified rendering of the objectives of the just transition movement, and IA does this by attending to the negative consequences of evidently positive decisions.

An attempt has been made in this section to sketch what the JTIA principles could look like in practice using the Vista expansion example and within the Canadian IA regime. Importantly, it shows that the principles apply at every stage of the assessment process, including the follow-up phase where it is necessary to continually engage the public in ensuring that assumptions and conclusions at the assessment and decision-making phase are correct and the aftermath of decisions are indeed supportive of ecological and human wellbeing. However, the real possibilities and limitations of the JTIA principles will remain unknown until applied in practice. In any case, if experience from the application of Gibson's sustainability assessment criteria is anything to go by, it seems certain that a major issue that will confront the application of the JTIA principles is how trade-offs are managed. I address this briefly below.

6.4 Just Transition Impact Assessment and Trade-off

In an ideal transitioning world, ecological and human wellbeing would be considered sacrosanct and non-negotiable; policies and projects would prioritize the interest of vulnerable individuals, communities, and ecosystems; rights would be considered as fundamental, inherent, and inalienable; every voice would matter equally; and impacts regardless of where and when would be relevant. This is, however, unrealistic in a complex world of different ideologies, conflicting priorities, and contrasting circumstances. With the urgency that climate change demands, there is a justifiable tendency to impatiently dismiss these complex realities. But as experienced in the years of choreographed motions with minimal movements in climate governance largely due to these complexities, it is more advantageous to recognize and accept complexity as the natural habitat of transition decision-making.[196] In practice, this means trade-off is an inevitable feature of complex transition decision-making. As explained by Peter and Swilling, if all sectors of a society were to operate at optimal levels in relation to their sectoral objectives ignoring the need

[196] See generally Jan Rotmans and Derk Loorbach, "Complexity and Transition Management" (2009) 13:2 Journal of Industrial Ecology 184 – 196; Camaren Peter and Mark Swilling, "Linking Complexity and Sustainability Theories: implications for Modeling Sustainability Transitions" (2014) 6 Sustainability 1594 - 1622.

for trade-offs between themselves, system stability and sustainability would be compromised.[197] They further ague that failing to negotiate trade-offs that transitions may have across sectors and scales may lead to resistance.[198]

Although trade-off is an inevitable component of the determination of public interest under the IAA, there is no guidance on how to manage trade-offs in decision making in Canada. This further makes the decision-making process highly subjective. IA scholars have, however, proposed trade-off principles and rules, particularly, in the context of sustainability assessment. The renowned Gibson trade-off rules, for example, emphasize that trade-offs must deliver net progress towards sustainability, comparatively avoid significant adverse effects, should not displace significant adverse effects to the future, must be justified by the proponent of the trade-off, be subject to an open process involving all stakeholders, and be explicitly justified by decision makers.[199] While recognizing that the Gibson rules are robust and helpful, Morrison-Saunders and Pope make the important contribution of how trade-offs manifest all through the assessment process, and proposed a conceptual model based on critical thresholds demarcating non-negotiable and negotiable trade-off issues.[200] Their model establishes a presumption that impacts that would cross a critical threshold into the realm of non-negotiable effects should not be allowed, while offsets fall within the negotiable domain.[201]

While Gibson's trade-off rules are relevant in the transition context, they are not without their criticisms. For example, Retief et al note that Gibson's rules fail to reflect the moral nature of most trade-off decisions, more so as the difficulty in managing trade-offs often entails a "morality clash between the interests of different stakeholders (and rights-holders)".[202] As noted by Gibson, the rules "do not provide much substantive guidance" and have little to say about unacceptable compromises.[203] Unlike Gibson, I do not propose a new set of rules for managing trade-offs. Trade-

[197] Peter and Swilling, *ibid* at 1600.
[198] *Ibid* at 1608.
[199] See Gibson, *supra* note 6 at 139 – 140.
[200] Angus Morrison-Saunders and Jenny Pope, "Conceptualising and Managing Trade-offs in Sustainability Assessment" (2013) 38 Environmental Impact Assessment Review 54 at 58 - 59.
[201] *Ibid.*
[202] Francois Retief et al, "Exploring the Psychology of Trade-off Decision-making in Environmental Impact Assessment" (2013) 31:1 Impact Assessment and project Appraisal 13 at 16, 18.
[203] See Gibson, *supra* note 6 at 138.

offs are highly situational.[204] Common trade-off situations in the transition context include climate change responses versus broader ecological wellbeing, socio-economic concerns versus ecological imperatives, and the conflicting positions of communities. Although these highlighted issues are framed as contrasts, like Gibson recommends, the objective should be achieving mutually reinforcing gains across the board.[205] Given the urgency and ambition that responses to climate change demand, conflict between climate measures and ecological wellbeing is on the increase. The discourse below focuses on this transition-peculiar trade-off situation.

Well-designed and properly implemented responses to climate change are essential to ecological wellbeing. This is, however, not always the case. There is an increasing tension between efforts to address climate change and the need to ensure the wellbeing of specific ecological systems. Examples abound.[206] The Rough Hat Clark County Solar project (Rough Hat project) proposed by Candela Renewables LLC (Candela) in Nevada, United States provides an apt illustration of this tension. The Rough Hat project is designed as a 400 MW solar power generation and battery storage facility on about 2400 acres of land in Pahrump, a community of about 40,000 people.[207] The project is near the 500 MW, 3000-acre Yellow Pine Solar Project. While the project is yet to go through the NEPA process, there are ample resources used in the American Bureau of Land Management (BLM) variance determination process to draw useful lessons from the Rough Hat

[204] As noted by Gibson, "specific circumstances differ. So do priorities … Because of these differences, application of the same core sustainability criteria will not always lead to the same conclusions about what trade-offs should be accepted or rejected". See *Ibid.*
[205] *Ibid* at 132 – 133.
[206] For example, in *Korean Biomass Plaintiffs v South Korea* filed on 28 September 2020, the plaintiffs, owners of solar power plant and residents near biomass plants, argued that the South Korean government's support for biomass violates the South Korean constitutional environmental rights as it leads to deforestation, high emissions, and air pollution. See Sabin Center for Climate Change Law, *Korean Biomass Plaintiffs v South Korea*, (2020) online: <http://climatecasechart.com/non-us-case/korean-biomass-plaintiffs-v-south-korea/?cn-reloaded=1>. See also Elizabeth Cushion et al, *Bioenergy Development: Issues and Impacts for Poverty and Natural Resource Management* (Washington: The World Bank, 2010); Suaad Jaber, "Environmental Impacts of Wind Energy" (2013) 3:1 J of Clean Energy Technologies 251-254; Ewa Klugmann-Radziemska, "Environmental Impacts of Renewable Energy Technologies" (2014) 69 IPCBEE, online: <http://www.ipcbee.com/vol69/021-ICEST2014-A1026.pdf> [https://perma.cc/LX42-KJBL]; Viktor Kouloumpis et al, "Environmental Impacts of Renewable Energy: Gone with the Wind?" ed by Evanthie Michalena & Jeremy Maxwell Hills, *Renewable Energy Governance: Complexities and Challenges* (London: Springer, 2013) 203-215; Adebayo Majekolagbe, "Impact Assessment, Sustainability, and Climate Change: Lessons from Lower Churchill" (2021) 44:1 Dalhousie Law Journal 71 at 73.
[207] US Department of Interior Bureau of Land Management (BLM), "BLM Advances Rough Hat Clark County Solar Project Application", (7 June 2022) online: <https://www.blm.gov/press-release/blm-advances-rough-hat-clark-county-solar-project-application>.

example. It is noteworthy that the project is connected to Nevada's requirement that 25% of electricity be generated from renewable sources by 2025, 50% by 2030, and net zero by 2050.[208]

The benefits of the deployment of solar energy to climate mitigation are not in doubt. For example, 400 MW from the Rough Hat project could potentially displace approximately 280,000 metric tons of $C0_2e$ per year, an equivalence of removing about 56,000 cars from the road, and planting over 7 million trees.[209] The project is, however, not without some consequential environmental impacts. The adverse impact on the federally threatened desert tortoise is one.[210] Noteworthy is that the Yellow Pine Solar project in the same ecological region has been found to endanger desert tortoises, Mohave yuccas and various other species in the Mojave Desert.[211] A relevant strategic instrument here is the US Department of Interior Programmatic Environmental Impact Statement for Solar Energy Development (Solar PEIS) which established exclusion zones for solar energy development. Although Pahrump valley project site is designated as a priority II desert tortoise connectivity habitat, it is considered a "highest priority area" for which applications for development are discouraged.[212] To mitigate impact on the desert tortoise, it was concluded that adult and sub-adult tortoises will be translocated to "acceptable locations".[213] This is significant given the fatalities among translocated tortoises due to the Yellow Pine project.[214] Beyond adverse impacts on desert tortoises, the project is also expected to lead to considerable dust emissions, have adverse impacts on cultural resources, water (during construction), visual resources, and property value, and has raised concerns about the management of hazardous waste.[215] As aptly framed by a

---

[208] Renewable Portfolio Standard, (2019) online: <https://www.leg.state.nv.us/App/NELIS/REL/80th2019/Bill/6651/Text#>, s 8, 22.

[209] This calculation uses values used by Sinha and Jenkins in estimating avoided emissions from 1 GW of solar module. 1 GW is estimated to generate over 1.3 TWh/yr power production, enough to power about 500,000 people, displace about 700,000 MT of CO_2e, an equivalence of removing over 140,000 cars from the road per year. The figures above are to illustrate the benefits of solar, but are not claimed to be precise, more so as the performance of solar photovoltaics are conditioned by numerous variables. See Parikhit Sinha and Laura Jenkins, "Estimating Carbon Displacement by Solar Deployment", (2014) online: <https://www.firstsolar.com/-/media/First-Solar/Sustainability-Documents/TechnicalReport_Carbon-Displacement-2014.ashx>.

[210] BLM, "Rough Hat Clark County Solar Project Right-of-Way Application", online: <https://eplanning.blm.gov/public_projects/2019992/200523600/20060841/250067023/05_RHC_Variance%20Determination_USFWS_508.pdf>.

[211] Basin and Range Watch, "Yellow Pine Solar Facility", online: <https://www.basinandrangewatch.org/Yellow-Pine-Solar.html>.

[212] BLM, *supra* note 210.

[213] *Ibid.*

[214] In 2021, it was recorded that badgers killed 26 of the 80 translocated desert tortoises. See Basin and Range Watch, *supra* note 211.

[215] Public comments from the engagement phase are instructive. Take a participant's contribution for example:

commentator in respect of the project, "it seems illogical to me to destroy the environment to protect the environment".[216]

As noted above, given the contextual nature of trade-off situations, it is difficult to propose concrete trade-off rules. Attempts could, however, be made to highlight generic situational guides as proposed in important works like the IPBES-IPCC workshop report on biodiversity and climate change and the International Union for the Conservation of Nature (IUCN) Guidelines on mitigating biodiversity impacts. The IPBES-IPCC report, for example, recommends spatial planning approaches integrating multiple objectives and spatial heterogeneity and states that explicitly considering the interactions between biodiversity, climate and society in policy decisions could help to maximize co-benefits and minimize trade-offs and mutually harmful effects for nature and society.[217] In the event of unavoidable trade-offs, the report suggests 'social tipping interventions' to modify shared values concerning nature like exchanging economic metrics of growth for inclusive wealth and recognizing the multiple values of nature.[218]

In the Rough Hat project context, the existence of the Solar PEIS which could have protected the Pahrump valley area as suggested in the IPBES-IPCC report seems to be vitiated by its allowance for variance.[219] This suggests that the existence of a strategic instrument which seeks to proactively ensure ecological wellbeing while addressing climate change can only be as effective as how permissive it is for derogation. Strategic documents must also be adaptive. The Solar PEIS was released in 2012. For example, although the desert tortoise was listed as threatened in 1990 under the US Endangered Species Act and would have been considered in the PEIS, the impacts of climate change have put even more pressure on the population of tortoises and their habitats since

---

"I think this is a complete abomination. I think you really should be ashamed of yourself trying to push this agenda on our little community … This is something that you would not have in your community, right next to an elementary school. All we heard from the last meeting is that, oh you know we're going to suffer a little bit of dust; we're only going to suffer a little bit of the ambient heat temperature around, we're only going to suffer mowing down the desert instead of digging it up. On how great! We are only going to suffer about 5% of our property loss, this is, this is really an abomination. This is nothing but greed. This is an attempt of vampires wanting to suck the lifeblood of the water out of our aquifers". See BLM, "Rough Hat Clark County Solar Project: input Summary Report", (March 2022) online: <https://eplanning.blm.gov/public_projects/2019992/200523600/20060786/250066968/FINAL%20Rough%20Hat%20Clark%20County%20Input%20Summary%20Report_508_part%201_compressed.pdf>.

[216] AP News, "Rural Communities push Back Against Solar Projects in Nevada", (30 November 2021) online: <https://apnews.com/article/business-environment-and-nature-las-vegas-nevada-environment-0c60ff102480ab06eac6cd0f13ade567>.

[217] H.O Pörtner et al, *Biodiversity and Climate Change Workshop Report* (IPBES and IPCC, 2021) 20, 21.

[218] *Ibid* at 22.

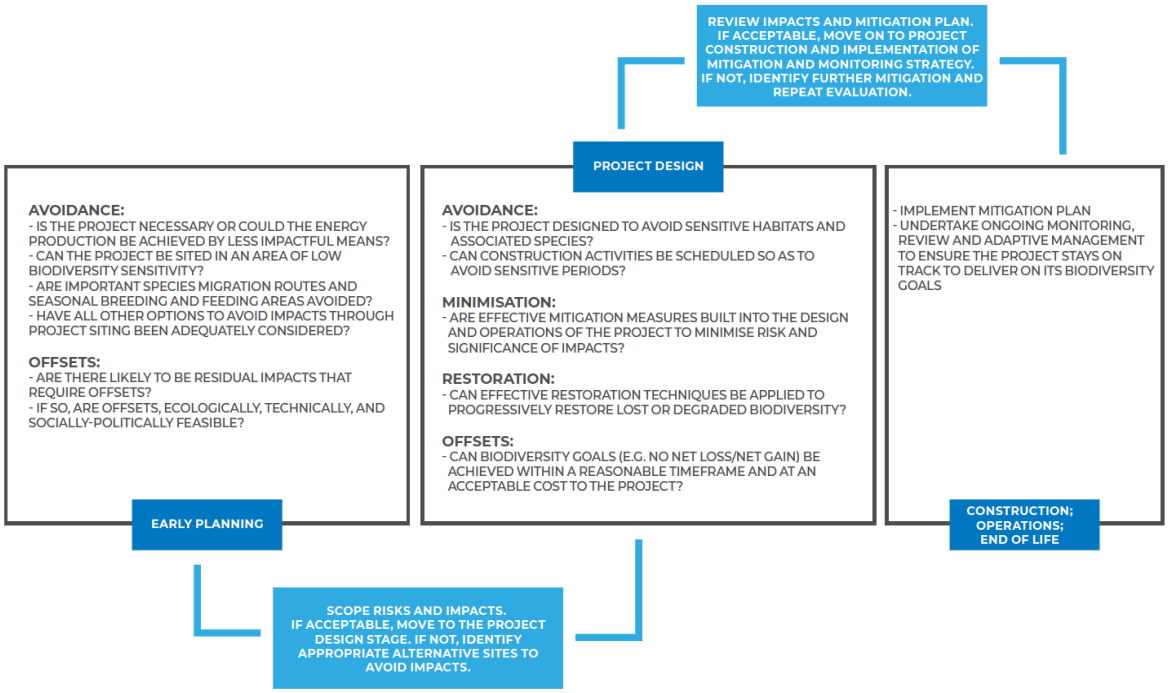
[219] The PEIS designated solar energy zones suitable for utility-scale production of solar energy. It, however, also allows a case-by-case consideration of application in designated variance areas. BLM, *supra* note 215.

2012.[220] IPBES-IPCC's recommendation on a collective shift of values in case of unavoidable trade-offs is particularly important in decisions about renewable energy projects which emphasize optimality. In the case of the Rough Hat project, the site was selected "as the optimal location in Clark County for the project".[221] 'Optimal', often, implies where the most electricity can be generated at the least cost for the most profit. An optimality orientation makes less invasive options unfavourable. In Rough Hat, for example, options like solar projects in brownfields and on buildings were proposed in public consultations but were not preferred.[222]

The biodiversity mitigation principles and hierarchy proposed by the IUCN for managing the tension between climate change measures and biodiversity are also useful. The principles include considering biodiversity and landscape-scale risks at the earliest planning stage, recognising peoples' rights and needs, carrying out surveys to understand risks, and applying the mitigation hierarchy rigorously.[223] The mitigation hierarchy is reproduced in *figure 18* below. It begins with determining whether the project is necessary or if energy could be achieved by less impactful means at both the early planning and project design stages.[224] In the Rough Hat project, the necessity of the project appears to have been determined at a strategic level, i.e., the Nevada Renewable Portfolio Standard which aims at generating 50% of its energy from renewable sources, of which, solar generated power constitutes over 50%. This is similar to other climate change mitigation programmes around the world which suggests an inevitable substitution of energy sources. The potential of reduced energy demand through efficiency and behavioural change is often underplayed. Transition from non-renewable to renewable energy sources should not be the objective established in strategic instruments which feed project assessment. The overarching objective should be wellbeing both in its ecological and human dimensions, while the transition from non-renewable to renewable should be a 'means' which is only desirable to the extent that it satisfies the wellbeing objective.

[220] The Basin and Range Watch, for example, referenced the worsening drought in the Mojave Desert. See Basin and Range Watch, *supra* note 211.
[221] Candela Renewables LLC, *Plan of Development: Rough Hat Clark county Solar Project* (Candela Renewables LLC, 2021) 1-8.
[222] BLM, *supra* note 215.
[223] IUCN, *Mitigating Biodiversity Impacts Associated with Solar and Wind Energy Development: Guidelines for Project Development* (IUCN, 2021) 13.
[224] *Ibid* at 12.

Figure 18: The Mitigation Hierarchy – Key Mitigation Checks During Project Development[225]



While trade-off situations will arise in respect of transition decisions, trade-offs are not inevitable. There is the need to reject the inevitable collateral damage mentality which seems to manifest in various transition trade-off contexts. This is one of the lessons of the mitigation hierarchy. Trade-offs, whether it is between climate measures and ecological wellbeing, climate measures and socio-economic imperatives, or between conflicting interests of communities, should generally be avoided. Considering alternatives in terms of type, approach, scale, place, and time of intervention is useful in avoiding trade-offs. Minimization, restoration, and offsets only arise when trade-offs cannot be avoided. Unavoidable trade-offs will entail making value judgments on conflicting interests. The subjectivity involved in addressing and reconciling conflicts makes the meaningful engagement of the public central to the management of unavoidable trade-offs. Hence, Gibson recommends that trade-off processes be open and "include and empower participants with sufficient commitment and capacity for effective engagement".[226] Given the urgency and scale of ambition required to adequately address climate change, it could indeed be the case that arguments are made against public engagement. This is more so in fossil fuel dependent economies, where communities might be more in favour of overtly climate unfriendly activities. It is, however,

[225] *Ibid.*
[226] Gibson et al, *supra* note 6 at 136.

noteworthy that the importance of participation is not arrival at a pre-conceived pro-climate end. Beyond instrumental goals like participation potentially conferring legitimacy on decisions, catering to threatened rights and interests, facilitating transformative learning, and fostering social integration through cooperation, people simply have a right to be involved in decisions that impact them.

In conclusion, the JTIA principles have been developed with explicit consideration for trade-off situations. It is, in fact, arguable that inherent in the just transition discourse are trade-off issues. Applying the JTIA principles across all levels of the assessment process, from the strategic to the project phase, will potentially assist in addressing trade-off issues throughout the process of designing and executing a transition activity. For example, the ecological and human wellbeing principle in the context of the Rough Hat project requires that the health, diversity, and resilience of the Pahrump valley area, and the wellbeing of the people of the area are held sacrosanct. This does not mean that the solar project cannot proceed. It only means that it proceeds without compromising wellbeing. In fact, when the solar project is also construed as an instrument of ecological wellbeing, the contradiction of such project undermining other expressions of ecological wellbeing becomes manifest. The principles of vulnerability, differentiation, and rights-based social dialogue are also useful in addressing the community versus community trade-off scenario. As in the Ermineskin Cree example, where communities or groups within communities disagree about transition-related projects, it is useful to consider how vulnerable certain communities are to the predicted impacts; circumstances and capacity to respond to impacts; and threatened rights and interests. However, while these principles have been drawn from established and recognized frameworks – international human rights law, the SDGs, and the principle of differentiation, they will not be accepted by default, and their meanings will be contested. It is, therefore, important to allow communities to dialogue on JTIA principles both generally and in the trade-off context, identify useful principles, and provide contextual definitions before applying them in respect of transition activities.

Chapter Seven
Conclusion

7.1 Summary of Findings

The primary objective of this thesis is to demonstrate how impact assessment is a tool for the deliberate steering of climate change response measures towards justice. Since the recognition of the need for a just transition in the Paris Agreement, just transition has been increasingly adopted as an umbrella under which diverse justice concerns relating to climate change induced transition are addressed. There is, however, a broad range of understandings about what just transition is. In presenting impact assessment as a viable tool for achieving a just transition in this work, it was, therefore, necessary to investigate whether any of the diverse iterations of just transition adequately address the multi-dimensional impacts of climate change response measures, and if not, how just transition can be refitted to address the local and global implications of transition decisions. This is the focus of the first part (chapters two and three) of this thesis. The second part (chapters four and five) of the thesis does a deep dive into the scholarship, policies, and practice of impact assessment, seeking to identify spaces and opportunities for addressing just transition concerns. Drawing from the analyses and conclusions in parts one and two, transition-specific principles for justice-aligned impact assessment processes – just transition impact assessment (JTIA) principles – were proposed and hypothetically applied in chapter six.

To capture the key findings in this thesis, I show how the questions this research sets out to answer have been resolved below.

i. Is just transition, as conventionally defined and applied, sufficient to address the multi-dimensional impacts of climate change response measures?

The definitions of just transition are varied and wide-ranging. In chapter two, these varied meanings were broadly categorized into two – the original understandings and contemporary understandings of just transition. Although just transition did not become a dominant subject in climate governance until recently, it has been traced to as far back as the 1970s, with the first explicit use of the term in 1995. Then, it was focused on workers, primarily in the toxic chemical industry, and the demands of workers were essentially job substitution, financial support, retraining etc. More contemporary meanings of just transition have ranged from the more traditional (passive) jobs-centric just transition to a more transformative emphasis on system change. While the different framings of just transition address various important fragments of

justice concerns pertaining to climate induced transition, this work finds that they suffer from limitations which make them inadequate to address transition impacts.

