Improving Shipping Governance in the Canadian Arctic by Integrating Inuit Perspectives and Area-Based Management: A Case Study of the Northern Low-Impact Shipping Corridors Initiative

by

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

at

Dalhousie University
Halifax, Nova Scotia
March 2023

DEDICATION PAGE

I would like to dedicate my thesis to the memory of my beloved grandmother, for her endless love, support and encouragement.

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ABSTRACT

Deepening impacts of climate change and biophysical changes in the Canadian Arctic have triggered interests in developing the maritime transportation section as well as concerns about shipping risks. This thesis explores the implications of Arctic marine shipping activities for the pursuit of improved shipping governance in the Canadian Arctic. This dissertation contributes to the growing body of literature on Arctic shipping by exploring how integrated area-based management can facilitate integrated shipping governance in light of indigenous rights and Inuit perspectives.

The results of this study are presented in four interrelated manuscripts. They review the evolution of Arctic shipping activities, examine Canada's maritime legal and political instruments, and identify the need to involve multiple stakeholders and rights holders, balance different interests, and incorporate various types of knowledge in Arctic shipping governance. The findings indicate that an integrated governance framework should be adopted for Arctic shipping in the Canadian Arctic. This framework will need to facilitate interdepartmental collaboration, enhance indigenous engagement, and support the implementation of area-based measures. Analysis of the Northern Low-Impact Shipping Corridors initiative reveals how Inuit have been engaged in Arctic shipping and how their rights and perspectives will continue to inform Arctic shipping governance. Furthermore, this study examines Canada's area-based measures for shipping and explores the potential to apply Marine Spatial Planning as a framework to govern shipping in the Canadian Arctic.

LIST OF ABBREVIATIONS USED

AC	Arctic Council
ACA	Arctic Cooperation Agreement
ACNV	Arctic Corridors and Northern Voices
AIS	Automatic Identification System
AMSA	Arctic Marine Shipping Assessment
ANPF	Arctic and Northern Policy Framework
ASSPPR	Arctic Shipping Safety and Pollution Prevention Regulations
ATBA	Area To Be Avoided
AWPPA	Arctic Waters Pollution Prevention Act
BES	Blue Economy Strategy
BSIMPI	Beaufort Sea Integrated Management Planning Initiative
BSP	Beaufort Sea Partnership
CCG	Canadian Coast Guard
CBD	Convention on Biological Diversity
CEMS	Cumulative Effects of Marine Shipping
CHS	Canadian Hydrographic Service
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
CMAC	Canadian Marine Advisory Council
COS	Chamber of Shipping
CSA	Canada Shipping Act
CZM	Coastal Zone Management
DFO	Department of Fisheries and Oceans Canada
DIAND	Department of Indian Affairs and Northern Development
DND	Department of National Defence
DEW	Distant Early Warning
DFAIT	Department of Foreign Affairs and International Trade
ECCC	Environment and Climate Change Canada
EBM	Ecosystem-Based Management
EBSA	Ecologically and Biologically Significant Area

EEZ	Exclusive Economic Zone
EMSA	Enhanced Maritime Situational Awareness
ESSIM	Eastern Scotian Shelf Integrated Management
FPIC	Free, Prior and Informed Consent
GoC	Government of Canada
GSAR	Ground Search and Rescue
HBC	Hudson's Bay Company
HFO	Heavy fuel oil
HMP	Haida Marine Planning
HTO	Hunters and Trappers Organization
ICC	Inuit Circumpolar Council
ICM	Integrated Coastal Management
ICZM	Integrated Coastal Zone Management
IIBA	Inuit Impact and Benefit Agreement
IMO	International Maritime Organization
IOMP	Integrated Ocean Management Plan
ISR	Inuvialuit Settlement Region
ITK	Inuit Tapiriit Kanatami
IUCN	International Union for Conservation of Nature
IWC	International Whaling Commission
LILCA	Labrador Inuit Land Claims Agreement
LOMA	Large Ocean Management Area
MAO	Marine Awareness Office
MaPP	Marine Plan Partnership
MPA	Marine Protected Area
MSP	Marine Spatial Planning
NIRB	Nunavut Impact Review Board
NLCA	Nunavut Land Claims Agreement
NMC	Nunavut Marine Council
NMCA	National Marine Conservation Areas
NMTCI	Northern Marine Transportation Corridors Initiative

NORDREG	Northern Canada Vessel Traffic Services Zone
NPC	Nunavut Planning Commission
NWP	Northwest Passage
OPP	Oceans Protection Plan
PAME	Protection of the Arctic Marine Environment
PCT	Pew Charitable Trusts
PNCIMA	Pacific North Coast Integrated Management Area
PVM	Proactive Vessel Management
QIA	Qikiqtani Inuit Association
SAC	Stakeholder Advisory Committee
SAR	Search and rescue
SDG	Sustainable Development Goal
TC	Transport Canada
TINMCA	Tallurutiup Imanga National Marine Conservation Area
TRC	Truth and Reconciliation Commission of Canada
TSB	Transportation Safety Board of Canada
TSS	Traffic Separation System
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNDA	United Nations Declaration on the Rights of Indigenous Peoples Act
UNESCO	United Nations Educational, Scientific and Cultural Organization
USSR	Union of Soviet Socialist Republics
VPZ	Voluntary Protection Zone for Shipping
WWF	World Wildlife Fund for Nature

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my supervisor Dr. Claudio Aporta for all of the support and guidance he has provided throughout my research journey. His unwavering patience and motivation have been invaluable, and his immense knowledge and experience have been a constant source of inspiration in my research. I am truly grateful for the opportunities to learn and grow under his supervision.