The inadequacy of the original and contemporary understandings of just transition is traceable to the failure to contextualize just transition within climate change realities, the continuous focus on jobs rather than society-wide transition, and the uncritical adoption of the distributive theory of justice as the dominant theoretical underpinning of just transition. Hence, just transition is widely understood to mean an equitable distribution of the gains and losses of sustainability transition. These widely adopted notions of just transition have had real-time impacts given their enshrinement in transition laws, policies, programmes, and plans. In chapter two, copious examples of how just transition is being operationalized in European countries, Canada, the United States, and Australia were given. It was shown that the dominant jobs-centric, and distributive justice-based operationalization of just transition through laws, policies, and programmes does little in improving the state of communities and persons for whom they are meant. Again, although a dominant refrain of the just transition movement is 'to leave no one behind' in the transition to a decarbonized world, the emphasis on jobs often leads to the conferment of advantages on already advantaged jobs, neglects seemingly peripheral jobs, and generally fails to address existing injustices and vulnerabilities. The failure to align with the unique characteristics of climate change, like its inherent global nature, has also led to an anomalous domestication of the just transition discourse.

Given the above, this research question has been answered in the negative. Both the traditional and more current understandings of just transition, among other things, fall short of addressing the multidimensional impacts of climate response measures. Giving these failings, I have re-envisioned just transition using Amartya Sen's capability approach. Capability approach emphasises the ends of justice rather than the allocation of resources which distributive justice focuses on, or participation which procedural justice emphasizes. As noted, distribution and participation have been the emphasis of the just transition movement. While important, the capability approach frames both distribution and participation as means rather than ends. According to Sen, the end of justice is wellbeing. Using the capability approach, ten characteristics of just transition have been proposed. They include the realization of human and ecological wellbeing as the central objective of just transition, ensuring that existing injustices are addressed and sustainability initiatives do not re-invent injustices, prioritizing the most socially and

ecologically vulnerable, scoping vulnerability both locally and globally, and taking a human rights and parity-sensitive approach to social dialogue. Reviewing transition policies using the just transition characteristics, no policy was found to fully possess the proposed characteristics. The transition policies in the European Union and Scotland are, however, unique in their explicit engagement with climate justice.

The localization of just transition discourse is one of the major flaws of the dominant narratives. I address this extensively in chapter three. I argue that the just transition discourse cannot be complete without addressing its global dimension. Climate change is fundamentally global in both its cause and effects. Further, response measures both at the strategic and project level have immense transboundary implications. Against a background of the trends in the global fossil fuel industry, I discuss and highlight the transboundary just transition implications of key supply-side climate mitigation policies – moratoria on exploration and investment, fossil fuel subsidy reform, diversification, divestment, and technological solutions – in chapter three. I find that each response measure has considerable adverse impacts on third countries, particularly developing countries. While some of the measures are questionable in their effectiveness in addressing climate change and are arguably influenced by what has been described as 'green protectionism', the emphasis in this chapter is that globally just and effective climate change response measures are possible.

I show how the principle of differentiation under international climate law can be applied in the administration of the global carbon budget. The implications of a nuanced interpretation of the CBDR principle are that all FFDEs are obligated to phase-out fossil fuel activities, historical responsibility matters in the pace of transitioning out, the capabilities and national circumstances of countries are relevant, and attention must be paid to vulnerability. This approach requires a distinction between emerging (developing) economies and underdeveloped fossil fuel dependent economies. Given their vulnerability and dire socio-economic condition, underdeveloped FFDEs should have greater latitude in continued engagement in the fossil economy. In lieu of such continued engagement however, a Yazuni-ITT styled initiative where the growth of underdeveloped countries will be supported in return for leaving their fossil fuel resources under the ground, could be established.

ii. To what extent does impact assessment, as a planning and decision-making process, provide spaces for addressing just transition concerns?

This research question is the focus of chapters four and five. The key finding here is that there is a dissonance between the promises of theoretical IA for just sustainability transition, and actual outcomes in practice. While there are no known examples of the explicit consideration of just transition in impact assessment laws and policies, sustainability is generally recognized as the primary objective of IA. Although IA has not succeeded in facilitating the actualization of this objective, this does not take away from its potentials to assist in achieving just sustainability transition. Its potentials are numerous. First, it is an authoritative decision-making tool given its enshrinement in laws across the world. Second, its ex-ante positioning in the decision-making process provides an opportunity to identify possible impacts early and ensure that activities have positive outcomes. Third, it has an established process which allows for a robust and methodical appraisal of impacts, consideration of alternatives, and reflective decision-making. Fourth, it is a recognized space for rational discourse, public engagement, and transformative learning. Fifth, it provides opportunities to re-appraise assumptions, manage adaptively, and improve outcomes. These potentials, among others, make impact assessment vital to just transition. So far, just transition has primarily been an afterthought and an add-on in the design of transition policies and projects. Impact assessment has the potential of putting justice considerations at the core of the design and implementation of these policies and projects. Chapters four and five show how conventional IA can be deployed to meet just sustainability transition ends.

In chapter four, I introduce impact assessment as a decision-making tool, exploring its history, central features, opportunities, and flaws. IA is however not monolithic. Over the years, hundreds of IA modes have been developed. To capture IA modes considered most apt to the just sustainability transition discourse, I classify IA into ecological IAs, interest and right-based IAs, and dimensional IAs. While IAs are generally expected to be sustainability consistent, I discussed sustainability assessment separately given its development over the years as a separate IA mode. I find that the various modes constituting each grouping provide specific opportunities to address specific characteristics of just transition as described in this thesis. For example, ecological IAs (e.g., environmental impact assessment, strategic environmental assessment, and ecological risk assessment) are useful tools for assessing ecological wellbeing, while interest and right-based IAs (e.g., social impact assessment, human rights impact assessment, and gender based plus analysis)

provided spaces through which concerns about transition related human wellbeing concerns can be addressed. Also, dimensional assessments like cumulative effects assessment and transboundary impacts assessment are useful in addressing the global dimension of just transition. The implication of this is that although IA laws and policies do not address just transition directly, there are interstitial opportunities through which different components of just transition can be addressed through conventional IA. However, to fully realize the opportunities that conventional IA presents, the different categories of IA must be engaged and applied in an integrated manner, and deliberately targeted towards meeting just transition needs.

Climate change and impact assessment (CC&IA) is the most direct mode of IA on climate change induced transition. The development of CC&IA is fairly recent and is increasingly being explicitly addressed in IA laws. In chapter five, I turn to this subject. Again, my objective was to identify spaces through which just transition can be addressed. I argue that for IA to be fit for climate change, it must be aligned with the key characteristics of the subject it seeks to address – climate change. This is important as climate change is fundamentally different from the traditional areas of focus of traditional IA. Four differentiating characteristics have been highlighted and discussed in chapter five - the global and multi-sectoral nature of the sources and impacts of climate change; climate change adaptation and loss and damage; delayed and cumulative nature of climate impacts and the causation challenge; and the ambitious and immediate climate action needed. As shown in the chapter, each of these characteristics has implications for the potentials of CC&IA to address just transition concerns. Further, I consider the extent to which CC&IA policies in Canada, the United States, and South Africa reflect the identified characteristics. While the CCIA policies in South Africa and the United States capture to varying degrees these characteristics, Canada's CC&IA policies and guidelines do not address adaptation and loss and damage and does not go far enough in addressing the delayed and cumulative impact of climate change. The chapter further discussed assessment of response measures under international climate law and considered how social and human rights impacts are addressed under the strategic assessments of response measures in the European Union and Scotland. I find that the assessment of response measures under the UNFCCC regime is largely generic and does not include tailored interventions to address impacts. The use of the Sustainable Development Goals (SDGs) under some of the UNFCCC commissioned assessments is, however, commendable. Similarly, while the strategic assessments in European Union and Scotland do not go far enough in addressing just transition robustly, they

represent a growing trend in the consideration of social impacts when transition measures are being proposed.

In all, in theory, there are spaces within conventional IA to address just transition concerns, and there are already a few examples in this regard. Albeit, these examples are mostly at the strategic level, and there is an overall ad-hoc approach to the consideration of the social and human right impacts of transition activities.

iii. How can just transition be mainstreamed in transition planning and decision-making through impact assessment?

The just transition impact assessment (JTIA) framework has been proposed in response to this question in chapter six. The JTIA framework entails a set of minimum principles to be applied when designing and executing transition activities, practical considerations in the application of the principles at different tiers of decision making, and general ideas on the management of trade-off situations. The JTIA principles are designed as minimum normative considerations and are expected to be largely informed by place-based realities. The JTIA principles drew extensively from the proposed characteristics of just transition and the global dimension of the just transition discourse in chapters two and three, and the discussion on spaces for just transition consideration within IA modes and CC&IA in chapters four and five. In discussing the principles, I relied extensively on the SDGs, human rights, and the principle of differentiation under international climate law. The JTIA framework is also highly influenced by Robert Gibson's work on sustainability assessment. Gibson's sustainability assessment has, however, not been directly adopted as they have been designed within the broader context of the sustainability discourse, without paying explicit attention to the unique realities of the transition.

Consistent with the capability approach to justice adopted in this work, the first JTIA principle is that ecological and human wellbeing should be adopted as the primary objective of transition activities. Transition activities are not an end in themselves. Rather, they are a means to an end – ecological and human wellbeing. I defined ecological wellbeing as entailing healthy, diverse, and resilient ecosystems, and argued that the SDGs interpreted through international human rights law provide a useful, albeit imperfect framework for interpreting human wellbeing. Second, transition activities should be sensitive to vulnerability in their design and implementation. Vulnerability is a result of macro, meso, and micro factors which should be considered and addressed through strategic and project impact assessment. Third, the principle of differentiation should be

considered in decision making. This includes paying attention to historical responsibility, capability, and circumstances. Particularly, the differentiation principle helps to address the global dimension of just transition. Fourth, life cycle, cumulative, and transboundary impacts should be considered. Fifth, a rights-based and parity-sensitive approach to social dialogue should be adopted. Rights-based dialogue entails, in part, the recognition of different levels of interests and rights in respect of transition activities. Drawing from the Canadian jurisprudence on the spectrum of the duty to consult, I have argued that the extent of participation is dependent on the nature of rights and seriousness of likely impacts. This addresses the impracticality of according the highest level of participation (consent) to all in respect of transition activities. The JTIA principles are not expected to operate in isolation. They are necessarily interconnected in such a way that the failure to respect one affects the other. For example, attending to vulnerability is essential to ecological and human wellbeing.

Using the Canadian thermal coal policy and the ongoing Vista mine expansion as case studies, I have considered the implications of the JTIA principle in practice. Unsurprisingly, just transition considerations were, at best, a footnote in these examples. The potential for applying the JTIA principles at all levels of the assessment process has been demonstrated. Key to this process, however, is meaningful engagement which is respectful of human rights and addresses parity-impeding norms. On the issue of trade-offs, given the place-sensitivity of trade-off situations, generic trade-off rules are undesirable. Rather, I have identified multiple trade-off situations (*climate change response measures v ecological wellbeing; community v community; social-economic interests v ecological goals*). Given its uniqueness in the transition context, I focused on the climate change response measures - ecological wellbeing trade-off situation using the Rough Hat Solar Project in Nevada, United States as an example. This case study shows how initiatives meant to address climate change could be inimical to ecological (and human) wellbeing. As noted however, such conflict is not a given. While there are useful Guidelines on how to manage the seeming conflict between ecological wellbeing and climate change response measures, I have argued that given that trade-off realities are inherent in the JTIA principles, applying them throughout an assessment and decision-making process provides an opportunity to address trade-off situations early.

7.2 The Just Transition Impact Assessment Framework: Criticisms and Responses

The real potential of the JTIA principles in ensuring that just transition is mainstreamed into transition planning and decision-making can only be determined in practice. The principles will evolve over time, benefiting from the actual assessment of transition projects, and contributions from communities, practitioners, and scholars. Likely objections to the JTIA principles include the seemingly overly expansive framing of just transition and the JTIA framework; the over-complication of transition decision making; the JTIA framework as further proliferation of IA modes; and the framework's inadequate attention to the ambition and urgency that climate change requires. I provide tentative responses to these criticisms below.

The criticism that the beyond-jobs vision of just transition (JTIA framework) proposed here is unduly expansive has been briefly addressed in chapter two. Justice is a complex subject and attempts to fit it into neat scholarly categories present the risk of undermining its pursuit. Take the jobs-centric vision of just transition as an example. Such notion focuses on the worker. Invariably, solutions from that analytical start-point seek to address the challenges of the 'worker'. However, the worker is more than a factor of production. A worker likely has a family, is part of a community, and has a mutually dependent relationship with nature. A jobs-centric notion of justice, however, fails to address the worker as a 'whole'. As seen in a few examples considered in chapters two and three, the policy outcome of such a narrow approach ends up adversely impacting families and communities. The point here is that to holistically address just transition concerns, 'justice' must necessarily be engaged in its complex form. The argument that there are other framings of justice (e.g., environmental justice, energy justice, and climate justice) that cater to other issues which a broad framing just transition will be addressing also does not pass muster. It equally suffers from the problem of approaching justice as a balkanized reality.

Flowing from the above criticism is the argument that just transition, particularly as broadly envisioned in this thesis, overcomplicates transition decision making, attempts to do everything, and will stretch the regulatory capacity of government (especially in developing and underdeveloped countries with limited capacity). Impact Assessment, in practice, is compelled to grapple with the multidimensional nature of the impacts of activities. The attempt to simplify truly complex issues – climate change and the transition being quintessential examples – inevitably means that decision makers make subjective determinations of what is relevant, often privileging 'power', entrenching the status quo, or amplifying dominant narratives. Climate change induced

transition must be accepted as the complex phenomenon it is and dealt with accordingly. It then becomes a question of how to effectively assess and address the multifarious impacts of transition decisions without 'overwhelming' the system or overly tasking developing and underdeveloped countries. To start with, there is need for a fundamental rethinking of the IA system to align with the multi-level albeit integrated nature of climate change and transition impacts. There is also a need to understand and incorporate non-western impact assessment structures, traditions, and practices. This is particularly important in the context of developing and underdeveloped countries, and Indigenous communities in developed countries. As noted below, the conduct of just transition impact assessment with a multicentric mindset and within a polycentric IA governance framework is an important subject for future research.

On whether the JTIA framework is needed given the already proliferated IA modes, it is worth emphasising that the JTIA framework is designed to be applied within regulatory IA processes. The framework is not another IA mode like social impacts assessment or human rights impact assessment. Rather, it argues for an integration of various IA modes to adequately address the complex dimensions of just transition. However, as argued in respect of CC&IA, impact assessment is not a fixed immutable process. In fact, dynamism and adaptability are vital to the utility of IA. To be fit for purpose, IA must adapt to context. While the process might be the same, the principles that govern the process must necessarily be contextual. This way, IA would be relevant in an increasingly changing world. Climate change induced transition is a distinct context with its own unique implications. For IA to be suitable, the just transition specific principles proposed here are important.

The argument could also be made that the JTIA framework does not appreciate enough the urgency and ambition required to address climate change. Indeed, the application of the JTIA framework would require considerable data, extensive public engagement, and consequently, a lengthy period to conduct a just transition compliant assessment. This is seemingly antithetical to the urgency that climate change requires. The application of the JTIA framework, however, does not necessarily need to undercut the urgency and ambition that climate change requires. The strategic assessment of Scotland's unconventional oil and gas policy is an example. Although the assessment took about five years, the Scottish government placed a temporary moratorium on UOG exploration. The point is that it is possible to ensure robust assessment of just transition impacts while still ensuring that urgent actions are taken. More importantly, it is arguable that the JTIA framework goes farther

than climate change response measures in the ambition it promotes. For example, it situates the need to address climate change within the broader context of ecological wellbeing. In any case, as argued in this work, ambitious climate actions which do not pay sufficient attention to justice concerns stand the risk of being derailed.

7.3 Conclusion and Opportunities for Further Research

In this thesis, I set out to design a framework through which justice will be at the center of responses to climate change. This work makes an important contribution to the otherwise separate scholarships of just transition and impact assessment. I have shown that impact assessment can be a useful tool in actualizing a just transition. While this work culminates in the development of the just transition impact assessment framework, other significant original contributions have been made throughout the thesis, including:

i. The use of the capability approach to justice for the development of a wellbeing-centric notion of just transition.
ii. A robust engagement with the global dimension of just transition and the re-purposing of the principle of differentiation as a normative guide for a global just transition approach.
iii. The identification of the various spaces in IA through which just transition can be addressed using existing IA modes and lenses.
iv. The rethinking of climate change and impact assessment in the light of the unique feature of climate change, and an extensive review of how just transition is being addressed in international climate law and in multiple jurisdictions.

As shown in the various chapters of the thesis, each of the above contributions has far reaching implications for climate governance, policies, and decision making. There, however, remain various important issues with respect to just transition and impact assessment which are either outside the remit of this thesis or have not been considered extensively enough. For example, this thesis has drawn most of its examples from national jurisdictions. Lessons, however, abound at the sub-national level as many transition activities are designed and executed at this level. Future studies should consider transition decision making at the sub-national level, and how just transition is addressed through decision making tools including impact assessment. Similarly, only a few transition activities will be assessed through regulatory IAs. Given the increase in voluntary climate actions by corporations, many more transition activities not subject to regulatory IA will take place within companies. It is important to study the internal assessment and due diligence processes of corporations in the design of transition activities, and particularly, how just transition impacts are considered and addressed.

BIBLIOGRAPHY

Treaties, Resolutions, and other International Materials

Adoption of the Paris Agreement, Decision 1/CP.21, FCCC/CP/2015/10/aDD.1

Agreement Concerning Annual Reports on Human Right and Free Trade Between Canada and the Republic of Colombia (27 May 2010) online: <https://www.treaty-accord.gc.ca/text-texte.aspx?id=105278&_ga=2.78048916.1202104672.1612437213-1842160648.1612437213>

American Association for the International Commission of Jurists, "Siracusa Principles on the Limitation and Derogation Provisions in the International covenant on Civil and Political Rights" (1985) online: <https://www.icj.org/wp-content/uploads/1984/07/Siracusa-principles-ICCPR-legal-submission-1985-eng.pdf>

Canada-Colombia Free Trade Agreement, (2008) online: <https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/colombia-colombie/fta-ale/index.aspx?lang=eng>

CBD, *Report of the Open-ended Working Group on the Post-2020 Global Biodiversity Framework on its Third Meeting (Part II)*, (29 March 2022) CBD/WG2020/3/7

Convention on Environmental Impact Assessment in a Transboundary Context, 25 February 1991, 1989 UNTS 309 (entered into force 10 September 1997) (as amended on 27 February 2001 and 4 June 2004)

Convention on the Conservation of Antarctic and Marine Living Resources, 20 May 1980, 1329 UNTS 47, (entered into force 7 April 1982)

Decision 1/CP.13, Bali Action Plan, FCCC/CP/2007/6/Add.1

Decision 1/CP.16, The Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention – Enhanced Action on Mitigation, FCCC/CP/2010/7/Add.1

Decision 11/CP.21, "Forum and Work Programme on the Impact of the Implementation of Response Measures", FCCC/CP/2015/10/Add.2

Decision 3/CP 3, "Implementation of Article 4, paragraphs 8 and 9, of the Convention", FCCC/CP/1997/7/Add.1

Decision 31/CMP 1, "Matters Relating to Article 3, paragraph 14, of the Kyoto Protocol" FCCC/KP/CMP/2005/8/Add.4

Decision 4/CP.3, Amendments to the List in Annex I to the Convention under Article 4.2(f) of the Convention, FCCC/CP/1997/Add/1

Decision 8/CP.17, "Forum and Work Programme on the Impact of the Implementation of Response Measures", FCCC/CP/2011/9/Add. 2

Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the Assessment of the Effects of Certain Public and Private Projects on the Environment

EC, *Common Provisions Regulation*, COM(2018) 375 final

EC, *Communication from the Commission to the European Parliament, the European Council, The Council, The European Economic and Social Committee and the Committee of the Regions – The European Green Deal*, COM(2019) 640 final

EC, *Interinstitutional Proclamation on the European Pillar of Social Rights,* [2017] OJ, C 428/10

EC, *Proposal for a Regulation of the European Parliament and of the Council Establishing the Just Transition Fund*, 2020/006 (COD) (final)

European Commission, *Better Regulation Guidelines* (Brussels: European Commission, 2021)

European Commission, Council Directive of 27 June 1985 on the Assessment of the Effects of Certain Public and Private Projects on the Environment (85/337/EEC) OJ L 175/40

European Commission, Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (2017) online: <http://ec.europa.eu/environment/eia/pdf/EIA_guidance_EIA_report_final.pdf>

European Commission, *Impact Assessment Report Accompanying Regulation Amending Regulation (EU) 2018/842 on Binding Annual Greenhouse Gas Emission Reductions by Member States from 2021 to 2030 Contributing to Climate Action to Meet Commitments under the Paris Agreement*, SWD (2021) 611

European Commission, *Impact Assessment Report Accompanying the Document – Stepping up Europe's 2030 Climate Ambition – Investing in a Climate-neutral Future for the Benefit of our People (EU)* SWD (2020)

European Commission, *Impact Assessment Report Accompanying the Proposal for a Regulation of the European Parliament and of the Council on Methane Emissions Reduction in the Energy Sector and Amending Regulation (EU) 2019/942*, SWD (2021)

European Commission, Proposal for a Directive of the European Parliament and of the Council on Corporate Sustainability Due Diligence and Amending Directive (EU) 2019/1937, COM (2022) 71

European Commission, *Proposal for a Regulation of the European Parliament and of the Council Establishing a Carbon border Adjustment Mechanism*, (14 July 2021) COM(2021)

European Parliament, *Amendments Adopted by the European Parliament on 17 September 2020 on the Proposal for a Regulation of the European Parliament and the Council Establishing the Just Transition Fund (COM(2020)0022 – C9-0007/2020 – 2020/0006(COD))*, P9_TA-PROV(2020) 0223

Eurostat, "NUTS – Nomenclature of Territorial Units for Statistics" online: <https://ec.europa.eu/eurostat/web/nuts/background>

Eurostat, "Principles and Characteristics" online: <https://ec.europa.eu/eurostat/web/nuts/principles-and-characteristics>

Framework Principles on Human Rights and the Environment, A/HRC/37/59

General Assembly Resolution 1803 (XVII) of 14 December 1962, "Permanent Sovereignty over Natural Resources"

Human Rights Council, "Right to a Healthy Environment: Good Practices – Report of the Special Rapporteur on the issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment" 43rd Sess (30 December 2019)

ILO, *Guidelines for a Just Transition Towards Environmentally Sustainable Economies and Societies for All* (Geneva: ILO, 2016)

International Commission of Jurists, *Maastricht Guidelines on violations of Economic, Social and Cultural Rights*, (26 January 1997) online: <http://hrlibrary.umn.edu/instree/Maastrichtguidelines_.html>

International Covenant on Civil and Political Rights, 16 December 1966, 999 UNTS 171 (entered into force 19 May 1976)

International Covenant on Economic, Social and Cultural Rights, 16 December 1966, 993 UNTS 3, (entered into force 3 January 1976)

International Standard ISO 14040, 2nd ed, (2006) ISO 14040:2006(E) "Environmental Management – Life Cycle Assessment – Principles and Framework"

Paris Agreement, 12 December 2015, 27 UNTS 54113 (entered into force 4 November 2016)

Protocol on Environmental Protection to the Antarctic Treaty, 14 October 1991, 5778 UNTS 2941, art 7 (entered into force 14 January 1998)

Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, 21 May 2003, 2685 UNTS 34028 (entered into force 11 July 2010)

Regulation (EU) 2021/1056 of the European Parliament and of the Council, OJEU L 231/1

Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 Establishing the Framework for Achieving Climate Neutrality and Amending Regulations (EC) No 401/2009 and (EU) 2018/1999

Report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment, (26 February – 23 March 2018) 37th Sess. HRC, A/HRC/37/59

Resolution LP.5(14) on the Provisional Application of the 2009 Amendment to Article 6 of the London Protocol (Adopted on 11 October 2019)

Right to a Healthy Environment: Good Practices – Report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Development, (24 February – 20 March 2020) 43rd Sess, Human Rights Council, A/HRC/43/53

Right to Meaningful Participation – Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, 25 June 1998, 2161 UNTS 447, (entered into force 30 October 2001)

SBI, *Differentiated Impacts of Climate Change on Women and Men; the Integration of Gender Considerations in Climate Policies, Plans and Actions; and Progress in Enhancing Gender Balance in National Climate Delegations*, 50th Sess, FCCC/SNI/2019/INF.8

Science Based Targets, *SBTI Corporate Net-zero Standard* (SBT, 2021)

The Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal 22 March 1989, 1673 UNTS 126 (entered into force 5 May 1992)

The Future We Want, GA Res 66/288, UNGAOR, 66th Sess, UN Doc A/Res/66/288 (2012)

The Human Right to a Clean, Healthy and Sustainable Environment, (2022) A/Res/76/300

The Lofoten Declaration: Climate Leadership Requires a Managed Decline of Fossil Fuel Production, online: <http://www.lofotendeclaration.org/#read>

The Rio Declaration on Environment and Development, UN Doc. A/CONF.151/26 (vol. I), 31 ILM 874 (1992).

Treaty of the Functioning of the European Union, 17 December 2007, 326 OJ 49, art. 174 (entered into force 1 December 2009)

UN Economic and Social Council, *General Comment No. 19 – The Right to Social Security (art. 9)*, (4 February 2008) E/C.12/GC/19

UN General Assembly, *Transforming Our World: The 2030 Agenda for Sustainable Development*, 21 October 2015, A/RES/70/1

UN Office of the United Nations High Commissioner for Human Rights (OHCHR), 'Guiding Principles on Business and Human Rights: Implementing the United Nations "Protect, Respect and Remedy" Framework' (2011) online: <https://www.ohchr.org/documents/publications/GuidingprinciplesBusinesshr_eN.pdf>

UNFCCC Conference of Parties (COP), "Forum and Work Programme on the Impact of the Implementation of Response Measures" Decision 8/CP.17, FCCC/CP/2011/9/Add.2

UNFCCC Subsidiary Bodies, "Improved Forum and Work Programme", FCCC/SB/2016/L.2/Rev.1

UNFCCC, "Guidance to Assist Developing Country Parties to Assess the Impact of the Implementation of Response Measures, Including Guidance on Modelling Tools: Technical Paper by the Secretariat" FCCC/TP/2016/4

UNFCCC, *Assessing Impacts of the Implementation of Response measures – The Case Study of Senegal and Kenya: A computable General Equilibrium Analysis*

UNFCCC, *Guidance to Assist Developing Country Parties to Assess the Impact of the Implementation of Response Measures, Including Guidance on Modelling Tools*, (UNFCCC, 2017). See also UNFCCC, *Technical Papers on the Impact of the Implementation of Response Measures – Executive Summary*

United Nations Declaration on the Rights of Indigenous Peoples, A/RES/61/295, 2007

United Nations Framework Convention on Climate Change, 9 May 1992, 1771 UNTS 30822 (entered into force 21 March 1994)

United Nations General Assembly, *Transforming our World: The 2030 Agenda for Sustainable Development* (2015) A/RES/70/1

United Nations, *Compilation of Information on the Minimization of Adverse Impacts in Accordance with Article 3, Paragraph 14, of the Kyoto Protocol, 2019*, FCCC/WEB/ART314/2019

United Nations, *Compilation of Information on the Minimization of Adverse Impacts in Accordance with Article 3, Paragraph 14, of the Kyoto Protocol, 2016*, FCCC/WEB/ART314/2016

United Nations, *Compilation of Information on the Minimization of Adverse Impacts in Accordance with Article 3, Paragraph 14, of the Kyoto Protocol, 2018*, FCCC/WEB/ART314/2018

United Nations, United Nations Conference on the Human Environment, 15 December 1972, A/RES/2994 (The Stockholm Declaration).

Universal Declaration of Human Rights, GA Res 217A (III), UNGAOR, 3rd Sess, Supp No 13, UN Doc A/810 (1948) 71

WRI/WBCSD, *The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard* (Geneva: WRI/WBCSD, 2004)

Legislation, Bills, National Policies and Guidelines

American Clean Energy and Security Act, 2009, H.R. 2454 – 111th Congress, ss. 421 - 433

Bankruptcy and Insolvency Act, RSC 1985, c. B-3

Canada National Parks Act, SC 2000, c 32

Canadian Net-Zero Emissions Accountability Act, SC 2021, c 22

CEQ, *Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act*, (2020) online: <https://www.govinfo.gov/content/pkg/FR-2020-07-16/pdf/2020-15179.pdf>

Clean Air Act, 42 USC §§7401-7671

Climate Change (Emissions Reduction Targets) (Scotland) Act 2019

Climate Protection Act, 2013, S. 332 – *113th Congress, s. 197*

Companies' Creditors Arrangement Act, RSC 1985, c C-36

Council on Environmental Quality, *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews,* (2016)

Department of Forestry, Fisheries and the Environment, *National Guideline for Consideration of Climate Change Implications in Applications for Environmental Authorisations, Atmospheric Emission Licenses and Waste Management Licenses* (2021) Government Gazette No. 44761,

Environment and Climate Change Canada, *A healthy Environment and a Healthy Economy: Canada's Strengthened Climate Plan to Create Jobs and Support People, Communities and the Planet* (Ottawa: Environment and Climate Change Canada)

Environmental Protection and Enhancement Act, RSA 2000, c E-12

Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment (CCCEA), *Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners* (CCCEA, 2003)

French Corporate Duty of Vigilance Law (2017), Art L. 225-102-4

German Supply Chain Due Diligence Act, 2021

Government of Canada, "Guidance: Considering the Extent to which a Project Contributes to Sustainability" (2020) online: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/guidance-considering.html>

Government of Canada, "Statement by the Government of Canada on Thermal Coal Mining", (11 June 2021) online: <https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/electricity-generation/statement-government-canada-thermal-coal-mining.html>

Government of Canada, "Strategic Environmental Assessment: The Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals – Guidelines for Implementing the Cabinet Directive" 2010

Government of Canada, *Pan-Canadian Framework on Clean Growth and Climate Change* (Ottawa: Government of Canada, 2016)

Government of Canada, *Strategic Assessment of Climate Change* (Government of Canada: Ottawa, 2020)

Government of Canada, *Technical Guide Related to the Strategic Assessment of Climate Change: Guidance on Quantification of Net GHG Emissions, Impact on Carbon Sinks, Mitigation Measures, Net-Zero Plan and Upstream GHG Assessment* (Ottawa: Government of Canada, 2021)

Government Pension Fund Act, No. 123 of 21 December 2005 (As amended in 2019) (Norway)

Guidelines for Observation and Exclusion from the Government Pension Fund Global (As amended in 2019) (Norway)

IAAC, "Framework: Public Participation Under the Impact Assessment Act", online: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/framework-public-participation.html>

IAAC, "Guidance: Gender-based Analysis Plus in Impact Assessment", online: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/gender-based-analysis.html>

IAAC, "Guidance: Public Participation under the Impact Assessment Act", online: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/guidance-public-particaption-impact.html#a5-4>

IAAC, "Operational Guide: designating a Project under the Impact Assessment Act", (19 May 2022) online: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/designating-project-impact-assessment-act.html>

Impact Assessment Act, SC 2019, c-C-28

Information and Management of Time Limits Regulations, SOR/2019-283

Low Carbon Economy Act, 2007, S. 1766 -110th Congress

Management Mandate for the GPFG (as of 30 November 2019) (Norway)

Nova Scotia Environment, "Guide to Considering Climate Change in Environmental Assessments in Nova Scotia", (February 2011) online: <https://novascotia.ca/nse/ea/docs/EA.Climate.Change.Guide.pdf>

Policy Context: Considering Environmental Obligations and Commitments in respect of Climate Change under the IAA, online: <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/considering-environmental-obligations.html>

Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations, SOR/2012-167

Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the Establishment of a Framework to Facilitate Sustainable Investment, and Amending Regulation (EU) 2019/2088

Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, 40 CFR Parts 1500 – 1508 (2005)

The Greenhouse Gas Pollution Pricing Act, SC 2018, c 12

The National Environmental Policy Act, 1969, Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, Sept. 13, 1982

The Town and Country Planning (Environmental Impact Assessment) Regulations, 2017 No. 571

United States Endangered Species Act of 1973, [As Amended Through P.L. 113–287, Enacted December 19, 2014]

UNDRIP Act, SC 202, c 14

US Environmental Protection Agency (US EPA), "Guidelines for Ecological Risk Assessment" 1998 EPA/630/R-95/002F

Jurisprudence

Canada – Certain Measures Affecting the Renewable Energy Generation Sector; Canada – Measures Relating to the Feed-in-Tariff Program (2012), *WTO Doc* WT/DS412/R, WT/DS426/R (Panel Report)

Canada – Certain Measures Affecting the Renewable Energy Generation Sector; Canada – Measures Relating to the Feed-in-Tariff Program (2013), *WTO Doc* WT/DS/412/AB/R, WT/DS426/AB/R (Appellate Body Report)

Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town), 2001 SCC 40, [2001] 2 S.C.R. 241

Case Concerning East Timor (Portugal v Australia) Merits, Judgment, ICJ Reports 1995 4

Case Concerning Pulp Mills on the River Uruguay (Argentina v Uruguay), Judgment, ICJ Reports 2010, p 14

Center for Biological Diversity v Bernhardt No. 3:20-cv-00290, 2021WL 3667986

Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua) and Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica), Judgment, I.C.J. Reports 2015

Chevron v Ecuador PCA (2018) Case No. 2009-23

Clements v Clements [2012] 2 SCR 181

ConocoPhillips v. Venezuela (2019) ICSID Case No. ARB/07/30

Delgamuukw v. British Columbia [1997] 3 SCR 1010

Ermineskin Cree Nation v The Minister of Environment and Climate Change and ors., 2021 FC 758

Friends of the Earth et al. v Haaland et al (2022) 21-2317

Haida Nation v British Columbia (Minister of Forests) 2004 SCC 73

Indus Waters Kishenganga Arbitration (Pakistan v India), 2011-01, Permanent Court of Arbitration (Partial Award Delivered 18 February 2013)

IPC Petroleum France SA v France (2019) N º 421004 online: <http://climatecasechart.com/non-us-case/ipc-petroleum-france-sa-v-france/>

Italian National Contact Point for the OECD Guidelines, *Specific Instance submitted to the Italian NCP on the 15th December 2017 by Chima Williams & Associate (CWA) and Advocates for Community Alternatives (ACA), on behalf*

of Egbema Voices of Freedom, versus ENI S.p.A. and ENI International BV – Report on the Agreement by the Parties, online: <*https://pcnitalia.mise.gov.it/attachments/article/2035928/Report%20CWA-ENI%20case%20-%20NCP%20final.pdf*>

Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, (1996) ICJ 226

Louisiana et al v Biden et al, (2022) Case No. 2L21-CV-01074

Massachusetts v Environmental Protection Agency, 549 US 497 (2007)

Milieudefensie et al v. Royal Dutch Shell Plc ECLI:NL:RBDHA:2021:5339

Mobil and Ors v. Venezuela (2014) ICSID Case No. ARB/07/27

Mustapha v Culligan of Canada Ltd. [2008] 2 SCR 114

Nevsun Resources Ltd v. Araya, 2020 SCC 5

Notre Affaire à Tous & Others v Total (2019) online: <http://climatecasechart.com/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2020/20200128_NA_complaint-2.pdf>

Occidental v. Ecuador (II) (2012) ICSID Case No. ARB/06/11

Orphan Well Association v. Grant Thornton Ltd, 2019 SCC 5

Oxfam Novib & Ors v ING, OECD Dutch NCP Final Statement (19 April 2019)

Pennsylvania Coal Co. v. Mahon (1922) 260 US 393

R v Crown Zellerbach Canada Ltd [1988] 1 SCR 401

R v Sparrow [1990] 1 SCR 1075

R v. Marshall [1999] 3 SCR 533

References re Greenhouse Gas Pollution Pricing Act (re GPPA), 2021 SCC 11

Sierra Club et al v Federal Energy Regulatory Commission, 867 F.3d 1357,1367 (D.C. Cir. 2017)

Sovereign Iñupiat for a Living Arctic et al v Bureau of Land Management 982 F.3d (9th Cir. 2020)

Statnett SF v Sør-Fosen Sijte et al, HR-2021-1975-S, (case no. 20-143891SIV-HRET), (case no. 20-143892SIV-HRET) and (case no. 20-143893SIV-HRET)

The Lake Lanoux Arbitration (France v Spain) (1957) 12 R.I.A.A. 281; 24 I.L.R. 101

The State of the Netherlands v Urgenda, ECLI:NL:HR:2019:2007

Thomas and Saik'uz First Nation v Rio Tinto 2022 BCSC 15

Trail Smelter Arbitration (United States v. Canada) (1941) 3 UN Rep Intl Arb Awards 1905

Tsilhqot'in Nation v British Columbia 2014 SCC 44

Union Fenosa Gas v. Egypt (2018) ICSID Case No. ARB/14/4

United States – Certain Measures Relating to the Renewable Energy Sector (2019), *WTO* Doc WT/DS510/R (Panel Report)

Urgenda Foundation v State of the Netherlands [2019] ECLI:NL:HR:2019:2007

Yahey v. British Columbia 2021 BCSC 1287

Monographs, Book Chapters, Reports, and Journal Articles

Abaza, Hussein et al. *Environmental Impact Assessment and Strategic Environmental Assessment: Towards an Integrated Approach* (Geneva: UNEP, 2004)

Adelman, Sam. "The Sustainable Development Goals, Anthropocentrism and Neoliberalism" in Duncan French and Louis Kotzé, eds., *Sustainable Development Goals: Law, Theory and Implementation* (Cheltenham, Edward Elgar: 2018)

Agyeman, Julian. *Introducing Just Sustainabilities: Policy, Planning, and Practice* (London: Zed Books, 2013)

Ahearn, Ariell et al, eds. *Indigenous Peoples and Climate Change: Emerging Research on Traditional Knowledge and Livelihoods* (Geneva: International Labour Organization, 2019)

Alberta Federation of Labour (AFL) & Coal Transition Coalition. *Getting it Right: A Just Transition Strategy for Alberta's Coal Workers* (AFL, 2017)

Armstrong, Chris & Simon Thompson. "Parity of Participation and the Politics of Status (2009) 8:1 European Journal of Political Theory 109

Armstrong, Chris. "Decarbonization and World Poverty: A Just Transition for Fossil Fuel Exporting Countries" (2020) 68:3 Political Studies 671

Arnold, Lauren M. et al. "Assessing the Cumulative Social Effects of Projects: Lessons from Canadian Hydroelectric Development" (2022) 69 Environmental Management 1035

Arnstein, Sherry. "A Ladder of Citizen Participation" (1969) 35: 4 Journal of American Institute of Planners 216

Arts, Jos et al. "Planning in Tiers? Tiering as a Way of Linking SEA and EIA" in Barry Sadler et al, eds, *Handbook of Strategic Environmental Assessment* (Oxon, New York: Earthscan, 2011) 415

Asheim, Geir et al. "The Case for a Supply-side Climate Treaty" (2019) 365:6451 Policy Forum 325

Ayres, Robert. "Life Cycle Analysis: A Critique" (1995) 15 Resources, Conservation and Recycling 199

Ayres, Sarah. "Assessing the Impacts of Informal Governance on Political Innovation" (2017) 19:1 Public Management Review 90

Bacchus, James. "What is a Climate Response Measure? Breaking the Trade Taboo Confronting Climate Change" (2019) CIGI Papers No. 220

Balistreli, Edward et al. "Optimal Environmental Border Adjustments Under the General Agreement on Tariffs and Trade" (2019) 74 Environmental and Resources Economics 1037

Balmaceda, Margarita. "Differentiation, Materiality, and Power: Towards a Political Economy of Fossil fuels" (2018) 39 Energy Research and Social Science 130

Banerjee, Subhabrata Bobby. 'Who Sustains Whose Development? Sustainable Development and the Reinvention of Nature' (2003) 24:1 Organization Studies 143

Baran, Jan et al. *Coal Transition in Poland: Options for a Fair and Feasible Transition for the Polish Coal Sector* (IDDRI & Climate Strategies, 2018)

Barclay, Linda. "The Importance of Equal Respect: What Capabilities Approach Can and Should Learn from Human Rights Law" (2016) 64: 2 Political Studies 385

Bare, Jane et al. "Midpoints versus Endpoints: The Sacrifices and Benefits" (2012) Intl J of Life Cycle Assessment 319

Barker, Adam & Christopher Wood. "Environmental Assessment in the European Union: Perspectives, Past, Present and Strategic" (2001) 9:2 European Planning Studies 243

Baron, Richard & David Fischer. "Divestment and Stranded Assets in the Low-Carbon Transition" Background Paper for the 32nd Round Table on Sustainable Development, 28 October 2015, OECD Headquarters, Paris

Bartell, S.M. "Ecology, Environmental Impact Statements, and Ecological Risk Assessment: A Brief Historical Perspective" (1998) 4:4 Human and Ecological Risk Assessment 843

Bartlett, Lesley & Frances Vavrus. "Comparative Case Study: An Innovative Approach" (2017) 1:1 Nordic Journal of Comparative and Intl Education 5

Bartlett, Robert & Priya Kurian. "The Theory of Environmental Impact Assessment: Implicit Models of Policy Making" (1999) 27:4 Policy & Politics 415

Benoit, Catherine et al. "The Guidelines for Social Life Cycle Assessment of products: Just in Time" (2010) 15 Int J Life Cycle Assess 156

Benson, John. "What is the Alternative? Impact Assessment Tools and Sustainable Planning" (2003) 21:4 Impact Assessment and Project Appraisal 261

Benzie, Magnus et al. "Meeting the Global Challenge of Adaptation by Addressing Transboundary Climate Risk", *Stockholm Environment Institute Discussion Brief* (April 2018)

Bergek, Anna, et al. "Technological Innovation Systems in Context: Conceptualizing Contextual Structures and Interaction Dynamics" (2015) 16 Env Innovation and Societal Transitions 51

Bergman, Noam. "Impacts of the Fossil Fuel Divestment Movement: Effects on Finance, Policy and Public Discourse" (2018) 10:7 Sustainability 1

Betey, Campion Benjamin & Essel Godfred. "Environmental Impact Assessment and Sustainable Development in Africa: A Critical Review" (2013) 3:2 Env and Nat Res Research 37

Biancone, Paolo & Silvana Secinaro eds. *Role of Impact Assessment in Sustainable Development* (Basel: MDPI, 2022)

Biber, Eric. "Climate Change, Causation, and Delayed Harm" (2009) 37 Hofstra Law Review 975

Bidstrup, Morten & Anne Merrild Hansen. "The Paradox of Strategic Environmental Assessment" (2014) 47 Env Impact Assessment Review 29 at 30

Bina, Olivia. "A Critical Review of the Dominant Lines of Argumentation on the Need for Strategic Environmental Assessment" (2007) 27 Env Impact Assessment Rev 585

Bina, Olivia. "Strategic Environmental Assessment" in A. Jordan & A. Lenschow eds, *Innovation in Environmental Policy? Integrating Environment for Sustainability* (Cheltenham: Edward Elgar Publishing Ltd, 2008)

Bird, Brian. "Are All Charter Rights and Freedoms Really Non-Absolute? (2017) 40:1 Dalhousie Law Journal 107

Bishop, Patrick & Glyn Davis. "Mapping Public Participation in Policy Choices" (2002) 61:1 Australian Journal of Public Administration 14

Blakley, Jill et al. "The Scope and Focus of Cumulative Effects and Regional Assessment" in Meinhard Doelle and A. John Sinclair eds., *The Next Generation of Impact Assessment: A Critical Review of the Canadian Impact Assessment Act* (Toronto: Irwin Law, 2021)

Blakley, Jill et al. *Lessons Learned, Best Practices and Critical Gaps in Regional Environmental Assessment: A Synthesis of Canadian and International Literature* (2020, prepared for the Social Sciences and Humanities Research Council of Canada and the Impact Assessment Agency of Canada)

Blue, Gwendolyn et al. "Justice as Parity of Participation: Enhancing Arnstein's Ladder Through Fraser's Justice Framework" (2019) 85:3 Journal of the American Planning Association 363

Bond, Alan et al. "Sustainability Assessment: The State of the Art" (2012) 30:1 Impact Assessment and Project Appraisal 53

Bosca, Hanna & Josephine Gillespie. "The Coal Story: Generational Coal Mining Communities and Strategies of Energy Transition in Australia" (2018) 120 Energy Policy 734

Boutillon, Sonia. "The Precautionary Principle: Development of an International Standard" (2003) 23:2 Michigan Journal of Intl Law 429

Boyd, David. *The Right to a Healthy Environment: Revitalizing Canada's Constitution* (Vancouver: UBC Press, 2012)

Bratspies, Rebecca. "Reasoning Up: Environmental Rights as Customary International Law" in John Knox & Ramin Pejan, *The Human Right to a Healthy Environment* (Cambridge: Cambridge University Press, 2018)

Brauers, Hanna et al. "Coal Transition in Germany: Learning from Past Transitions to Build Phase-out Pathways" (2018) IDDRI & Climate Strategies

Braungardt, Sibylle et al. "Fossil Fuel Divestment and Climate Change: Reviewing Contested Arguments" (2019) 50 Energy Researcha and Social Science 191

Bridgewater, Peter et al. "Ecological Integrity: A Relevant Concept for International Environmental Law in the Anthropocene" (2015) 25:1 Yearbook of International Environmental Law 61

British Petroleum. *BP Statistical Review of World Energy*, 68th ed (London: BP, 2019)

British Petroleum. *BP Statistical Review of World Energy*, 69th Ed., (London: BP, 2020)

Bruce, James et al eds. *Climate Change 1995: Economic and Social Dimensions of Climate Change – Contribution of Working Group III to the Second Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 1996)

Brueckner-Irwin, Irene et al. "Applying a Social-ecological Wellbeing Approach to Enhance Opportunities for Marine Protected Area Governance" (2019) 24:3 Ecology and Society 7

Brunce, Valerie. "Paper Curtains and Paper Tigers" (1995) 54:4 Slavic Review 979

Bullock, David. "Combatting Climate Recalcitrance: Carbon-Related Border Tax Adjustments in a New Era of Global Climate Governance" (2017) 27:3 Washington Intl Law Journal 609

Burdge, Rabel. "The Focus of Impact Assessment (and IAIA) Must Now Shift to Global Climate Change" (2008) 28 Env Impact Assessment Rev 618

Byer, Philip, et al. "Climate Change in Impact Assessment: International Best Practice Principles" (2012) 8 IAIA Special Publication Series

Cahill, Ben & Mary Margaret Allen. *Just Transition Concepts and Relevance for Climate Action: A Preliminary Framework* (Center for Strategic and International Studies & Climate Investment Fund, 2020)

Caldecott, Ben et al. "Lessons from Previous 'Coal Transitions': High Level Summary for Decision-Makers" (2017) IDDRI & Climate Strategies

Caldwell, Lynton, *The National Environmental Policy Act: An Agenda for the Future* (Bloomington: Indiana University Press, 1998)

Caldwell, Lynton. "Analysis-Assessment-Decision: The Anatomy of Rational Policymaking" (1991) 9:4 Impact Assessment 81

Caldwell, Lynton. "Environmental Impact Analysis (EIA): Origins, Evolution, and Future Directions" (1988) 6:3/4 Impact Assessment 75

Canadian Coal Power Workers and Communities. *What We Heard from Canadian Coal Power Workers and Communities* (Ottawa: Government of Canada, 2019)

Candela Renewables LLC. *Plan of Development: Rough Hat Clark county Solar Project* (Candela Renewables LLC, 2021)

Carley, Sanya et al. "Adaptation, Culture, and the Energy Transition in American Coal Country" (2018) 37 Energy Research & Social Science 133

Carter, T.R. et al. *IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptations* (University College London and National Institute for Environmental Studies, 1994)

Cashmore, Matthew et al. "The Interminable Issue of Effectiveness: Substantive Purposes, Outcomes and Research Challenges in the Advancement of Environmental Impact Assessment Theory" (2004) 22:4 Impact Assessment and Project Appraisal 295

CDP & We Mean Business. *The Business End of Climate Change* (CDP & We Mean Business, 2016)

Chan, Nicholas. "The 'New' Impacts of the Implementation of Climate Change Response Measures" (2016) 25:2 Review of European Community & Intl Envtl Law 228

Charnovitz, Steve and Carolyn Fisher. "Canada-Renewable Energy: Implications for WTO Law on Green and not-So-Green Subsidies" (2015) 14:2 World trade Review 177

Chatterton, Paul et al. "Articulating Climate Justice in Copenhagen: Antagonism, the Commons, and Solidarity" (2013) 45:3 Antipode 602

Chief, Karletta et al. "Indigenous Experiences in the Us with Climate Change and Environmental Stewardship in the Anthropocene," V. Alaric Sample and R. Patrick Bixler ed., in *Forest Conservation and Management in the Anthropocene: Conference Proceedings* (Fort Collins, CO, USA: US Department of Agriculture, Forest Service. Rocky Mountain Research Station, 2014)

Ciplet, David & Jill Harrison. "Transition Tensions: Mapping Conflicts in Movements for a Just and Sustainable Transition" (2020) 29: 3 Environmental Politics 435

Claassen, M. "Ecological Risk Assessment as a Framework for Environmental Impact Assessments" (1999) 39:10/11 Water Science Tech 151

Climent-Gil, Emilio et al. "The Social Vulnerability Approach for Social Impact Assessment" (2018) 73 Environmental Impact Assessment Review 70

Coady, David et al. "Global Fossil Fuel Subsidies Remain Large: An Update based on Country-Level Estimates" (2019) IMF Working Paper, WP/19/89

Cohen, Joshua. "Deliberation and Democratic Legitimacy" in A. Hamlin and B. Pettit, eds, *The Good Polity* (Oxford, 1989)

Commission on Growth, Structural Change and Employment. *Commission on Growth, Structural Change and Employment – Final Report* (Berlin: Federal Ministry for Economic Affairs and Energy, 2019)

Conceição, Pedro. "Towards a new Generation of Human Development Metrics for the Anthropocene" in *Human Development Report 2020: The Next Frontier – Human Development and the Anthropocene* (New York: UNDP, 2020)

Corporate Accountability et al. *The Big Con: How Big Polluters are Advancing a "Net Zero" Climate Agenda to Delay, Deceive, and Deny*, (Corporate Accountability et al, 2021)

Coutinho, Miguel et al. “Impact Assessment: Tiering Approaches for Sustainable Development Planning and Decision-making of a Large Infrastructure Project” (2019) 37:6 Impact Assessment and Project Appraisal 460

Craik, Neil & Sara Seck. “The Value of an Innovation Framework for International Law” in Neil Craik et al, eds., *Global Environmental Change and Innovation in International Law* (Cambridge: Cambridge University Press, 2018)

Cushion, Elizabeth et al. *Bioenergy Development: Issues and Impacts for Poverty and Natural Resource Management* (Washington: The World Bank, 2010)

D’Amato, Claudio. “Collectivist Capabilitarianism” (2020) 21: 2 Journal of Human Development and Capabilities 105

Dahl, R.A. *Democracy and its Critics* (New Havel, 1989)

Dale, Allan & Marcus Lane. “Strategic Perspectives Analysis: A Procedure for Participatory and Political Social Impact Assessment” (1994) 7:3 Society & Natural Resources 253

Daly, Herman. “Sustainable Development and OPEC” (Paper delivered at OPEC and the Global Energy Balance: Towards a Sustainable Energy Future Conference, Vienna, Austria, September 2001)

Davidson, Christopher. *After the Sheikhs: The Coming Collapse of the Gulf Monarchies* (Oxford: Oxford University Press, 2012)

De Neve, Jan-Emmanuel & Jeffrey Sachs. “Sustainable Development and Human Well-Being” in John Helliwell eds., *World Happiness Report* (New York: Sustainable Development Solutions Network, 2020) 112 – 127

De Neve, Jan-Emmanuel & Jeffrey Sachs. “The SDGs and Human Well-Being: A Global Analysis of Synergies, Trade-offs, and Regional Differences” (2020) 10:1 Scientific Reports 1

Dean, Graham. “The Scottish Oil-Shale Industry from the Viewpoint of the Modern-day Shale-gas Industry” in Jonathan Craig et al, *History of the European Oil and Gas Industry* (London: Geological Society, 2018)

Devlin, Richard. “The Charter and Anglophone Legal Theory” (1997 - 1998) 4:1 Rev of Const Stud 19

Djik, M. et al. “Sustainability Assessment as Problem Structuring: Three Typical Ways” (2017) 12 Sustainability Science 305

Doelle, Meinhard and A. John Sinclair. “Time for a New Approach to Public Participation in EA: Promoting Cooperation and Consensus for Sustainability” (2006) 26 Environmental Impact Assessment Review 185

Doelle, Meinhard. “Integrating Climate Change Mitigation into the Impact Assessment Act” in Meinhard Doelle and A. John Sinclair eds., *The Next Generation of Impact Assessment: A Critical Review of the Canadian Impact Assessment Act* (Toronto: Irwin Law, 2021) 277

Doorey, David. “Just Transitions Law: Putting Labour Law to Work on Climate Change” (2017) 30:2 Journal of Envl L & Practice 201 – 239; Ann Eisenberg, “Just Transitions” (2019) 92 Southern California L Rev 273

Dorsch, Marcel & Christian Flachsland. “A Polycentric Approach to Global Climate Governance” (2017) 17:2 Global Environmental Politics 45

Drakes, Oronde & Eric Tate. “Social Vulnerability in a Multi-hazard Context: A Systematic Review” (2022) 17 Environmental Research 1 –

Duinker, Peter & Lorne Greig. “Scenario Analysis in Environmental Impact Assessment: Improving Explorations of the Future” (2007) 27 Env Impact Assessment Rev 206

Duinker, Peter & Lorne Greig. “The Impotence of Cumulative Effects Assessment in Canada: Ailments and Ideas for Redeployment” (2006) 37:2 Environmental Management 153

Duinker, Peter et al. “Scientific Dimensions of Cumulative Effects Assessment: Toward Improvements in Guidance for Practice” (2013) 21 Environ Rev 40

Duinker, Peter. “Cumulative Effects Assessment: What’s the Big Deal?” in Alan Kennedy ed., *Cumulative Effects Assessment in Canada: From Concept to Practice* (Edmonton: Alberta Society of Professional Biologists, 1994)

Edmunds, Stahrl. “Environmental Policy: Bounded Rationality Applied to Unbounded Ecological Problems” (1980) 9:3 Policy Studies Journal 359

Edwards, Gareth. “Coal and Climate Change” (2019) 10 WIREs Climate Change 1

Eisenberg, Ann. “Just Transitions” (2019) 92:2 Southern California Law Review 273

Environmental Protection Agency (EPA). *Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts* (EPA, 2021)

ETC. *Mission Possible: Reaching Net-Zero Carbon Emissions from Harder-to-Abate Sectors by Mid-Century* (London: ETC, 2018)

European Commission. *Impact Assessment Report Accompanying the Proposal for a Regulation of the European Parliament and of the Council on Methane Emissions Reduction in the Energy Sector and Amending Regulation (EU) 2019/942*, SWD (2021)

European Commission. *Trade Sustainability Impact Assessment on the Environmental Goods Agreement: Executive Summary* (European Union, 2016)

European Institute for Gender Equality, *Gender Impact Assessment: Gender Mainstreaming Toolkit* (Gedimino, Lithuania; EIGE, 2016)

Fankhauser, Sam et al. "The Meaning of Net Zero and How to Get it Right" (2022) 12 Nature Climate Change 15

Fargašová, Agáta. "Ecological Risk Assessment Framework" (2016) 24:1 ACTA ENVIRONMENTALICA UNIVERSITATIS COMENIANAE (BRATISLAVA) 10

Feenstra, Jan et al. *Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies* (Nairobi: UNEP, 1998)

Felner, Eitan et al. *Human Rights Impact Assessment: A Review of the Literature, Differences with other Forms of Assessments and Relevance for Development* (The World Bank & Nordic Trust Fund, 2013)

Few, Roger et al. "Public Participation and Climate Change Adaptation: Avoiding the Illusion of Inclusion" (2007) 7 Climate Policy 46

Fineman, Martha. "The Vulnerable Subject and the Responsive State" (2010) 60:2 Emory Law Journal 251

Fineman, Martha. "The Vulnerable Subject: Anchoring Equality in the Human Condition" (2008) 20:1 Yale Journal of Law & Feminism 1

Fineman, Martha. "Vulnerability and Social Justice" (2019) 53:2 Valparaiso University Law Review 341

Finnveden, Goran et al. "Strategic Environmental Assessment Methodologies: Applications within the Energy Sector" (2003) 23 Env Impact Assessment Rev 91

Fisher, Aled Dilwyn. "Human Rights in the Transition to a "Green Economy" – Critical Human Rights-Based Approaches to Climate change in Norway" (2014) 32:3 Nordic Journal of Human Rights 258

Fisher, Thomas. "Strategic Environmental Assessment in Post-Modern Times" (2003) 23 Environmental Impact Assessment Review 155

Fitzpatrick, Patricia and A. John Sinclair. "Learning through Public Involvement in Environmental Assessment Hearings" (2003) 67 Journal of Environmental Management 161

Flannery, Brian et al. *Framework Proposal for a US Upstream GHG Tax with WTO-Compliant Border Adjustments: 2020 Update* (Washington, DC: Resources for the Future, 2020)

Fleurbaey, Marc et al. "Sustainable Development and Equity" in Edenhofer O., eds., *Climate Change 2014: Mitigation of Climate Change – Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2014)

Fluker, Shaun. "Ecological Integrity in Canada's National Parks: The False Promise of the Law" (2010) 29 Windsor Rev of Legal & Soc Issues 89

Foden, Mike et al. *The State of the Coalfields: Economic and Social Conditions in the Former Mining Communities of England, Scotland and Wales* (Centre for Regional Economic and Social Research, 2014)

Foley, Melissa et al. "The Challenges and Opportunities in Cumulative Effects Assessment" (2017) 62 Env Impact Assessment Rev 122

Forsyth, Tim. "Climate Justice is not Just Ice" (2014) 54 Geoforum 230

Foster, James & Christopher Handy. "External Capabilities" (2008) 8 OPHI Working Papers 1

Franks, Max et al. "Why Finance Ministers Favor Carbon Taxes, Even If They Do Not Take Climate Change into Account" (2017) 68:3 Environmental and Resource Economics 445

Fraser, Nancy. "Recognition Without Ethics" (2001) 18:2/3 Theory, Culture & Society 21

Fraser, Nancy. "Reframing Justice in a Globalizing World" (2005) 36 New Left Review 69

Fraser, Nancy. "Rethinking Recognition" (May/June 2000) 3 New Left Review 107

Fraser, Nancy. "Who Counts? Dilemmas of Justice in a Postwestphalian World" (2009) 41: 1 Antipode 281

Fridman, G.H.L. *The Law of torts in Canada* (Toronto: Carswell, 1989)

Friederike, Otto et al. "Assigning Historic Responsibility for Extreme Weather Events" (2017) 7 Nature Climate Change 757

Friedlingstein, Pierre et al. "Global Carbon Budget 2019" (2019) 11 Earth Syst Sci Data 1783

Gage, Andrew & Margaretha Weweinke. *Taking Climate Justice into our own Hands: A Model Climate Compensation Act*, (Vanatu Environmental Law Association & West Coast Environmental Law, 2015)

Galgoczi, Bela. "Just Transition Towards Environmentally Sustainable Economies and Societies for All" (2018) ILO ACTRAV Policy Brief

Galgoczi, Bela. "Phasing Out Coal – A Just Transition Approach" Working Paper 2019.04 European Trade Union Institute

Garufi, Sebastiano. "Border Tax Adjustments and Environmental Protection: The Role of Taxes and GATT Limits" (2013) Bocconi Legal Studies Research Paper No 2360226, 24

Gass, Philip & Daniella Echeverria. *Fossil Fuel Subsidy Reform and the Just Transition: Integrating Approaches for Complementary Outcomes* (Winnipeg: IISD, 2017)

Geels, Frank & Johan Schot. "The Dynamics of Transitions: A Socio-Technical Perspective" in John Grin et al eds., *Transitions to Sustainable Development*, (New York: Routledge, 2010)

Geels, Frank & Rene Kemp. "The Multi-Level Perspective as a New Perspective for Studying Socio-Technical Transitions" in Frank Geels et al, eds, *Automobility in Transition? A socio-Technical Analysis of Sustainable Transport* (New York: Routledge, 2012)

Geels, Frank. "The Multi-level Perspective on Sustainability Transitions: Responses to Seven Criticisms" (2011) 1 Env Innovation and Societal Transitions 24

Gibson, Robert & Kevin Hanna. "Progress and Uncertainty: The Evolution of Federal Environmental Assessment in Canada" in Kevin Hanna ed., *Environmental Impact Assessment: Practice and Participation* 3rd edn (Ontario: Oxford University Press, 2016)

Gibson, Robert et al. "The Key Components and Provisions That Need to be Incorporated into Assessment Legislation to Ensure that Assessed Undertakings Help Meet Canadian Climate Change Commitments and Duties" (2018) The Paris to Project Research Initiative Discussion Paper

Gibson, Robert et al. *From Paris to Projects: Clarifying the Implications for Canada's Climate Change Mitigation Commitments for the Planning and Assessment of Projects and Strategic Undertakings* (Waterloo: 2019)

Gibson, Robert et al. *Sustainability Assessment: Criteria, Processes and Applicatio*n (London: Earthscan, 2005)

Gibson, Robert. "Avoiding Sustainability Trade-offs in Environmental Assessment" (2013) 31:1 Impact Assessment and Project Appraisal 2

Gibson, Robert. "Foundations: Sustainability and the Requirements for Getting There" in Robert Gibson ed., *Sustainability Assessment: Applications and Opportunities* (London: Earthscan, 2016)

Gibson, Robert. "From Wreck Cove to Voisey's Bay: The Evolution of Federal Environmental Assessment in Canada" (2002) 20:3 Impact Assessment and Project Appraisal 151

Gibson, Robert. "Opportunities: Finding Best Openings for Influential Applications" in Robert Gibson ed., *Sustainability Assessment: Applications and Opportunities* (London: Earthscan, 2016) 253

Gibson, Robert. "Sustainability Assessment: Basic Components of a Practical Approach" (2006) 24:3 Impact Assessment and Project Appraisal 170

Glasson, John et al. *Introduction to Environmental Impact Assessment,* 4th ed (Oxon: Routledge, 2012)

Glasson, John et al. *Introduction to Environmental Impact Assessment* 3rd ed. (Oxon: Routledge, 2005)

Global CCS Institute, *Global Status of CCS 2020* (Melbourne: Global CCS Institute, 2020)

Goddard, George & Megan Farrelly. "Just Transition Management: Balancing Just Outcomes with Just Processes in Australian Renewable Energy Transitions" (2018) 225 Applied Energy 110

Gomes, Guilherme & Rosana Corazza. "Global Carbon Budget: An International Political Economy Approach to Global Climate Governance" (AFEP IIPEE International Conference, Lille, France, 3 – 5 July 2019)

Gonzalez-Canton, Cesar et al. "Exploring the Link Between Human Rights, the Capability Approach and Corporate Responsibility" (2019) 160 Journal of Business Ethics 865

Gonzalez, Carmen. “Racial Capitalism, Climate Justice, and Climate Displacement” (2021) 11:1 Oñati Socio-Legal Series 108

Goodrick, Delwyn. “Comparative Case Studies” (2014) 9 UNICEF Methodological Briefs Impact Evaluation 1

Gosselin, Pierre et al. *The Royal Society of Canada Expert Panel Report: Environmental and Health Impacts of Canada’s Oil Sands Industry* (Ottawa, Ontario: Royal Society of Canada, 2010)

Götzmann, Nora. “Introduction to the Handbook on Human Rights Impact Assessment: Principles, Methods and Approaches” in Nora Götzmann, ed., *Handbook on Human Rights and Impact Assessment* (Cheltenham: Edward Elgar, 2019)

Government of Canada. *Pan-Canadian Framework on Clean Growth and Climate Change* (Ottawa: Government of Canada, 2016)

Government of Canada. *Technical Guide Related to the Strategic Assessment of Climate Change: Guidance on Quantification of Net GHG Emissions, Impact on Carbon Sinks, Mitigation Measures, Net-Zero Plan and Upstream GHG Assessment* (Ottawa: Government of Canada, 2021)

Graham, Nicole et al. “Broadening Law’s Context: Materiality in Socio-Legal Research” (2017) 26:4 Griffith Law Review 480

Great Sand Hills Advisory Committee. *Great Sand Hills Regional Environmental Study* (2017)

Green Jobs Assessment Institutions Network. *How to Measure and Model Social and Employment Outcomes of Climate and Sustainable Development Policies* (Geneva: ILO, 2017)

Green, Fergus and Richard Denniss. “Cutting with both Arms of the Scissors: The Economic and Political Case for Restrictive Supply-side Climate Policies” (2018) 150 Climate Change 73

Green, Fergus. “Australia: caught Between a ‘Just Transition’ and ‘No Transition’” (March 2019) Foundation for European Progressive Studies – Policy Brief

Green, Fergus. “The Logic of Fossil Fuel Bans” (2018) 8 Nature Climate Change 444

Greenpeace. *Carbon Capture Scam (CCS): How a False Climate Solution Bolsters Big Oil* (Washington, DC: Greenpeace USA, 2015)

Griffin, Paul. *The Carbon Majors Database: CDP Carbon Majors Report 2017* (London: CDP, 2017)

Gudynas, Eduardo. ‘Buen Vivir: Today’s Tomorrow’ (2011) 54:4 Development 441

Gümplová, Petra. “Restraining Permanent Sovereignty over Natural Resources” (2014) 53 Enrahonar. Qaderns de Filosofia 93

Gunderson, Ryan et al. “The Fossil Fuel Industry’s Framing of Carbon Capture and Storage: Faith in Innovation, Value Instrumentalization, and Status Quo Maintenance” (2020) 252 Journal of Cleaner Production 1

Gupta, Joyeeta and Susanne Schmeier, “Future Proofing the Principle of No Significant Harm” (2020) 20 International Environ Agreements 731

Habermas, Jurgen. (translated by Thomas Burger), *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society* (Cambridge: The MIT Press, 1991)

Habermas, Jurgen. (translated by William Rehg), *Between Facts and Norms: Contributions to a Discourse Theory of Law and Democracy* (Cambridge: The MIT Press, 1996)

Hacking, Theo & Peter Guthrie. “A Framework for Clarifying the Meaning of Triple Bottom-Line, Integrated, and Sustainability Assessment” (2008) 28 Env Imp Assessment Rev 73

Haggerty, Julia et al. “Planning for the Local Impacts of Coal Facility Closure: Emerging Strategies in the U.S. West” (2018) 57 Resources Policy 69

Harris, Angela. “Vulnerability and Power in the Age of the Anthropocene” (2014) 6:1 Washington and Lee Journal of Energy, Climate, and the Environment 98

Hasan, Md Arif et al. “Public Participation in EIA: A Comparative Study of the Projects run by Government and Non-government Organizations” (2018) 72 Env Impact Assessment Rev 12

Hauschild, Michael & Mark Huijbregts eds. *Life Cycle Impact Assessment* (Dordretch: Springer, 2015); J. W. Owens, “Life-Cycle Assessment: Constraints on Moving from Inventory to Impact Assessment” (1997) 1:1 Journal of Industrial Ecology 37

Hayes, Adrian. “What is Impact Assessment? Some Personal Reflections C.P. Wolf (1933 - 2015), Edited Posthumously by Adrian C. Hayes” (2017) 35:3 Impact Assessment and Project Appraisal 186

Health Protection Scotland. *A Health Impact Assessment of Unconventional Oil and Gas in Scotland* (Glasgow: HPS, 2016)

Heede, Richard. *Carbon Majors: Accounting for Carbon and Methane Emissions 1854 – 2010 – Methods and Results Report* (Snowmass, Colorado: Climate Mitigation Services, 2014)

Heede, Richard. *Carbon Majors: Updating Activity Data, Adding Entities, and Calculating Emissions: A Training Manual* (Climate Accountability Institute, 2019)

Heffron, Raphael & Darren McCauley. “What is the ‘Just Transition’?” (2018) 88 Geoforum 74

Heffron, Raphael. “The Just Transition to a Low Carbon Economy” (2018) 8:4 RELP 39

Herb, Michael. *The Wages of Oil: Parliaments and Economic Development in Kuwait and the UAE* (Ithaca: Cornell University Press, 2014)

Hernández, Diana. “Sacrifice Along the Energy Continuum: A Call for Energy Justice” (2015) 8:4 Environmental Justice 151

Hildén, Mikael et al. “Views on planning and expectations of SEA: the case of transport planning” (2004) 24:5 Environmental Impact Assessment Review 519

Hilding-Rydevik, T, Hlfkk, Theodo´rsdo´ ttir A´, eds. *Planning for Sustainable Development—The Practice and Potential of Environmental Assessment*, (Stockholm: Proceedings from the 5th Nordic Environmental Assessment Conference, Reykjavik, Iceland, 25–26 August 2003, 2004) 54

Hoogeveen, Dawn et al. “Sex, Mines, and Pipelines: Examining ‘Gender-based Analysis Plus’ in Canadian Impact Assessment Resource Extraction Policy” (2021) 8 The Extractive Industries and Society 1

Huseman, Jennifer & Damien Short. “’A Slow Industrial Genocide’: Tar Sands and the Indigenous Peoples of Northern Alberta” (2012) 16:1 The International Journal of Human Rights 216

Hutchinson, Terry & Nigel Duncan. “Defining and Describing What We Do: Doctrinal Legal Research” (2012) 17:1 Deakin Law Review 83

IEA. *Energy Technology Perspectives 2020: Special Report on Carbon Capture Utilisation and Storage – CCUS in Clean Energy Transitions* (Paris: IEA, 2020)

IEA. *Net Zero by 2050: A Roadmap for the Global Energy Sector* (Paris: IEA, 2021)

IEA. *The Role of Gas in Today’s Energy Transitions* (Paris: IEA, 2019)

IEMA, *Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance* (Lincoln: IEMA, 2017)

Impact Assessment Agency of Canada (IAAC). *Analysis Report: Whether to Designate the Vista Coal Underground Mine and Vista Mine Phase II Expansion Physical Activities in Alberta Pursuant to the Impact Assessment Act (Ottawa: IAAC, 2021)*

Impact Assessment Agency of Canada. *Suncor Base Mine Extension Project: Tailored Impact Assessment Guidelines Pursuant to the Impact Assessment Act* (Ottawa: IAAC, 2021)

Interim Report of the Special Rapporteur on Extreme Poverty and Human Rights, Olivier De Schutter: The “Just Transition” in the Economic Recovery: Eradicating Poverty within Planetary Boundaries (7 October 2020) 75th Sess. UNGA, A/75/181/Rev. 1

International Commission of Jurists. *Effective Operational-level Grievance Mechanisms* (Geneva: International Commission of Jurists, 2019)

International Energy Agency. *The Oil and Gas Industry in Energy Transitions: Insights from IEA Analysis* (Paris: IEA, 2020)

International Joint Commission. “Our Lakes, Our Health, Our Future: Proceedings of the International Joint Commission’s 1995 Biennial Meeting on Great Lakes Water Quality” (September 22 – 25, 1995, Duluth, Minnesota)

International Law Commission. *Articles on Prevention of Transboundary Harm from Hazardous Activities, with Commentaries* (2001) 2:2 Yearbook of the International Law Commission

International Law Commission, *Prevention of Transboundary Damage from Hazardous Activities* (1999) Document A/CN.4/501

International Trade Union Confederation. “Just Transition – Where Are We Now and What’s Next? – A Guide to National Policies and International Climate Governance” (2017) ITUC Climate Justice Frontline Briefing

IPCC. *Climate Change 2014: Synthesis Report – Summary for Policymakers* (IPCC, 2014)

IRENA. *Renewable Energy and Jobs: Annual Review 2019* (Masdar City: IRENA, 2019)

IUCN. *Mitigating Biodiversity Impacts Associated with Solar and Wind Energy Development: Guidelines for Project Development* (IUCN, 2021)

Jaber, Suaad. “Environmental Impacts of Wind Energy” (2013) 3:1 J of Clean Energy Technologies 251

Jacob, Klaus. “Regulatory Impact Assessment and Sustainable Development: Towards a Common Framework” (2010) 1:3 European Journal of Risk Regulation 276

Jänicke, Martin. “The Multi-level System of Global Climate Governance – the Model and its Current State” (2017) 27 Environmental Policy and Governance 108

Jay, Stephen et al. “Environmental Impact Assessment: Retrospect and Prospect” (2007) 27 Env Impact Assessment Rev 287

Jenkins, Kirsten et al. “Humanizing Sociotechnical Transitions Through Energy Justice: An Ethical Framework for Global Transformative Change” (2018) 117 Energy Policy 66

Jenkins, Kirsten. “Setting Energy Justice apart from the Crowd: Lessons from Environmental and Climate Justice” (2018) 39 Energy Research & Social Science 117

Jensen, Svenn et al. “An Introduction to the Green Paradox: The Unintended Consequences of Climate Policies” (2015) 9:2 review of Environmental Economics and Policy 246

Jha-Thakur, Urmila & Thomas Fisher. “25 Years of the UK EIA System: Strengths, Weaknesses, Opportunities and Threats” (2016) 61 Env Impact Assessment Rev 19

Jiliberto, Rodrigo. “Recognizing the Institutional Dimension of Strategic Environmental Assessment” (2011) 29:2 Impact Assessment and Project Appraisal 133

João, Elsa. “Key Principles of SEA” in M. Schmidt et al eds, *Implementing Strategic Environmental Assessment* (Berlin: Springer, 2005)

Kaarbo, Juliet & Ryan Beasley. “A Practical Guide to the Comparative Case Study Method in Political Psychology” (1999) 20:2 Political Psychology 369

Kaltenborn, Markus et al, eds. *Sustainable Development Goals and Human Rights* (Cham, Switzerland: Springer, 2019)

Karl, Terry Lynn & Philippe Schmitter. “From an Iron Curtain to a Paper Curtain: Grounding Transitologists or Students of Postcommunism” (1995) 54:4 Slavic Review 965

Kartha, Sivan et al. “Whose Carbon is Burnable? Equity Consideration in the Allocation of a “Right to Extract”” (2018) 150 Climatic Change 117

Kaufmann, Christine & Rolf Weber. “Carbon-related border Tax Adjustment: mitigating Climate Change or Restricting International Trade?” (2011) 10:4 World Trade Review 497

Khan, Mizan. “Polluter-Pays-Principle: The Cardinal Instrument for Addressing Climate Change” (2015) 4 Laws 638

Klugmann-Radziemska, Ewa. “Environmental Impacts of Renewable Energy Technologies” (2014) 69 IPCBEE

Kohler, Jonathan et al. “An Agenda for Sustainability Transitions Research: State of the Art and Future Directions” (2019) 31 Environmental Innovation and Societal Transitions 1

Koplow, Doug. “Defining and Measuring Fossil Fuel Subsidies” in Jakob Skovgaard & Harro Van Asselt eds, *The Politics of Fossil Fuel Subsidies and Their Reform* (Cambridge: Cambridge University Press, 2018)

Kothari, R. *Research Methodology: Methods and Techniques, 2nd edn* (New Delhi: New Age, 2004)

Kotzé, Louise. “The Anthropocentric Oncology of International Environmental Law and the Sustainable Development Goals: Towards an Ecocentric Rule of Law in the Anthropocene” (2018) 7 Global Journal of Comparative Law 5

Kouloumpis, Viktor et al. “Environmental Impacts of Renewable Energy: Gone with the Wind?” ed by Michalena, Evanthie & Jeremy Maxwell Hills. *Renewable Energy Governance: Complexities and Challenges* (London: Springer, 2013)

KPMG. *Economic Impact Assessment and Scenario Development of Unconventional Oil and Gas in Scotland* (KMPG, 2016)

Lamorgese, Lydia and David Geneletti. “Equity in Sustainability Assessment: A Conceptual Framework” in Angus Morrison-Saunders et al eds, *Handbook of Sustainability Assessment* (Cheltenham: Edward Elgar, 2015).

Land Use Consultants (LUC). *Environmental Report for SEA of Preferred Position on Unconventional Oil and Gas in Scotland* (LUC, 2018)

Laplante, Benoit & Jonathan Garbutt. “Environmental Protectionism” (1992) 68:1 Land Economics 116

Lavallée, Lynn. “Practical Application of an Indigenous Research Framework and Two Qualitative Indigenous Research Methods: Sharing Circles and Anishaabe Symbol-Based Reflection” (2009) 8:1 Intl Journal of Qualitative Methods 21

Lawrence, David. “Planning Theories and Environmental Impact Assessment” (2000) 20 Env Impact Assessment Review 607

Lawrence, David. “The Need for EIA Theory-Building” (1997) 17 Environmental Impact Assessment Rev 79

Lazarus, Michael et al. “Supply-side Climate Policy: The Road Less Taken” (2015) 13 Stockholm Environment Institute (SEI) Working Paper 4

Leaton, James et al. “Unburnable Carbon 2013: Wasted Capital and Stranded Assets” (CTI and Grantham Research Institute of Climate Change and the Environment, 2013)

Lee, John. “The Underlying Legal Theory to Support a Well-defined Human Right to a Healthy Environment as a Principle of Customary International Law” (2000) 25:2 Columbia Journal of Environmental Law 283

Lenferna, Georges Alexandre. “Divestment as Climate Justice: Weighing the Power of the Fossil Fuel Divestment Movement” in Stefan Jacobsen ed, *Climate Justice and the Economy* (Abingdon: Routledge, 2018)

Leopold, Aldo. *A Sand Country Almanac* (Oxford: Oxford University Press, 1949)

Leopold, Les. *The Man Who Hated Work and Loved Labour: The Life and Times of Tony Mazzocchi* (Vermont: Chelsea Green Publishing, 2007)

Lerner, Stephen. *Sacrifice Zones: The Front Lines of Toxic Chemical Exposure in the United States* (Cambridge: MIT Press, 2010)

Lerner, Stephen. *Sacrifice Zones: The Front Lines of Toxic Chemical Exposure in the United States* (Cambridge: MIT Press, 2010)

Levin, Kelly & David Rich. “Turning Points: Trends in Countries’ Reaching Peak Greenhouse Gas Emissions Over Time” (2017) World Resources Institute Working Paper

Lewin, Philip. ““Coal is Not Just a Job, It’s a Way of Life”: The Cultural Politics of Coal Production in Central Appalachia” (2019) 66 Social Problems 51

Licker, Rachel. “Attributing Ocean Acidification to Major Carbon Producers” (2019) Environmental Research Letters

Lipponen, Juho et al. “The Politics of Large-scale CCS Development” (2017) 114 Energy Procedia 7581

Lobos, Victor & Maria Partidario. “Theory versus Practice in Strategic Environmental Assessment (SEA)” (2014) 48 Env Impact Assessment Review 34

Loorbach, Derk & Jan Rotmans. “The Practice of Transition Management: Examples and Lessons from Four Distinct Cases” (2010) 42 Futures 237

Lopes de Souza, Marcelo. “’Sacrifice Zone’: The Environment-Territory-Place of Disposable Lives” (2020) Community Development Journal 1

Loring, Philip. “Threshold Concepts and Sustainability: features of a Contested Paradigm” (2020) 5 FACETS 182

Lottici, Marìa & Carlos Galperìn. ““Green Trade Protectionism”: An Analysis of Three New Issues that Affect Developing Countries” (2014) 2:2 Chinese Journal of Urban and Environmental Studies 1

Loye, David & Riane Eisler. “Chaos and Transformation: Implications of Nonequilibrium Theory for Social Science and Society” (1987) 32:1 Behavioural Science 53

Magnan, Alexandre & Teresa Ribera. “Global Adaptation after Paris: Climate Mitigation and Adaptation cannot be Uncoupled” (2016) 352:6291 *Science* 1280

Maguire, Rowena. “The Role of Common but Differentiated Responsibility in the 2020 Climate Regime” (2013) 4 Carbon and Climate Law Review 260

Mainville, Sara and Renée Pelletier. "UNDRIP, Decision Making, and the Role of Indigenous Peoples" in Meinhard Doelle and A. John Sinclair eds., *The Next Generation of Impact Assessment: A Critical Review of the Canadian Impact Assessment Act* (Toronto: Irwin Law, 2021)

Majekolagbe, Adebayo, Sara Seck, and Penelope Simons. "Human Rights and the Impact Assessment Act: Proponents and Consultants as Duty Bearers" in Meinhard Doelle and A. John Sinclair eds., *The Next Generation of Impact Assessment: A Critical Review of the Canadian Impact Assessment Act* (Toronto: Irwin Law, 2021)

Majekolagbe, Adebayo. "Impact Assessment, Sustainability, and Climate Change: Lessons from Lower Churchill" (2021) 44:1 Dalhousie Law Journal 71

Mansbridge, Jane. "Conflict and Commonality in Habermas's Structural Transformation of the Public Sphere" (2012) 40:6 Political Theory 789

Manuilova, Anastassia et al. "Should Life Cycle Assessment be part of the Environmental Impact Assessment? Case Study: EIA of CO_2 Capture and Storage in Canada" (2009) 1 Energy Procedia 4511

Margolies, Joseph. "Fossil Fuel Extraction Bans: A Takings Analysis" (2018) 30:1 Environmental Claims Journal 87

Marino, Elizabeth & Jesse Ribot. "Special Issue Introduction: Adding Insult to Injury: Climate Change and the Inequities of Climate Intervention" (2012) 22 Global Envtl Change 323

Marino, Elizabeth. "The Long History of Environmental Migration: Assessing Vulnerability Construction and Obstacles to Successful Relocation in Shishmaref, Alaska" (2012) 22 Global Environmental Change 374

Markard, Jochen et al. "Sustainability Transitions: An Emerging Field of Research and Its prospects" (2012) 41 Research Policy 955

Masson-Delmotte, Valerie et al, eds. *Climate Change and Land: Special Report* (Geneva: IPCC, 2019)

Masson-Delmotte, Valerie et al, eds. *Global Warming of 1.5ºC: Special Report* (Geneva: IPCC, 2019)

Mayer, Benoit. "Environmental Assessments in the Context of Climate Change: The Role of the UN Economic Commission for Europe" (2019) 28 RECIEL 82 European Commission, "Inception Impact Assessment" Ref. Ares(2020) 1350037

McCauley, Darren & Raphael Heffron. "Just Transition: Integrating Climate, Energy and Environmental Justice" (2018) 119 Energy Policy 1

McGlade, Christophe & Paul Ekins. "The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2ºC" (8 January 2015) 517

McGlade, Christophe and Paul Ekins. "The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2ºC" (8 January 2015) 517

McIntyre, Owen McIntyre & Thomas Mosedale. "The Precautionary Principle as a Norm of Customary International Law" (1997) 9:2 Journal of Environmental Law 221

McLure, Charles. "A Primer on the Legality of Border Adjustments for Carbon Prices: Through a GATT Darkly" (2011) 4 Climate Change Law Review 456

Menkel-Meadow, Carrie. "Uses and Abuses of Socio-Legal Studies" in Naomi Creutzfeldt et al eds, *Routledge Handbook of Socio-legal Theory and Methods* (London: Routledge, 2019)

Merriam, S.B. *Qualitative Research and Case Study Applications in Education* (San Francisco: Jossey-Bass, 1998)

Merry, Engle. "Resistance and the Cultural Power of Law" (1995) 29:1 Law & Society Review 11

Mertins-Kirkwood, Hadrian & Clay Duncalfe. *Roadmap to a Canadian Just Transition Act: A Path to a Clean and Inclusive Economy* (Canadian Centre for Policy Alternatives, 2021)

Mertins-Kirkwood, Hadrian. *Making Decarbonization Work for Workers: Policies for a Just Transition to a Zero-carbon Economy in Canada* (Canadian Centre for Policy Alternatives, 2018)

Meyer, Lukas. "Why Historical Emissions Should Count" (2013) 13:2 Chicago Journal of International Law 597

Mezirow, Jack. "Transformative Learning as Discourse" (2003) 1:1 Journal of Transformative Education 58

Mezirow, Jack. "Understanding Transformation Theory" (1994) 44:4 Adult Education Quarterly 222

Mezirow, Jack. *Transformative Dimensions of Adult Learning* (San Francisco: Jossey Bass, 1991)

Milke, Mark & Lennie Kaplan. *Canada's Oil Sands and Local First Nations: A Snapshot* (Canadian Energy Centre, 2020)

Mimura, Nubuo et al. “Adaptation planning and implementation” in C.B Field et al, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2014)

Minow, Martha. “Archetypal Legal Scholarship: A Field Guide” (2013) 63:1 Journal of Legal Education 65

Mognensen, Vernon. “Book Review: The Man Who Hated Work and Loved Labour: The Life and Times of Tony Mazzocchi (Les Leopold)” (2009) 12:4 Working USA: The Journal of Labour and Society 644

Morena, Edouard et al. *Mapping Just Transition(s) to a Low-Carbon World* (United Nations Research Institute for Social Development, 2018) 4

Morgan, Richard. “Environmental Impact Assessment: The State of the Art” (2012) 30:1 Impact Assessment and Project Appraisal 5

Morrison-Saunders, Angus & Jenny Pope. “Conceptualising and Managing Trade-offs in Sustainability Assessment” (2013) 38 Environmental Impact Assessment Review 54

Morrison-Saunders, Angus et al. “Gearing up Impact Assessment as a Vehicle for Achieving the UN Sustainable Development Goals” (2020) 38:2 Impact Assessment and Project Appraisal 113

Morrison-Saunders, Angus et al. “Strengthening Impact Assessment: A Call for Integration and Focus” (2014) 32:1 Impact Assessment and Project Appraisal

Mulvaney, Dustin. *Solar Power: Innovation, Sustainability, and Environmental Justice* (California: University of California Press, 2019)

Munda, Luis et al. “Demand-side Approaches for Limiting Global Warming to 1.5°C” (2019) 12 Energy Efficiency 343

Munn, R.E. *Environmental Impact Assessment: Principles and Procedures* 2nd Ed. (New York: Wiley, 1979)

Munns, Wayne et al. “Ecosystem Services as Assessment Endpoints for Ecological Risk Assessment” (2015) 12:3 Integrated Env Assessment and Mgt 522

Murray, Clark et al. *Cumulative Effects in Marine Ecosystems: Scientific Perspectives on its Challenges and Solutions* (Vancouver: WWF-Canada, 2014)

Muttitt, Greg & Sivan Kartha. “Equity, Climate Justice and Fossil Fuel Extraction: Principles for a Managed Phase Out” (2020) 20:8 Climate Policy 1024

Muttitt, Greg. “What Role for OPEC in the Last Generation of Oil?” in Dag Harald Claes and Giulano Garavani, eds, *Handbook of OPEC and the Global Energy Order: Past, Present and Future Challenges* (Oxon; New York, Routledge: 2020) 338

Mutua, Athena. “Mapping Racial Capitalism: Implications for Law” (2022) 2 Journal of Law and Political Economy 127

Nakhle, Carole & Francesco Petrini. “The Changing Relationship Between OPEC Countries and International Oil Companies: The Dynamics of Bargaining Power in an Evolving Market” in Dag Harald Claes and Giulano Garavani eds, *Handbook of OPEC and the Global Energy Order: Past, Present and Future Challenges* (Oxon; New York, Routledge: 2020) 157

National Research Council. *Our Common Journey: A Transition Toward Sustainability* (Washington: National Academies Press, 1999) 23

Nedelsky, Jennifer. *Law’s Relations: A Relational Theory of Self, Autonomy, and Law* (Oxford University Press, 2011)

Neville, Kate. “Shadows of Divestment: The Complications of Diverting Fossil Fuel Finance” (2020) 20:2 Global Environmental Politics 3

Newell, Peter & Andrew Simms. “Towards a Fossil Fuel Non-Proliferation Treaty” (2020) 20:8 Climate Policy 1043

Newell, Peter & Dustin Mulvaney. “The Political Economy of the ‘Just Transition’” (2013) 179:2 The Geographical Journal 132

Noble, Bram & Jill Gunn. “Strategic Environmental Assessment” in *Environmental Impact Assessment: Practice and Participation* 3rd edn (Ontario: Oxford University Press, 2016)

Noble, Bram & Kelechi Nwankezie. “Conceptualizing Strategic Environmental Assessment: Principles, Approaches and Research Directions” (2017) Env Impact Assessment Rev 165

Noble, Bram & Lisa Christmas. “Strategic Environmental Assessment of Greenhouse Gas Mitigation Options in the Canadian Agricultural Sector” (2007) 41 Env Mgt 64

Nunes, Ana Raquel. “Exploring the Interactions Between Vulnerability, Resilience, and Adaptation to Extreme Temperatures” (2021) 109 Natural Hazards 2261

Nussbaum, Martha. “Capabilities and Human Rights” (1997) 66:2 Fordham Law Review 273

Nussbaum, Martha. “Capabilities and Social Justice” (2002) 4: 2 International Studies Review 123

Nussbaum, Martha. “Capabilities as Fundamental Entitlements: Sen and Social Justice” (2003) 9:2/3 Feminist Economics 33

Nussbaum, Martha. “Capabilities, Entitlements, Rights: Supplementation and Critique” (2011) 12: 1 Journal of Human Development and Capabilities 23

Nwanekezie, Kelechi et al. “Transitions-based Strategic Environmental Assessment” (2021) 91 Environmental Impact Assessment Review 1

Öberg, Marko Divac. “The Legal Effects of Resolutions of the UN Security Council and General Assembly in the Jurisprudence of the ICJ” (2006) 16:5 The European Journal of International Law 879

OECD. *Environmental Principles and Concepts* (Paris: OECD, 1995)

OECD. *OECD Factbook: Economic, Environmental and Social Statistics 2015 – 2016* (Paris: OECD Publishing, 2016)

Oei, Pao-Yu et al. “Lessons from Germany’s Hard Coal Mining Phase-out: Policies and Transition from 1950 to 2018” (2020) 20:8 Climate Policy 963

Office of the Auditor General of Canada. *2019 Spring Reports of the Commissioner of the Environment and Sustainable Development* (Ottawa: Office of the Auditor General, 2019)

OGUK. *Economic Report 2019* (OGUK, 2019)

Ohsawa, Takafumi and Peter Duinker. “Climate Change Mitigation in Canadian Environmental Impact Assessments” (2014) 32:3 Impact Assessment and Project Appraisal 222

Olszynski, Martin et al. “From Smokes to Smokestacks: Lessons from Tobacco for the Future of Climate Change Liability” (2017) 30:1 Georgetown Envtl Law Review 1

Omorogbe, Yinka. “The Legal Framework for the Production of Petroleum in Nigeria” (1987) 5:4 Journal of Energy and Natural Resources Law 273

OPEC. *OPEC Monthly Oil Market Report* (Vienna: OPEC, 2020)

Osborne, Philip. *The Law of Torts*, 6th ed (Toronto: Irwin Law, 2020)

Ostrom, Elinor et al. “Revisiting the Commons: Local Lessons, Global Challenges” (1999) 284 Science 278

Ostrom, Elinor. “A Behavioural Approach to the Rational Choice Theory of Collective Action” (1998) 92:1 The American Political Science Review 1

Ostrom, Elinor. “A polycentric Approach for Coping with Climate Change” (2014) 15:1 Annals of Economics and Finance 97

Pal, Rajib. “Has the Appellate Body’s Decision in Canada – Renewable Energy/Canada – Feed-in Tariff Program Opened the Door for Production Subsidies?” (2014) 17 Journal of International Economic Law 125

Parry, Ian et al. *Getting Energy Prices Right: From Principle to Practice* (Washington DC: IMF, 2014)

Partidário, Maria do Rosário. *Strategic Environmental Assessment Better Practice Guide – Methodological Guidance for Strategic Thinking in SEA* (Portuguese Environmental Agency, 2012)

Pattberg, Philipp et al. “20 Years of Global Climate Change Governance Research: Taking Stock and Moving Forward” (2022) 22 International Environmental Agreements 295

Paun, Ashim et al. *Stranded Assets: What Next?* (London: HSBC Global Research, 2015)

Peel, Jacqueline. “Issues in Climate Change Litigation” (2011) 24 Carbon & Climate Law Review 15

Peletz, Nicole et al. *Gender Analysis and Impact Assessment: Canadian and International Experiences* (Vancouver: Canadian International Resources and Development Institute, 2019)

Perlaviciute, Goda & Lorenzo Squintani. “Public Participation in Climate Policy Making: Toward Reconciling Public Preferences and Legal Frameworks” (2020) 2 One Earth 341

Perrez, Franz, "The Relationship Between "Permanent Sovereignty" and the Obligation Not to Cause Transboundary Environmental Damage" (1996) 26:4 Environmental Law 1187

Perrow, Charles. *Complex Organizations: A Critical Essay,* 2nd Edn (Glenview, Illinois: 1986)

Peszko, Grzegorz et al. *Diversification and Cooperation in a Decarbonizing World: Climate Strategies for Fossil-Fuel Dependent Countries* (Washington DC: World Bank, 2020)

Peter, Camaren & Mark Swilling. "Linking Complexity and Sustainability Theories: implications for Modeling Sustainability Transitions" (2014) 6 Sustainability 1594

Piggot, Georgia et al. "Realizing a Just and Equitable Transition away from Fossil Fuels" (January 2019) SEI Discussion Brief

Piggot, Georgia et al. "Swimming Upstream: Addressing Fossil Fuel Supply Under the UNFCCC" (2018) 18:9 Climate Policy 1189

Pirani, Simon. *Burning Up: A Global History of Fossil Fuel Consumption* (London: Pluto Press, 2018)

Polanyi, Karl. *The Great Transformation* (Beacon Hill, Boston: Beacon Press, 1965)

Pollin, Robert & Brian Callaci. "The Economics of Just Transition: A Framework for Supporting Fossil-Fuel Dependent Workers and Communities in the United States" (2019) 44:2 Labour Studies Journal 93

Pope, Jenny et al. "A Conceptual Framework for Sustainability Assessment" in Angus Morrison-Saunders et al eds, *Handbook of Sustainability Assessment* (Cheltenham: Edward Elgar, 2015)

Pope, Jenny et al. "Advancing the Theory and Practice of Impact Assessment: Setting the Research Agenda" (2013) 41 Env Impact Assessment Rev 1

Pope, Jenny et al. "Conceptualising Sustainability Assessment" (2004) 24 Env Impact Assessment Rev 595

Popp, Rebekka et al. "How to Ensure a Just and Fast Transition to a Competitive Low-carbon Economy for the EU" (21 November 2018) THINK 2030 Science-Policy Solutions for a More Sustainable Europe

Pörtner, H.O et al. *Biodiversity and Climate Change Workshop Report* (IPBES and IPCC, 2021)

Pörtner, Hans-O. et al. *Climate Change 2022: Impacts, Adaptation and Vulnerability – Summary for Policymakers* (IPCC, 2022)

Pörtner, Hans-Otto et al, eds. *Special Report on the Ocean and Cryosphere in a Changing Climate* (Geneva: IPCC, 2019)

Poshen, Peter. *Decent Work, Green Jobs and the Sustainable Economy: Solutions for Climate change and Sustainable Development* (Sheffield: Greenleaf Publishing, 2015)

Pye, Steve et al. "An Equitable Redistribution of Unburnable Carbon" (2020) 11:3968 Nature Communications 1

Quintavalla, Alberto & Klaus Heine. "Priorities and Human Rights" (2019) 23: 4 The Intl Journal of Huma Rights 679

Rajamani, Lavanya. "Ambition and Differentiation in the 2015 Paris Agreement: Interpretative Possibilities and Underlying Politics" (2016) 65:2 Intl and Comparative Law Quarterly 493

Rajamani, Lavanya. "Differentiation in the Emerging Climate Regime" (2013) 14 Theoretical Inquiries in Law 151

Rawls, John. "Justice as Fairness" (1958) 67:2 The Philosophical Review 164

Rawls, John. *A Theory of Justice*, Revised Edition (Cambridge: Harvard University Press, 1999)

Rawls, John. *Justice as Fairness: A Restatement* (Cambridge: Harvard University Press, 2001)

Retief, Francois et al. "Exploring the Psychology of Trade-off Decision-making in Environmental Impact Assessment" (2013) 31:1 Impact Assessment and project Appraisal 13

Retief, Francois et al. "Exploring the Psychology of Trade-off Decision-making in Environmental Impact Assessment" (2013) 31:1 Impact Assessment and Project Appraisal 1

Richardson, Tim. "Environmental Assessment and Planning Theory: Four Short Stories about Power, Multiple Rationality, and Ethics" (2005) 25 Env Impact Assessment Rev 341

Richie, Justin & Hadi Dowlatabadi. *Fossil Fuel Divestment: Reviewing Arguments, Implications & Policy Opportunities* (Victoria: Pacific Institute for Climate Solutions, 2015)

Robeyns, Ingrid. "Capabilitarianism" (2016) 17: 3 Journal of Human Development and Capabilities 397

Robeyns, Ingrid. "The Capability Approach: A Theoretical Survey" (2005) 6: 1 Journal of Human Development 93

Robeyns, Ingrid. *Wellbeing, Freedom and Social Justice: The Capability Approach Re-examined* (Cambridge: Open Book Publishers, 2017)

Robins, Nick et al. *Climate Change and the Just Transition: A Guide for Investor Action* (Grantham Research Institute on Climate Change and the Environment, 2018) 16; World Benchmarking Alliance, *Just Transition Methodology* (WBA, 2021)

Robins, Nick et al. *Investing in a Just Transition in the UK: How Investors can Integrate Social Impact and Place-based Financing into Climate Strategies* (London: Grantham Research Institute on Climate Change and the Environment & the London School of Economics and Political Science, 2019)

Rogelj, Joeri et al. "Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development" in Valerie Masson-Delmotte et al, eds, *Global Warming of 1.5°C: Special Report* (Geneva: IPCC, 2019)

Rogers, Patricia. *Methodological Briefs: Impact Evaluation No. 2, Theory of Change* (Florence: UNICEF Office of Research, 2014)

Rohwer, Yasha & Emma Marris. "Ecosystem Integrity is Neither Real nor Valuable" (2021) Conservation Science and Practice 1

Rosemberg, Anabella. "Building a Just transition: The linkages Between Climate Change and Employment" (2010) 2:2 Intl Journal of Labour Research 143

Rosenau, James. *Turbulence in World Politics: A Theory of Change and Continuity* (Princeton: Princeton University Press, 1990)

Rotmans, Jan & Derk Loorbach. "Complexity and transition Management" (2009) 13:2 Journal of Industrial Ecology 184

Ruhl, J.B. "The Political Economy of Climate Change Winners" (2012) 97 Minnesota Law Review 206

Ruseski, Gor. *Restructuring and Adjustment Policy in Canada's Fisheries Labour Market Programming and Other measures: The Learning Experience (1992 - 2003)*, Expert Meeting on the Human Side of Fisheries Adjustment, Directorate for Food, Agriculture, Fisheries, Fisheries Committee, Organization for Economic Cooperation and Development, AGR/FI/HAS (2006)

Rybaczewska-Blażejowska, Magdalena & Dmitry Palekhov. "Life Cycle Assessment (LCA) in Environmental Impact Assessment (EIA): Principles and Practical Implications for Industrial Projects" (2018) 22:1 Management 138

Safari, Amir et al. "Natural Gas: A Transition Fuel for Sustainable Energy System Transformation" (2019) 7 Energy Science and Engineering 1075

Salleh, Ariel. "Climate, Water, and Livelihood Skills: A Post-development Reading of the SDGs" (2016) 13:6 Globalizations 952

Sanchez, Luis & Solange Silva-Sanchez. "Tiering Strategic Environmental Assessment and Project Environmental Impact Assessment in Highway Planning in Sao Paolo, Brazil" (2008) 28 Env Impact Assessment Rev 515

Sanzillo, Tom et al. *The Financial Case for Fossil Fuel Divestment* (Lakewood: Sightline Institute & IEEFA, 2018)

Sarkin, Jeremy & Mark Koenig. "Developing the Right to Work: Intersecting and Dialoguing Human Rights and Economic Policy" (2011) 33:1 Human Rights Quarterly 1

Sartor, O. "Implementing Coal Transitions: Insight from Case Studies of Major Coal-consuming Economies" (2018) IDDRI & Climate Strategies

Savaget, Paulo. "The Theoretical Foundations of Sociotechnical Systems Change for Sustainability: A Systematic Literature Review" (2019) 206 Journal of Cleaner Production 878

Schlager, Edella & Elinor Ostrom. "Property-Rights Regimes and Natural Resources: A Conceptual Analysis" (1992) 68:3 Land Economics 249

Schlosberg, David. *Defining Environmental Justice: Theories, Movements, and Nature* (Oxford; New York: Oxford University Press, 2009)

Schot, Johan & Frank Geels. "Strategic Niche Management and Sustainable Innovation Journeys: Theory, Findings, Research Agenda, and Policy" (2008) 20:5 Technology Analysis & Strategic Management 537

Schrage, Wiek & Nick Bonvoisin. "Transboundary Impact Assessment: Frameworks, Experiences and Challenges" (2008) 26:4 Impact Assessment and Project Appraisal 234

Schrijver, Nico. "Managing the Global Commons: Common Good or Common Sink" (2016) 37:7 Third World Quarterly 1252

Scott, Dayna et al. “Synthesis Report: Implementing a Regional, Indigenous-led and Sustainability-Informed Impact Assessment in Ontario’s Ring of Fire” (2020) 2807 Articles & Book Chapters 1

Scott, Dayna. ““Sacrifice Zones” in the Green Energy Economy: Toward an Environmental Justice framework” (2017) 62:3 McGill LJ 861

Scott, Heidi. *Fuel: An Ecocritical History* (London: Bloomsbury Academic, 2018)

Scottish Government. *Scotland’s Onshore Unconventional Oil and Gas Policy* (Scottish Government, 2019)

Seck, Sara L. “A Relational Analysis of Enterprise Obligations and Carbon Majors for Climate Justice” (2020) 11:1 Oñati Socio-Legal Series 254

Seck, Sara L. “Relational Law and the Reimagining of Tools for Environmental and Climate Justice” (2019) 31 Canadian Journal of Women and the Law 151

Seck, Sara L. “Transnational Labour Law and the Environment: Beyond the Bounded Autonomous Worker” (2018) 33: 2 Canadian Journal of Law and Society 137

Sen, Amartya. “Human Rights and Capabilities” (2005) 6: 2 Journal of Human Development 151

Sen, Amartya. *The Idea of Justice* (Cambridge, Massachusetts: Harvard University Press, 2009)

Sheate, William. “The Evolving Nature of Environmental Assessment and Management: Linking Tools to Help Deliver Sustainability” in William Sheate ed, *Tools, Techniques and Approaches for Sustainability: Collected Writings in Environmental Assessment Policy and Management* (Singapore: World Scientific, 2009)

Shue, Henry. “Historical Responsibility” (4 June 2009) SBSTA Technical Briefing

Siegele, Linda. “Loss and Damage (Article 8)” in Daniel Klein et al eds, *The Paris Agreement on Climate Change: Analysis and Commentary* (Oxford: Oxford University Press, 2017)

Sikor, Thomas et al. “Property Rights Regimes and Natural Resources: A Conceptual Analysis Revisited” (2017) 93 World Development 337

Sinclair, A. John & Meinhard Doelle. “Entering the Next Generation of Impact Assessment in Canada” in Meinhard Doelle and A. John Sinclair eds., *The Next Generation of Impact Assessment: A Critical Review of the Canadian Impact Assessment Act* (Toronto: Irwin Law, 2021)

Sinclair, A. John and Alan Diduck. “Public Involvement in EA in Canada: A Transformative Learning Perspective” (2001) 21 Environmental Impact Assessment Review 113

Sinclair, A. John et al. “Looking up, down, and sideways: Reconceiving Cumulative Assessment as a Mindset” (2017) 62 Env Impact Assessment Rev 183

Sinclair, John & Alan Diduck. “Reconceptualizing Public Participation in Environmental Assessment as EA Civics” (2017) 62 Env Impact Assessment Rev 174

Sinn, Hans-Werner. *The Green Paradox: A Supply-side Approach to Global Warming* (Cambridge: The MIT Press, 2012)

Skea, Jim et al, eds. *Climate Change 2022: Mitigation of Climate Change* (Geneva: IPCC, 2022)

Skovgaard, Jakob. “International Push, Domestic Reform? The influence of International Economic Institutions on Fossil Fuel Subsidy Reform” in Jakob Skovgaard & Harro Van Asselt eds, *The Politics of Fossil Fuel Subsidies and Their Reform* (Cambridge: Cambridge University Press, 2018)

Smil, Vaclav. *Energy and Civilization: A History* (Cambridge: MIT Press, 2017)

Smith, Ernest. “From Concessions to Service Contracts” (1991) 27:4/3 Tulsa Law Review 493

Smith, Samantha. “Just Transition: A Report for the OECD” (May 2017) Just Transition Centre

Snell, Tim & Richard Cowell. “Scoping in Environmental Impact Assessment: Balancing Precaution and Efficiency” (2006) 26 Environmental Impact Assessment Review 359

Sovacool, Benjamin and Joseph Scarpaci. “Energy Justice and the Contested Petroleum Politics of Stranded Assets: Policy Insights from the Yasuní-ITT Initiative in Ecuador” (2016) 95 Energy Policy 158

Sovacool, Benjamin et al. “New Frontiers and Conceptual Frameworks for Energy Justice” (2017) 105 Energy Policy 677

Spaling, Harry. “Cumulative Effects Assessment: Concept and Principles” (1994) 12:3 Impact Assessment 231

Sparks, Colin. “Theories of Transition”, (2010) 5:3 *Journalism Si Comunicare* 5

Sprain, Leah. “Paradoxes of Public Participation in Climate Change Governance” (2016) 25:1 The Good Society 62

Stanton, Elizabeth. “The Human Development Index: A History” (2007) 127 Political Economy Research Institute Working Paper Series

Stephen Russel, “A Recommended Methodology for Estimating and Reporting the Potential GHG Emissions from Fossil Fuel Reserves” (2016) World Resources Institute Working Paper

Stephenson, Sean. “Jobs, Justice, Climate: Conflicting State Obligations in the International Human Rights and Climate Change Regimes” (2010) 42:1 Ottawa Law Review 155

Stern, Nicholas. “The Economics of Climate Change” (2008) 98:2 American Economic Review: Papers and Proceedings 1

Stevis, Dimitris & Romain Felli. “Global Labour Unions and Just Transition to a Green Economy” (2015) 15 Intl Environmental Agreements 29

Stevis, Dimitris et al. “Introduction: The Genealogy and Contemporary Politics of Just Transitions” in Morena, Edouard et al eds. *Just Transitions: Social Justice in the Shift towards a Low-carbon World* (London: Pluto Press, 2020)

Stockholm Environment Institute et al. *The Production Gap Report 2021*, (SEI, 2021)

Strambo, Claudia et al. *The End of Coal? Planning a “Just Transition” in South Africa* (Stockholm: Stockholm Environment Institute, 2019)

Suter, Glenn II. “Ecological Risk Assessment in the United States Environmental Protection Agency: A Historical Overview” (2008) 4:3 Integrated Env Assessment and Mgt 285

Swilling, Mark. *The Age of Sustainability: Just Transitions in a Complex World* (Oxon, Routledge: 2020)

Szpor, Aleksander & Konstancja Ziokowska. *The Transformation of the Polish Coal Sector: GSI Report* (Winnipeg, Manitoba: IISD, 2018)

Tetlow, Monica Fundingsland & Marie Hanusch. “Strategic Environmental Assessment: The State of the Art” (2012) Impact Assessment and Project Appraisal 15

The Interorganizational Committee on Guidelines and Principles for SIA, “Principles and Guidelines for SIA in the USA” (2003) 21:3 Impact Assessment and Project Appraisal 231

The Task Force on Just Transition for Canadian Coal Power Workers and Communities. *A Just and Fair Transition for Canadian Coal Power Workers and Communities* (Ottawa: Government of Canada, 2018)

The World Commission on Environment and Development (Brundtland Commission). *Our Common Future* (Oxford: Oxford University Press, 1987)

Therivel, Riki & Bill Ross. “Cumulative Effects Assessment: Does Scale Matter?” (2007) 27 Env Impact Assessment Rev 365

Therivel, Riki & M.R. Partidario eds. *The Practice of Strategic Environmental Assessment* (London: Earthscan, 1996)

Therivel, Riki and Ainhoa González. ““Ripe for Decision”: Tiering in Environmental Assessment” (2021) 87 Environmental Impact Assessment Review 1

Therivel, Riki. *Strategic Environmental Assessment in Action* 2nd ed (London: Earthscan, 2010)

Tienhaara, Kyla & Lorenzo Cotula. *Raising the Cost of Climate Action? Investor-State Dispute Settlement and Compensation for Stranded Fossil Fuel Assets* (London: IIED, 2020)

Traverso, Marzia et al. “Towards Social Cycle Assessment: A Quantitative Product Social Impact Assessment” (2018) 23 Int J Life Cycle Assess 597

Tukker, Arnold. “Life Cycle Assessment as a Tool in Environmental Impact Assessment” (2000) 20 Env Impact Assessment Rev 435

Turnheim, Bruno & Frank Geels. “Regime Destablisation as the Flipside of Energy Transitions: Lessons from the History of the British Coal Industry (1913 - 1997)” (2012) 50 Energy Policy 35

Turnheim, Bruno & Frank Geels. “The Destablisation of Existing Regimes: Confronting a Multi-dimensional Framework with a Case Study of the British Coal Industry (1913 - 1967)” (2013) 42 Research Policy 1749

Turnheim, Bruno et al. “Evaluating Sustainability Transitions Pathways: Bridging Analytical Approaches to Address Governance Challenges” (2015) 35 Global Environmental Change 239

UNEP. *Assessing Environmental Impacts – A Global Review of Legislation* (Nairobi: UNEP, 2018)

UNEP. *Emissions Gap Report 2019* (Nairobi: UNEP, 2019)

UNEP. *Making Peace with Nature: A Scientific Blueprint to Tackle the Climate, biodiversity and Pollution Emergencies* (Nairobi: UNEP, 2021)

Unger, Jason. "Transparency and Accountability in Decision Making: Does the Impact Assessment Act Support Credible Decision Making?" in Meinhard Doelle and A. John Sinclair eds., *The Next Generation of Impact Assessment: A Critical Review of the Canadian Impact Assessment Act* (Toronto: Irwin Law, 2021) 412

United Nations Environment Program (UNEP). *Emissions Gap Report 2021: The Heat is on* (Nairobi: UNEP, 2021)

US EPA. "Generic Ecological Assessment Endpoints for Ecological Risk Assessment: Second Edition with Generic Ecosystem Services Endpoints Added" (2016) EPA/100/F15/005

Valters, Craig. "Theories of Change in International Development: Communication, Learning, or Accountability" (2014) JSRP Paper 17

Van de Poel, Ibo. "The Transformation of Technological Regimes" (2003) 32 Research Policy 49

Van der Burg, Laurie & Shelagh Whitley. "Unexpected Allies: Fossil Fuel Subsidy Reform and Education Finance" (2016) Backgrounder Paper – The Learning Generation, The Education Commission

Van der Ploeg, Frederick & Cees Withagen. "Global Warming and the Green Paradox: A Review of Adverse Effects of Climate Policies" (2015) Oxcarre Research Paper 116

Van der Ploeg, Frederick. "Natural Resources: Curse or Blessing?" (2011) 49:2 Journal of Economic Literature 366

Van Driel, Hugo & Johan Schot. "Radical Innovation as a Multilevel Process: Introducing Floating Grain Elevators in the Port of Rotterdam" (2005) 46:1 Technology and Culture 51

Vanclay, Frank. "Conceptualising Social Impacts" (2002) 22 Env Impact Assessment Rev 183

Vanclay, Frank. "Integration and Focus from the Perspective of Social Impact Assessment: A Response to Morrison-Saunders et al" (2014) 32:1 Impact Assessment and Project Appraisal 11

Vanclay, Frank. "Reflections on Social Impact Assessment in the 21st Century" (2020) 38:2 Impact Assessment and Project Appraisal 126

Vanhulst, Julien & Adrian Beling. "*Buen Vivir:* Emergent Discourse Within or Beyond Sustainable Development" (2014) 101 Ecological Economics 54

Verkuijl, Cleo et al. "Untapped Ambition: Addressing Fossil Fuel Production through NDCs and LEDS" (June 2019) SEI Working Paper 11

Vick, Douglas. "Interdisciplinarity and the Discipline of Law" (2004) 31:2 Journal of Law and Society 163

Vigna, Michele et al. *Re-Imaging Big Oils: How Energy Companies Can Successfully Adapt to Climate Change* (New York: Goldman Sachs, 2018)

Vizard, Polly et al. "Introduction: The Capability Approach and Human Rights" (2011) 12: 1 Journal of Human Development and Capabilities 1

Vodden, Kelly & Heather Hall. "Long Distance Commuting in the Mining and Oil and Gas Sectors: Implications for Rural Regions" (2016) 3 The Extractive Industries and Society 577

Vogel, Isabel. "Review of the Use of the 'Theory of Change' in International Development" (2012) UK Department of International Development Review Report; Danielle Stein, "Understanding Theory of Change in International Development" (2012) JSRP Paper 1

Voigt, Christina & Felipe Ferreira. "'Dynamic Differentiation': The Principles of CBDR-RC, Progression and Highest Possible Ambition in the Paris Agreement" (2016) 5:2 Transnational Environmental Law 283

Vriens, Lauren. *The End of Coal: Alberta's Coal Phase-out* (IISD Report) (Winnipeg, Manitoba: IISD, 2018)

Wallington, Tabatha et al. "Theorising Strategic Environmental Assessment: Fresh Perspectives and Future Challenges" (2007) 27 Env Impact Assessment Rev 569

Warlenius, Rikard. "Decolonizing the Atmosphere: The Climate Justice Movement on Climate Debt" (2018) 27:2 Journal of Environment and Development 131

Weber, Heloise. "Politics of 'Leaving No One Behind': Contesting the 2030 Sustainable Development Goals Agenda" (2017) Globalizations 1

Webley, Lisa. "The Why and How to of Conducting a Socio-Legal Empirical *Research* Project", in Naomi Creutzfeldt et al eds, *Routledge Handbook of Socio-legal Theory and Methods* (London: Routledge, 2019)

Wei, David. "Climate and the Just Transition: The Business Case for Action" (2018) BSR Report

Weinstein, Michael, et al. “The Global Sustainability Transition: It Is More Than Changing Light Bulbs” (2013) 9:1 Sustainability: Science, Practice & Policy 4

Weller, Sally. “Just Transition? Strategic Framing and the Challenges Facing Coal Dependent Communities” (2019) 37:2 EPC: Politics and Space 298

Wende, Wolfgang et al. “Climate Change Mitigation and Adaptation in Strategic Environmental Assessment” (2012) 32 Env Impact Assessment Rev 88

Westerman, Pauline. “Open or Autonomous? The Debate on Legal Methodology as a Reflection of the Debate on Law” in Mark Van Hoecke ed., *Methodologies of Legal Research: What Kind of Method for What Kind of Discipline?* (Oxford; Portland: Hart Publishing, 2011)

Westman, Clinton & Tara Joly. “Oil Sands Extraction in Alberta, Canada: A Review of Impacts and Processes Concerning Indigenous Peoples” (2019) 47 Human Ecology 233

Whyte, Kyle. “Indigenous Climate Change Studies: Indigenizing Futures, Decolonizing the Anthropocene” (2017) 55:1/2 English Language Notes 153

Whyte, Kyle. “Is It Colonial Déjà Vu? Indigenous Peoples and Climate Injustice” in Joni Adamson & Michael Davis, *Humanities for the Environment: Integrating Knowledge, Forging New Constellations of Practice* (London: Routledge, 2016)

Wilkins, Hugh. “The Need for Subjectivity in EIA: Discourse as a Tool for Sustainable Development” (2003) 23 Env Impact Assessment Rev 401

Winkler, Harald & Lavanya Rajamani. “CBDR&RC in a Regime Applicable to all” (2014) 14:1 Climate Policy 102

Winkler, Harald. “Mitigation (Article 4)” in Daniel Klein et al eds, *The Paris Agreement on Climate Change: Analysis and Commentary* (Oxford: Oxford University Press, 2017)

World Bank Group. *Managing Coal Mine Closure: Achieving a Just Transition for All* (Washington D.C.: World Bank, 2018)

World Business Council for Sustainable Development (WBCSD). *Natural Climate Solutions: The Business Perspective* (Geneva: WBCSD, 2019)

World Business Council for Sustainable Development (WBCSD). *The Business Manifesto for Climate Recovery* (WBCSD, 2021)

World Meteorological Organization (WMO). *State of the Global Climate 2021* (Geneva: WMO, 2021)

World Resources Institute (WRI). *Millennium Ecosystem Assessment - Ecosystems and Human Well-being: Synthesis* (Washington, DC: Island Press, 2005)

Wragg, Cheryl & Peter Gibbons. *Regional Inequality in Australia - Submission 132* (Canberra, Australian Senate Standing Committees on Economics, 2019)

Wright, David & Meinhard Doelle. “Social Cost of Carbon in Environmental Impact Assessment” (2019) 52:3 UBC Law Review 1007

Wright, David. “Carbonated Fodder: The Social Cost of Carbon in Canadian and U.S. Regulatory Decision-Making” (2017) 29 Georgetown Envtl Law Review 513

Wright, Erik Olin. *Envisioning Real Utopias* (London: Verson, 2010)

Yergin, Daniel. *The New Map: Energy, Climate, and the Clash of Nations* (New York: Penguin Press, 2020)

Yergin, Daniel. *The Prize: The Epic Quest for Oil, Money and Power* (New York: Simon & Schuster, 1991)

Young, Iris. *Justice and the Politics of Difference* (Princeton: Princeton University Press, 2011)

Zahar, Alexander. “The Polluter Pays Principle and its Ascendancy in Climate Change Law” (2020) 114 National Taipei University Law Review 129

Zickfield, Kirsten & Tyler Herrington. “The Time Lag between a Carbon Dioxide Emission and Maximum Warming Increases with the Size of the Emission” (2015) 10 Environ. Res. Lett. 1

Other Materials

"Alberta Surface Lease Agreement, <https://caplacanada.org/wp-content/uploads/2015/02/Alberta-Surface-Lease-Agreement.pdf>

"G20 Leaders Statement: The Pittsburgh Summit", (2009) online: <http://www.g20.utoronto.ca/2009/2009communique0925.html>

"Joint Leaders' Statement on the Launch of the 'Agreement on Climate Change, Trade and Sustainability Initiative'" online: <https://www.beehive.govt.nz/sites/default/files/2019-09/ACCTS%20joint%20leaders%20statement.pdf>

Abnett, Kate. "EU Eying Carbon Border Fees Plan for Steel, Cement and Power: Senior Official", *Reuters* (13 October 2020) online: <https://www.reuters.com/article/us-climate-change-eu-carbon/eu-eying-carbon-border-fees-plan-for-steel-cement-and-power-senior-official-idUSKBN26Y2MX>

Alberta Energy Regulator. "Environmental Impact Assessment Report Required for Vista Project – Phase II", online: <https://open.alberta.ca/dataset/ab136e20-299b-4bc0-ac76-0c6f946b0eb4/resource/ba2a0d31-0ac3-4c1b-8d2f-9589da0dcaea/download/eia-report-required-coalspur-vista-project-phase-ii.pdf>

Alberta Government. "Industry Profiles 2018: Mining and Oil and Gas Extraction Industry" (2018) online: <https://work.alberta.ca/documents/industry-profile-mining-oil-and-gas-extraction.pdf>

Alberta. "Coal Community Transition Fund" online: <https://www.alberta.ca/coal-community-transition-fund.aspx>

Alberta. "Coal Community Transition Fund" online: <https://www.alberta.ca/coal-community-transition-fund.aspx>

Alberta. "Phasing Out Emissions from Coal" online: <https://www.alberta.ca/climate-coal-electricity.aspx#toc-1>

Alberta. "Support for Albertans affected by Coal Phase-out" online: <https://www.alberta.ca/support-for-coal-workers.aspx>

Ambrose, Jillian. "Shell to cut up to 9000 jobs as COVID-19 Accelerates Green Drive", *The Guardian* (30 September 2020) online: <https://www.theguardian.com/business/2020/sep/30/shell-to-cut-up-to-9000-jobs-on-back-of-covid-19-crisis>

Anderson, Andrea. "The Community Builder's Approach to Theory of Change: A Practical Guide to Theory Development" online: <https://assets.aspeninstitute.org/content/uploads/files/content/docs/rcc/rcccommbuildersapproach.pdf>

Anderson, Chanel. "What are Indigenous Knowledge Systems – and how can they help fight climate change?", *tvo* (30 September 2021) online: <https://www.tvo.org/article/what-are-indigenous-knowledge-systems-and-how-can-they-help-fight-climate-change>

AP News. "Rural Communities push Back Against Solar Projects in Nevada", (30 November 2021) online: <https://apnews.com/article/business-environment-and-nature-las-vegas-nevada-environment-0c60ff102480ab06eac6cd0f13ade567>

Appunn, Kerstine. "Emission Reduction Panacea or Recipe for Trade War: The EU's Carbon Border Tax Debate", *Clean Energy Wire* (30 November 2020) online: <https://www.cleanenergywire.org/factsheets/emission-reduction-panacea-or-recipe-trade-war-eus-carbon-border-tax-debate>

Aung, May Thazin. "A Just Transition to Renewables must Recognize the Rights of Indigenous Peoples", *Stockholm Environment Institute Perspective* (2020) online: <https://www.sei.org/perspectives/a-just-transition-to-renewables-must-recognize-the-rights-of-indigenous-peoples/>

Baldwin, Alec & Paul Pazy Mino. "Amazon is Refusing to Pay for the 'Amazon Chernobyl' – We Can Fight Back with Citizen Action", *The Guardian* (17 September 2020) online: <https://www.theguardian.com/commentisfree/2020/sep/17/chevron-amazon-oil-toxic-waste-dump-ecuador-boycott>

Ballingall, Alex. "New Environment Minister Pledges 'Thoughtful and Sensitive' Approach to Climate Action", *The Star* (26 November 2019) online: <https://www.thestar.com/politics/federal/2019/11/26/new-environment-minister-pledges-thoughtful-and-sensitive-approach-to-climate-action.html>

Barkindo, Mohammad Sanusi. "The Future Economy of Oil from the Middle East and across OPEC" (Speech delivered at the International Petroleum Week, 21 February 2017, London, England) online: <http://www.opec.org/opec_web/en/4114.htm>

Barkindo, Mohammed Sanusi. "Keynote Address by OPEC Secretary General" (Delivered at the International Carbon Capture Utilization and Storage Conference, 26 February 2020, Riyadh, Saudi Arabia) online: <https://www.opec.org/opec_web/en/press_room/5854.htm>

Barnes, Aimee. “Kamala Harris’ Plan for International Climate Cooperation Could Smooth the Transition from Fossil Fuels”, *State of the Planet* (20 August 2020) online: <https://blogs.ei.columbia.edu/2020/08/20/kamala-harris-coalition-just-transition/>

Basin and Range Watch. “Yellow Pine Solar Facility”, online: <https://www.basinandrangewatch.org/Yellow-Pine-Solar.html>

Baxter, Tom. “It’s Time to Accept Carbon Capture Has Failed – Here’s What We Should Do Instead”, *The Conversation* (23 August 2017) online: <https://theconversation.com/its-time-to-accept-carbon-capture-has-failed-heres-what-we-should-do-instead-82929>

Bingler, Jacey & Urgewald. “Five Years Lost: How Finance is Blowing the Paris Carbon Budget”, *Reclaim Finance* (2020) online: <https://reclaimfinance.org/site/wp-content/uploads/2020/12/FiveYearsLostReport.pdf>

BLM. “Rough Hat Clark County Solar Project Right-of-Way Application”, online: <https://eplanning.blm.gov/public_projects/2019992/200523600/20060841/250067023/05_RHC_Variance%20Determination_USFWS_508.pdf>

BLM. “Rough Hat Clark County Solar Project: input Summary Report”, (March 2022) online: <https://eplanning.blm.gov/public_projects/2019992/200523600/20060786/250066968/FINAL%20Rough%20Hat%20Clark%20County%20Input%20Summary%20Report_508_part%201_compressed.pdf>

BP. “Advancing the Energy Transition”, (2018) online: <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/sustainability/group-reports/bp-advancing-the-energy-transition.pdf>

Brazil. “Brazil’s Nationally Determined Contribution”, online: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Brazil%20First/Brazil%20First%20NDC%20(Updated%20submission).pdf>

Budgit. “2021 Proposed Budget: A Quick Review” online: <https://yourbudgit.com/wp-content/uploads/2020/12/2021-Budget-Analysis-Proposed.pdf>

Buis, Alan. “The Atmosphere: Getting a Handle on Carbon Dioxide”, *NASA* (9 October 2019) online: <https://climate.nasa.gov/news/2915/the-atmosphere-getting-a-handle-on-carbon-dioxide/>

Business and Human Rights Resource Centre. “Renewable Energy Risking Rights and Returns: An Analysis of Solar, Bioenergy and Geothermal Companies’ Human Rights Commitments”, (2018) <https://media.business-humanrights.org/media/documents/files/Solar_Bioenergy_Geothermal_Briefing_-_Final_0.pdf>

Cadan, Yossi et al. “$11 Trillion and Counting” (2019) online: <https://631nj1ki9k11gbkhx39b3qpz-wpengine.netdna-ssl.com/divestment/wp-content/uploads/sites/52/2019/09/FF_11Trillion-WEB.pdf>

CALD. “Statement on the Nature of Legal Research” (2005) online: <https://cald.asn.au/wp-content/uploads/2017/11/cald-statement-on-the-nature-of-legal-research-20051.pdf>

Caney, Simon. “Climate Change, Equity, and Stranded Assets” (2013) OXFAM America Research Backgrounder

Carbon Tracker Initiative (CTI). “Unburnable Carbon – Are the World’s Financial Markets Carrying a Carbon Bubble?” (2011), online: <https://carbontracker.org/wp-content/uploads/2014/09/Unburnable-Carbon-Full-rev2-1.pdf>

CBD. “What is Impact Assessment” online: <https://www.cbd.int/impact/whatis.shtml>

CEAA. “Considering Aboriginal Traditional Knowledge in Environmental Assessments Conducted under the Canadian Environmental Assessment Act” (2015) online: <https://www.canada.ca/en/environmental-assessment-agency/services/policy-guidance/considering-aboriginal-traditional-knowledge-environmental-assessments-conducted-under-canadian-environmental-assessment-act-2012.html>

Cederborg, Jeney & Sara Snöbohm. “Is There a Relationship Between Economic Growth and Carbon Dioxide Emissions?”, (2016) online: <https://www.diva-portal.org/smash/get/diva2:1076315/FULLTEXT01.pdf>

Chow, Lorraine. “France Approves World’s First Ban on Fracking and Oil Production”, *EcoWatch* (20 December 2017) online: <https://www.ecowatch.com/france-fracking-ban-2518885658.html>

CLC. “Just Transition for Workers During Environmental Change” (April 2000) <https://perma.cc/BL78-SQEZ>

Coleman, Nick. “UK Government to back ‘Healthy’ North Sea Investment, but Faster Transition”, *S&P Global* (14 December 2020) online: <https://www.spglobal.com/platts/en/market-insights/latest-news/coal/121420-uk-government-to-back-healthy-north-sea-investment-but-faster-transition>

Coletta, Amanda. “Indigenous People in Nova Scotia Exercised their Right to Catch Lobster. Now they’re Under Attack”, (26 October2020) *Washington Post* <https://www.washingtonpost.com/world/the_americas/canada-nova-scotia-indigenous-lobster-fishery/2020/10/24/d7e83f54-12ed-11eb-82af-864652063d61_story.html>

COP 24. *Solidarity and Just Transition Silesia Declaration* (2018), online: <https://cop24.gov.pl/fileadmin/user_upload/Solidarity_and_Just_Transition_Silesia_Declaration_2_.pdf>

Council on Ethics. “Recommendation to Exclude Canadian Natural Resources Ltd from Investment by the Government Pension Fund Global (GPFG)”, (7 November 2019) online: <https://etikkradet.no/files/2020/05/Canadian-Natural-ENG.pdf>

CTI. “Unburnable Carbon 2013: Wasted Capital and Stranded Assets” (2013), online: <http://carbontracker.live.kiln.digital/Unburnable-Carbon-2-Web-Version.pdf>.

Dalman, Axel. “Carbon Budgets: Where Are We Now?”, *Carbon Tracker Initiative* (11 May 2020) online: <https://carbontracker.org/carbon-budgets-where-are-we-now/>

Davidson, Jordan. “BP to cut Oil and Gas Production 40%, Invest 10x More in Green Energy”, *EcoWatch* online:<https://www.ecowatch.com/bp-green-energy-investment-2646892538.html?rebelltitem=2#rebelltitem2>

Dietz, Simon et al. “Carbon Performance of European Integrated Oil and Gas Companies: Briefing Paper”, *Transition Pathway Initiative* (May 2020) online: <https://www.transitionpathwayinitiative.org/publications/58.pdf?type=Publication>

Doelle, Meinhard. “The Evolution of Federal EA in Canada: One Step Forward, Two Steps Back?” (January 24, 2014). Available at SSRN: <https://ssrn.com/abstract=2384541 or http://dx.doi.org/10.2139/ssrn.2384541>

Drew Anderson. “This Alberta Coal Mine is Back from the Brink of Financial Ruin – but it comes at a cost”, *The Narwhal* (12 February 2022) online: <https://thenarwhal.ca/alberta-vista-coal-mine-turnaround/>

Edelstein, Michael. “Promoting a Sustainable Transformation through Psycho-social Impact Research” (May 25, 2019), paper presented at EDRA 50, online: <https://cuny.manifoldapp.org/read/promoting-a-sustainable-transformation-through-psycho-social-impact-research/section/7810a41d-827a-4042-a872-62fbea18b012>

Energy & Climate Intelligence Unit. “Net Zero Emissions Race: 2020 Scorecard” online: <https://eciu.net/netzerotracker>

Engie. “Hazelwood Power Station in Australia to Close at the End of March 2017” (3 November 2016) online: <https://www.engie.com/en/journalists/press-releases/hazelwood-power-station-australia>

Environmental Defence. “The Elephant in the Room: Canada’s Fossil Fuel Subsidies Undermine Carbon Pricing Efforts”, (2016) online: <https://d36rd3gki5z3d3.cloudfront.net/wp-content/uploads/2016/11/Fossil-Fuel-Subsidies-EN.pdf?x49259>

ETUC. “Spain Guarantees a Just Transition for Miners” online: <https://www.etuc.org/en/spain-guarantees-just-transition-miners>

European Commission (EC). “The European Green Deal Investment Plan and Just Transition Mechanism Explained” (14 January 2020) online: <https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_24>

European Commission. “Carbon Border Adjustment Mechanism: Questions and Answers” (14 July 2021) online: <https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_3661>

European Commission. “Coal Regions in Transition” online: <https://ec.europa.eu/energy/topics/oil-gas-and-coal/EU-coal-regions/coal-regions-transition_en>

European Commission. “EU Green Deal (Carbon Border Adjustment Mechanism) – About this Initiative” (2020) online: <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12228-Carbon-Border-Adjustment-Mechanism>

European Commission. “France, Germany, UK, US and EU Launch Ground-breaking international Just Energy Transition Partnership with South Africa” (2 November 2021) online: <https://ec.europa.eu/commission/presscorner/detail/en/IP_21_5768>

European Parliament. “Briefing - Carbon Emissions Pricing: Some Points of Reference” (2020) online: <https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/649352/EPRS_BRI(2020)649352_EN.pdf>

Farand, Chloe. “UN Report on 1.5C Blocked from Climate Talks After Saudi Arabia Disputes Science” *Climate Change News* (27 June 2019), online: <https://www.climatechangenews.com/2019/06/27/un-report-1-5c-blocked-climate-talks-saudi-arabia-disputes-science/>

Fawthrop, Andrew. "UK Trade Body Warns of up to 30,000 North Sea Job Losses amid Pandemic" *NS Energy* (28 April 2020) online: <https://www.nsenergybusiness.com/news/industry-news/north-sea-job-losses-oguk/>

French, Janet. "Alberta Budget 2019: Cities, Universities, Civil Servants Feel the Fiscal Pain", *Edmonton Journal* (25 October 2019) online: <https://edmontonjournal.com/news/local-news/2019-alberta-budget-will-have-2-8-per-cent-spending-cut-programs-eliminated>

Friends of Fossil Subsidy Reform. "The Communique" (2015) online: <http://fffsr.org/communique/>

G7. "G7 Ise-Shima Leaders' Declaration" (2016) online: <https://www.mofa.go.jp/files/000160266.pdf>

Gailus, Jeff. "Oil, Gas and the Climate: An Analysis of Oil and Gas Industry Plans for Expansion and Compatibility with Global Emission Limits" (December 2019) online: <https://www.ciel.org/wp-content/uploads/2019/12/oilGasClimateDec2019.pdf>

Ghussain, Alia Al. "The Biggest Problem with Carbon Offsetting is that it Doesn't Really Work", *Greenpeace* (26 May 2020) online: <https://www.greenpeace.org.uk/news/the-biggest-problem-with-carbon-offsetting-is-that-it-doesnt-really-work/>

Global CCS Institute. "CO_2RE Facilities Database" <https://co2re.co/FacilityData>

Goldenberg, Suzanne. "Saudi Arabia Accused of Trying to Wreck Paris Climate Deal" *The Guardian* (8 Dec 2015), online: <https://www.theguardian.com/environment/2015/dec/08/saudi-arabia-accused-of-trying-to-wreck-the-paris-climate-deal>

Government of Canada. "Arctic Offshore Oil and Gas" (4 October 2018) online: <https://www.rcaanc-cirnac.gc.ca/eng/1535571547022/1538586415269>

Government of Canada. "Coal Facts" (6 October 2020) online: <https://www.nrcan.gc.ca/science-data/data-analysis/energy-data-analysis/energy-facts/coal-facts/20071>

Government of Canada. "Draft Terms of Reference for Conducting a Strategic Assessment of Thermal Coal Mining", online: <https://www.canada.ca/en/environment-climate-change/corporate/transparency/consultations/draft-terms-reference-conducting-strategic-assessment-thermal-coal-mining.html>

Government of Canada. "Minister's Response", (29 September 2021) online: <https://iaac-aeic.gc.ca/050/evaluations/document/141492>

Government of Canada. "Order Designating Physical Activities", (29 September 2021) online: <https://iaac-aeic.gc.ca/050/evaluations/document/141457>

Government of Canada. "Strategic Assessment of Thermal Coal Mining", online: <https://iaac-aeic.gc.ca/050/evaluations/proj/81576>

Government of India's Ministry of Petroleum and Natural Resources. "Model Production Sharing Contract: Fifth Offer of Blocks" (2005) online: <http://petroleum.nic.in/sites/default/files/MPSC%20NELP-V.pdf>

Government of Louisiana. "How the Ancient People and People Before the Time of Oil Wells Used Petroleum" online: <http://www.dnr.louisiana.gov/assets/TAD/education/BGBB/2/ancient_use.html>

Green, Tom. "Zeroing in on Emissions: Canada's Clean Power Pathways – A Review" *David Suzuki Foundation* (2019), online: <https://davidsuzuki.org/wp-content/uploads/2019/05/zeroing-in-on-emissions-canadas-clean-power-pathways-review.pdf>

Greenpeace. "Steeling the Future: The Truth Behind Australian Metallurgical Coal Exports" (2017) online: <https://www.greenpeace.org.au/wp/wp-content/uploads/2017/06/280517-GPAP-Steeling-the-Future-Report-LR.pdf>

Gross, Samantha. "Why are Fossil Fuels so Hard to Quit", *Brookings* (June 2020) online: <https://www.brookings.edu/essay/why-are-fossil-fuels-so-hard-to-quit>

Guénaire, Michael et al. "Oil and Gas Regulation in France: Overview", *Thomson Reuters Practical Law* (2020) online: <https://uk.practicallaw.thomsonreuters.com/4-629-7328?transitionType=Default&contextData=(sc.Default)&firstPage=true>

Gueye, Moustapha. "Environmental Change and Decent Work: Using Labour Policies for a Just Transition" (27 September 2018) Presentation at the African Region Awareness Creation Workshop to Maximize the Positive and Minimize the Negative Impacts of the Implementation of Climate Change Response Measures online: <https://unfccc.int/sites/default/files/resource/day%202_session%209_ILO.pdf>

Gujarat Mineral Development Corporation Ltd. “Thermal Power”, online: <https://www.gmdcltd.com/en/thermal-power>

Heritage Newfoundland and Labrador. “Economic Impacts of the Cod Moratorium”, online: <https://www.heritage.nf.ca/articles/economy/moratorium-impacts.php>

Hudes, Sammy. “Alberta Budget Banks on Critical Revenue Boosts Despite Market ‘Volatility’, Rising Debt”, *Calgary Herald* (28 February 2020) online: <https://calgaryherald.com/news/politics/alberta-budget-banks-on-critical-revenue-boosts-despite-market-volatility-rising-debt>

IEA. “Coal 2019: Analysis and Forecasts to 2024”, (December 2019) online: <https://www.iea.org/reports/coal-2019#executive-summary>

IEA. “Coal Information Overview”, (July 2020) online: <https://www.iea.org/reports/coal-information-overview>

IEA. “Global Energy Review 2020: The Impacts of the Covid-19 Crises on Global Energy Demand and CO2 Emissions” (April 2020) online: <https://www.iea.org/reports/global-energy-review-2020/coal>

IEA. “World Total Coal Production, 1971 – 2019 Provisional”, (29 July 2020) online: <https://www.iea.org/data-and-statistics/charts/world-total-coal-production-1971-2019-provisional>

IEN. “Indigenous Principles of just Transition”, online: <http://www.ienearth.org/wp-content/uploads/2017/10/IENJustTransitionPrinciples.pdf>

IHRB. “Just Transitions for All: Business, Human Rights, and Climate Action” (November 2020) online: <https://www.ihrb.org/uploads/reports/Just_Transitions_For_All_-_Business%2C_Human_Rights%2C_and_Climate_Action_-_IHRB_Nov2020.pdf >

IHRB. “Just Transitions for All: Business, Human Rights, and Climate Action”, (November 2020) online: <https://www.ihrb.org/uploads/reports/Just_Transitions_For_All_-_Business%2C_Human_Rights%2C_and_Climate_Action_-_IHRB_Nov2020.pdf >

ILO. “Gender, Labour and a Just Transition Towards Environmentally Sustainable Economies and Societies for all” (2017) online: <https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---ilo_aids/documents/publication/wcms_592348.pdf>

IMF. “Reforming Energy Subsidies: Summary Note” online: <https://www.imf.org/external/np/fad/subsidies/pdf/note.pdf>

Impact Assessment Agency of Canada. “Awasis Solar – 10 MW Project” (9 December 2020) online: <https://iaac-aeic.gc.ca/050/evaluations/proj/80915>

Impact Assessment Agency of Canada. “Minister’s Response”, (20 December 2019) online: <https://iaac-aeic.gc.ca/050/evaluations/document/133222>

Impact Assessment Agency of Canada. “Suncor Base Mine Extension Project”, online: <https://iaac-aeic.gc.ca/050/evaluations/proj/80521?culture=en-CA>

India. “India’s Intended Nationally Determined Contribution”, online: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/India%20First/INDIA%20INDC%20TO%20UNFCCC.pdf>

ITUC. “ITUC Economic and Social Policy Brief: The Role of Social Protection in a Just Transition” <https://www.ituc-csi.org/IMG/pdf/role_of_social_protection_in_a_just_transition_en.pdf>

Jeliazkov, Gabrielle et al. “Offshore Oil and Gas Workers’ Views on Industry Conditions and the Energy Transition”, (2020) online: <https://www.greenpeace.org.uk/resources/offshore-oil-and-gas-workers-report/>

Just Transition Commission Scotland. “Paper 4/1 – Oil and Gas Sector background Information” online: <https://www.gov.scot/binaries/content/documents/govscot/publications/minutes/2019/10/just-transition-commission-meeting-papers-september-2019/documents/paper-4-1-oil-and-gas/paper-4-1-oil-and-gas/govscot%3Adocument/Paper%2B4.1%2B-%2BOil%2Band%2Bgas.pdf>

Kartha, Sivan. “Fossil Fuel Production in a 2°C in a World: The Equity Implications of a Diminishing Carbon Budget”, *Discussion Brief* (2016) online: <https://mediamanager.sei.org/documents/Publications/Climate/SEI-DB-2016-Equity-fossil-fuel-production-rents.pdf>

Kingdom of Tonga. “Tonga’s Second Nationally Determined Contribution”, (2020) online: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Tonga%20Second/Tonga's%20Second%20NDC.pdf>

Krause, Dunja. "Why Human Rights-Based Social Protection is Needed in Climate Change Responses: A Just Transition", *Social Protection and Human Rights* (2019) online: <https://socialprotection-humanrights.org/expertcom/why-human-rights-based-social-protection-is-needed-in-climate-change-responses-a-just-transition/>

Labour Network for Sustainability & Strategic Practice. ""Just Transition" – Just What Is It?: An Analysis of Language, Strategies, and Projects" (2018) online: <https://www.labor4sustainability.org/uncategorized/just-transition-just-what-is-it/>

Last, John. "What Russia's $300B Investment in Arctic Oil and Gas Means for Canada" (15 February 2020) online: <https://www.cbc.ca/news/canada/north/russian-arctic-oil-and-gas-explained-1.5462754>

Latrobe Valley Authority. "About" online: <https://lva.vic.gov.au/about>

Lucidity Solutions. "Just Transition Commission: Engagement Event" (2020) online: <https://www.gov.scot/publications/just-transition-commission-community-engagement/>

Mackenzie, Kate. "Big Oil's Net-Zero Plans Show the Hard Limits of Carbon Offsets", *Bloomberg Green* (1 March 2021) online: <https://www.bloomberg.com/news/articles/2021-03-01/big-oil-s-net-zero-plans-show-the-hard-limits-of-carbon-offsets>

Majlie de Puy Kamp. "How Marginalized Communities in the South are Paying the Price for 'Green Energy' in Europe", *CNN* (July 9, 2021) online: <https://www.cnn.com/interactive/2021/07/us/american-south-biomass-energy-invs/>

McDonnell, Giulia. "U.S. Supreme Court Rules that Ecuador Must Pay Chevron $96 Million", *Cultural Survival* (17 July 2016) online: <https://www.culturalsurvival.org/news/us-supreme-court-rules-ecuador-must-pay-chevron-96-million>

McKibben, Bill. "Global Warming's Terrifying New Math", *Rolling Stone* (19 July 2012) online: <https://www.rollingstone.com/politics/politics-news/global-warmings-terrifying-new-math-188550>

Ministry for the Ecological Transition. "Ecological Transition Contracts" online: <https://www.ecologie.gouv.fr/contrat-transition-ecologique#e0>

Morrissey, James. "Who Should Sell the Last of the Fossil Fuels: Stranded Assets, Equity and Climate Change", *OXFAM* (9 May 2016) online: <https://politicsofpoverty.oxfamamerica.org/who-should-sell-the-last-of-the-fossil-fuels-stranded-assets-equity-and-climate-change/>

Müller, Tadzio. ""As Time Goes By …": The Hidden Pitfalls of the "Just Transition" Narrative", *Just Transition Research Collaborative* (14 June 2018) online: <https://medium.com/just-transitions/mueller-fc3f434025cc>

Murphy, Michael & Karren Gillam. "Greenhouse Gases and Climate in Environmental Impact Assessment – Practical Guidance" (2013) online: <https://conferences.iaia.org/2013/pdf/Final%20papers%20review%20process%2013/Greenhouse%20Gases%20and%20Climate%20in%20Environmental%20Impact%20Assessment%20%e2%80%93%20Practical%20Guidance.pdf>

Murray, Adrienne. "Denmark Set to End all New Oil and Gas Exploration", *BBC* (4 December 2020) online: <https://www.bbc.com/news/business-55184580>

Natural Resources Canada. "Calculating the Real Cost of Energy", online: <https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/GenEnergy/Calculating%20the%20Real%20Cost%20of%20Energy.pdf>

Nauels, Alexander et al. "Zero in on the Remaining Carbon Budget and Decadal Warming Rates", *The CONSTRAIN Project Annual Report* (2019) online: <https://constrain-eu.org/wp-content/uploads/2020/02/CONSTRAIN-Zero-In-On-The-Remaining-Carbon-Budget-Decadal-Warming-Rates.pdf>

Norges Bank. "Grounds for Decision – product Based Coal Exclusions" (14 April 2016) online: <https://www.nbim.no/contentassets/d99e60bdb5794272ae0df58d79da0d65/20160414-grounds-for-decision---product-based-coal-exclusions.pdf>

Norges Bank. "Grounds for Decision: Product-based Coal Criterion (the Executive Board's Decision 20.11.2019)", (13 May 2020) online: <https://www.nbim.no/contentassets/d7b3ae86514d4917a3078653cc2bff87/grounds-for-decision.pdf>

Norges Bank. "Observation and Exclusion of Companies", (2020) online: <https://www.nbim.no/en/the-fund/responsible-investment/exclusion-of-companies/>

Nugent, Ciara. "U.K. Says It Will End Support for Overseas Oil, Gas and Coal Projects with 'Very Limited Exceptions'", *TIME* (11 December 2020) online: <https://time.com/5920475/u-k-fossil-fuels-overseas/>

OECD. "Glossaries of Statistical Terms: Environmental Impact Assessment" (2001) online: <https://stats.oecd.org/glossary/detail.asp?ID=828>

OECD. "Governments Should Use Covid-19 Recovery Efforts as an Opportunity to Phase-out Support for Fossil Fuels, say OECD and IEA" (5 June 2020) online: <http://www.oecd.org/environment/governments-should-use-covid-19-recovery-efforts-as-an-opportunity-to-phase-out-support-for-fossil-fuels-say-oecd-and-iea.htm>

Office of the Auditor General of Canada. "Fossil Fuel Subsidies", (2019) online: <https://www.oag-bvg.gc.ca/internet/English/esd_fs_e_43320.html>

Office of the United Nations High Commissioner for Human Rights (OHCHR). "Frequently Asked Questions on Economic, Social and Cultural Rights" Fact Sheet No. 33 online: <https://www.ohchr.org/Documents/Publications/FactSheet33en.pdf>

OGCI. "Delivering on a Low Carbon Future: A Progress Report from the Oil and Gas Climate Initiative", (December 2020) online: <https://oilandgasclimateinitiative.com/wp-content/uploads/2020/12/OGCI-Progress-Report-2020.pdf>

Oil and Gas Authority. "The OGA Strategy" (16 December 2020) online: <https://www.ogauthority.co.uk/news-publications/publications/2020/the-oga-strategy/>

Oil Prices. Pipelines and Jason Kenney's Impeccable Timing", *The Globe and Mail* (28 April 2019) <https://www.theglobeandmail.com/opinion/editorials/article-oil-prices-pipelines-and-jason-kenneys-impeccable-timing/>

Oil Sands Community Alliance. "Oil Sands Operations-Related Rotational Workforce Study" (January 2018) online: <http://www.oscaalberta.ca/wp-content/uploads/2015/08/Oil-Sands-Operations-Related-Rotational-Workforce-Study.pdf>

Olurounbi, Ruth. "Nigeria Dangerously Exposed to Oil Crash", *Petroleum Economist* (24 March 2020) online: <https://www.petroleum-economist.com/articles/politics-economics/africa/2020/nigeria-dangerously-exposed-to-oil-crash#:~:text=Finance%20minister%20Zainab%20Ahmed%20says,25pc%20cut%20in%20annual%20expenditure.&text=In%20the%20long%20term%2C%20present,unsustainable%20with%20current%20oil%20prices>

OPEC. "Carbon Capture and Storage, CO2 for Enhanced Oil Recovery, and Gas Flaring Reduction" (Official Report of the Joint Workshop Held by OPEC and the World Petroleum Congress at the OPEC Secretariat in Vienna, Austria, on 8 – 9 June 2004), online: <https://www.opec.org/opec_web/en/press_room/905.htm>

Organizational Research Services. "Theory of Change: A Practical Tool for Action, Results and Learning" (2004) online: < https://www.aecf.org/m/resourcedoc/aecf-theoryofchange-2004.pdf>

Ouaguena, Safiyah. "How Solar Energy E-Waste is Leaving Ghana Burnt Out" (4 October 2020) online: <https://ingena.co.uk/2020/10/04/how-solar-energy-e-waste-is-leaving-ghana-burnt-out/>

Page, Kevin et al. "IFSD Platform Assessment Framework: Fiscal Credibility of 2019 Federal Party Election Platforms", *Institute for Fiscal Studies and Democracy* (2019) <https://www.ifsd.ca/en/blog/last-page-blog/assessment-party-platforms>

Paraskova, Tsevetana. "Putin Would Like to See Oil Prices Above $46 per Barrel", *OILPRICE* (27 August 2020) online: <https://oilprice.com/Energy/Energy-General/Putin-Would-Like-To-See-Oil-Prices-Above-46-Per-Barrel.html>

Parks Canada. "Jasper National Park", online: <https://www.pc.gc.ca/en/pn-np/ab/jasper>

People's Republic of China. "Enhanced Actions on Climate Change: China's Intended Nationally Determined Contributions", online: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/China%20First/China%27s%20First%20NDC%20Submission.pdf>

Pinzler, Petra. "Why Phasing-out Coal is So Expensive", *ZEIT Online* (3 July 2020) online: <https://www.zeit.de/wirtschaft/2020-07/kohleausstieg-energiewende-leag-rwe-entschaedigung-bundesregierung>

Popkin, Gabriel. "Germany's Ruhr Valley Beckons with Converted Coal Mines and a Unique Industrial Heritage", *The Washington Post* (21 February 2020) online: <https://www.washingtonpost.com/lifestyle/travel/germanys-ruhr-valley-beckons-with-converted-coal-mines-and-a-unique-industrial-heritage/2020/02/20/aac02bd0-4841-11ea-bc78-8a18f7afcee7_story.html>

PPCA. “Declaration” online: <https://poweringpastcoal.org/about/declaration>

PPCA. “PPCA Co-chairs Announce Expanded Membership Offer for National Governments”, online: <https://poweringpastcoal.org/news/PPCA-news/membership-options-national-governments-declaration-group>

Principles for Paris-Aligned Financial Institutions – Climate Impact, Fossil Fuels and Deforestation, (16 September 2020) online: <https://www.ran.org/wp-content/uploads/2020/09/RAN_Principles_for_Paris-Aligned_Financial_Institutions.pdf>

Prystupa, Mychaylo. “At COP21, Oil Sands Worker Urges Smooth Transition off Fossil Fuels”, *Canada’s National Observer* (8 December 2015), online: <https://www.nationalobserver.com/2015/12/08/news/cop21-oil-sands-worker-urges-smooth-transition-fossil-fuels>

Rabdall, Tom & Hayley Warren. “Peak Oil is Suddenly Upon Us”, *Bloomberg* (1 December 2020) online: <https://www.bloomberg.com/graphics/2020-peak-oil-era-is-suddenly-upon-us/>

Raymer, Elizabeth. “Canada Expected to Pass Legislation on Modern-day Slavery in Supply Chains”, Canadian Lawyer (30 January 2020) online: <https://www.canadianlawyermag.com/news/general/canada-expected-to-pass-legislation-on-modern-day-slavery-in-supply-chains/325664>

Reuters. “Norway Wealth Fund Earned a Record $180 billion in 2019”, *CNBC* (27 February 2020) online: <https://www.cnbc.com/2020/02/27/norway-wealth-fund-earned-a-record-180-billion-in-2019.html>

Riley, Sharon. “The Inside Story of an Alberta Coal Mine Devastated by a Financial Crisis”, *The Narwhal* (24 June 2021) online: <https://thenarwhal.ca/alberta-coal-mine-vista-coalspur-finances/>

Ritchie, Hannah & Max Roser, “Fossil Fuels”, *Our World in Data* (2017) online: <https://ourworldindata.org/fossil-fuels>

Ritchie, Hannah & Max Roser. “2019 Annual Emission Data - CO_2 Emissions”, *Our World in Data* (2019) online: <https://ourworldindata.org/co2-emissions>

Ritchie, Hannah. “Who has Contributed Most to Global CO_2 Emissions”, *Our World in Data* (1 October 2019) online: <https://ourworldindata.org/contributed-most-global-co2>

Robeyns, Ingrid. “The Capability Approach” in Edward Zalta ed., Stanford Encyclopedia of Philosophy, (2016) online: <https://plato.stanford.edu/entries/capability-approach/#:~:text=The%20capability%20approach%20is%20a,their%20real%20opportunities%20to%20do>

Rolfe, Kelsey. “Coalspur: The Canary in Canada’s Thermal Coal Mines as Ottawa sets High Bar for New Projects”, *Financial Post* (23 June 2021) online: <https://financialpost.com/commodities/energy/vista-mine-owner-preparing-to-restart-operations-while-working-through-ccaa-proceedings>

Rosemberg, Anabella. “The hidden Pitfalls of the Just Transition Narrative: A Response”, *Just Transition Research Collaborative* (26 June 2018) <https://medium.com/just-transitions/the-hidden-pitfalls-of-the-just-transition-narrative-a-response-39c4ed0c0624>

Schrijver, Nico. “Self-determination of Peoples and Sovereignty over Natural Wealth and Resources” in OHCHR, *Realizing the Right to Development* (New York, Geneva: United Nations, 2013) 95

Scottish Government. “£62 million Fund for Energy Sector” (12 June 2020) online: <https://www.gov.scot/news/gbp-62-million-fund-for-energy-sector/>

Scottish Government. “Oil and Gas Statistics: 2018” (2019) online: <https://www.gov.scot/publications/oil-and-gas-production-statistics-2018/>

Scottish Government. “Scotland’s Onshore Unconventional Oil and Gas Policy” (2019) online: <https://www.gov.scot/publications/scottish-governments-finalised-policy-position-unconventional-oil-gas-development/>

Shulka, P. et al. “Pathways to Deep Decarbonization in India” *SDSN-IDDRI* (2015), online: <https://backend.orbit.dtu.dk/ws/portalfiles/portal/120569341/DDPP_IND_Final.pdf>

Simon, Frédéric. “’Game Over’ for CCS, Driven out by Cheap Renewables”, *Eurativ* (4 December 2017) online: <https://www.euractiv.com/section/climate-environment/news/game-over-for-ccs-driven-out-by-cheap-renewables/>

Sinha, Parikhit & Laura Jenkins. “Estimating Carbon Displacement by Solar Deployment”, (2014) online: <https://www.firstsolar.com/-/media/First-Solar/Sustainability-Documents/TechnicalReport_Carbon-Displacement-2014.ashx>

Sovacool, Benjamin et al. “The Decarbonization Divide: Contextualizing Landscapes of Low-carbon Exploitation and Toxicity in Africa” (2020) 60: 102028 Global Environmental Change 1

Sparling, Erik et al. “Best Practices for Consideration of the Effects of Climate Change in Project-level Environmental Assessments”, *Ontario Centre for Climate Impacts and Adaptation Resources* (September 2017) online: <http://www.climateontario.ca/doc/reports/BestPracticesForConsiderationOfEffectsOfClimateChangeInProjectEAs2017.pdf>

Statistics Canada. “Employment by Industry, Annual” (2018) online: <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410020201>

Taylor, Trevor. “Twenty-seven Years After the Cod collapse, We Still Haven’t Learned our Lesson”, *Oceans North* (4 June 2019) online: <https://oceansnorth.org/en/blog/2019/07/twenty-seven-years-after-the-cod-collapse-we-still-havent-learned-our-lesson/>

The Asia-Pacific Economic Cooperation (APEC) Leaders’ Declaration (2009) online: <https://www.apec.org/Meeting-Papers/Leaders-Declarations/2009/2009_aelm.aspx>

The Center for Racial Justice Innovation. “Racial Equity Impact Assessment”, online: <https://www.raceforward.org/sites/default/files/RacialJusticeImpactAssessment_v5.pdf>

The Green Political Foundation. “Polluter Pay! Carbon Majors Funding Loss and Damage”, (1 December 2014) online: <https://www.boell.de/en/2014/11/25/polluters-pay-carbon-majors-funding-loss-and-damage>

The Kingdom of Saudi Arabia. “The Intended Nationally Determined Contribution of the Kingdom of Saudi Arabia Under the UNFCCC” online: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Saudi%20Arabia%20First/KSA-INDCs%20English.pdf>

The Universal Rights Group et al. “Human Rights and the SDGs: Pursuing Synergies” (2017) online: <https://www.universal-rights.org/wp-content/uploads/2017/12/RAPPORT_2017_HUMAN-RIGHTS-SDGS-PURSUING-SYNERGIES_03_12_2017_digital_use-2.pdf>;

The World Bank. “Population, Total”, (2019 Revision) online: <https://data.worldbank.org/indicator/SP.POP.TOTL>

UNDP. “Human Development Index (HDI) Ranking (from the 2020 Human Development Report)” online: <http://hdr.undp.org/en/data>

UNFCCC. “Carbon Capture, Use and Storage” <https://unfccc.int/resource/climateaction2020/tep/thematic-areas/carbon-capture/index.html>

UNFCCC. “Just Transition of the Workforce, and the Creation of Decent Work and Quality Jobs – Technical Paper” online: < https://unfccc.int/sites/default/files/resource/Just%20transition.pdf>

UNFCCC. “Response Measures” online: <https://unfccc.int/topics/mitigation/workstreams/response-measures#eq-3>

UNFCCC. “The Concept of Economic Diversification in the Context of Response Measures – Technical Paper” online: <https://unfccc.int/files/cooperation_support/response_measures/application/pdf/technical_paper_economic_diversification.pdf>

Union of Concerned Scientists. “Tracing Fossil Fuel Companies’ Contributions to Temperature Increase and Sea Level Rise”, (October 2017) online: <https://www.ucsusa.org/sites/default/files/attach/2017/10/gw-accountability-factsheet.pdf>

UNPFII. “Indigenous Peoples and the 2030 Agenda”, online: <https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2016/10/Short-flyer_UNPFII-Substantive-Inputs-2017.pdf>

US Department of Interior Bureau of Land Management (BLM). “BLM Advances Rough Hat Clark County Solar Project Application”, (7 June 2022) online: <https://www.blm.gov/press-release/blm-advances-rough-hat-clark-county-solar-project-application>

USAID. *Stakeholder Participation in Climate Change Adaptation Planning* (USAID, 2013)

Verkuijl, Cleo et al. “Aligning Fossil Fuel Production with the Paris Agreement: Insights for the UNFCCC Talanoa Dialogue” *Stockholm Environment Institute (SEI)* (March 2018), online: <https://www.sei.org/wp-content/uploads/2018/03/verkuijl-fossil-fuels-paris-pb.pdf>

Wamsted, Dennis & David Schlissel, “Petra Nova Mothballing Post-Mortem: Closure of Texas Carbon Capture Plant is a Warning Sign”, *Institute for Energy Economics and Financial Analysis* (August 2020) online: <https://ieefa.org/wp-content/uploads/2020/08/Petra-Nova-Mothballing-Post-Mortem_August-2020.pdf>

Watkins, Simon. “Oil Price War Puts Entire kingdom of Saudi Arabia at Risk”, *OILPRICE* (11 May 2020) online: <https://oilprice.com/Geopolitics/Middle-East/Oil-Price-War-Puts-Entire-Kingdom-Of-Saudi-Arabia-At-Risk.html>

World Bank. “Press Release: World Bank Group Announcement at One Planet Summit” (12 December 2017) online: <https://www.worldbank.org/en/news/press-release/2017/12/12/world-bank-group-announcements-at-one-planet-summit >

X Fossil Free: Divestment. “Overview” <https://gofossilfree.org/divestment/commitments/>