I would like to thank Dr. Aldo Chircop and Dr. Ronald Pelot for their invaluable support, guidance, insightful comments and encouragement, which have been driving forces behind my academic and professional growth. Their expertise and knowledge have been instrumental in shaping my research and helping me to navigate through complex challenges.

My sincere thanks also go to Dr. Jackie Dawson for being my external examiner. Jackie's academic excellence has always been an inspiration to me. I am grateful for the time and effort she took to review my work and provide insightful feedback.

I am deeply grateful to my parents, who have provided me with moral and emotional support in my life. I am also thankful to my friends who have supported me along the way.

I am grateful for the assistance provided by Khoi Truong and director Dr. Peter Tyedmers from the Interdisciplinary PhD program. Very special gratitude goes out to Marine Affairs Program and Becky Field. I am also grateful to the Bailey Lab for Dr. Megan Bailey's support and for the cherished time spent together in the lab.

CHAPTER 1 Introduction

Shipping is both the result and the enabler of industrial and commercial development in the Arctic. As climate change is increasingly affecting the Arctic, undergoing biophysical changes in the region open prospects for marine shipping in different sectors, such as fishing, resource exploitation, commercial transportation, research, community resupply, cruise tourism, research and government ice-breaking services (Arctic Council [AC], 2009). In the Canadian Arctic, shipping activities have increased due to the fast-retreating sea ice, needs from growing northern communities, tourism demand, and increasing fisheries, and resource development activities (Dawson et al., 2017; Lasserre, 2011; Lasserre, 2019). Since the 1990s, the Arctic marine traffic volume and the total distance traveled by vessels in the Canadian Arctic have increased dramatically (Dawson et al., 2018; Pizzolato et al., 2016; Pizzolato et al., 2014).

Longer navigable seasons and the substantial growth of marine shipping activities have generated some benefits to Arctic coastal communities (mostly Inuit), as less limited (by ice) shipping seasons open up opportunities for the exploration and exploitation of resources that once were out of reach, or too expensive to pursue. Inuit communities across the Inuit Nunangat (Inuit homeland) are experiencing and will likely experience some economic and social benefits (Argetsinger, 2020) as a result of increasing shipping, such as increasing job opportunities, income, community resupply and infrastructure development (Alvarez et al., 2020; Kelley & Ljubicic, 2012; Pew Charitable Trusts, 2016).

While the benefits (present and potential) are not to be neglected, the risks associated with increasing shipping trends are prominent, and require proper governance arrangements that involve Inuit from the outset. The situation of shipping governance is complex. This situation is generated by increasing shipping and also involves a multitude of interests across different

geographic, economic, legal and political scales, from the local to the global. More concretely, increasing shipping activities pose legal-political, economic, socio-cultural, environmental, and operational risks, resulting in adverse impacts on shipping operations, government surveillance, the marine environment, and indigenous practices. Compared to southern Canada, the overall level of shipping operations in the Canadian Arctic is relatively low (Gelfand, 2014). But because of the characteristics and fragility of Arctic ecosystems and human populations, shipping activities have brought some inevitable risks, that are amplified when compared to other latitudes (Chen et al., 2022; VanderZwaag et al., 2008), to indigenous subsistence, cultural and social activities (Olse et al., 2019). Given the remoteness of the Arctic and the sensitive nature of this environment, there is a need to improve shipping governance to minimize social and environmental risks through enhancing safe navigation, protecting indigenous practices, and responding to potential shipping incidents (AC, 2009).

Arctic shipping governance involves international and domestic maritime laws and policies, international conventions, and industry standards. Firstly, marine shipping is an inherently international activity, which is highly regulated by international maritime laws and global industry standards. The *United Nations Convention on the Law of the Sea* (UNCLOS, 1982) is an international convention that governs the world's oceans, including uses of marine resources and marine activities, including shipping. Article 234 of UNCLOS, commonly called the "Canada clause", is a provision allowing Arctic coastal states to enforce laws and regulations to prevent, reduce, and control marine pollution in ice-covered areas within their exclusive economic zone (EEZ). Public and private international laws concerning shipping form international maritime legal frameworks, addressing shipping issues like marine pollution, maritime safety and security, labour, and economic development (e.g., International Convention for the Prevention of

Pollution from Ships, 1973/78, International Convention for the Safety of Life at Sea [SOLAS], 1974, and International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978). These international conventions are the primary means the International Maritime Organization (IMO) uses to regulate shipping activities. In 2014/2015, IMO adopted the International Code of Safety for Ships Operating in Polar Waters (Polar Code, 2014/2015), to provide some fundamental guidelines, mandatory measures and recommendatory provisions for ships operating in polar regions. In 2022, the draft amendments to the Polar Code were approved to improve navigation of non-SOLAS vessels (e.g., fishing vessels, private yachts, and smaller cargo vessels) in Arctic waters (IMO, 2022).

Canada has a long history of governing shipping activities generally and those in the Canadian Arctic particularly through an evolving system of laws for the purposes of protecting sovereignty and security, enhancing national surveillance and preventing marine pollution (Bartenstein, 2019; Kraska, 2016; VanderZwaag et al., 2008). To maintain high standards for Arctic shipping, Canada has also incorporated the Polar Code into domestic legislation by introducing the new *Arctic Shipping Safety and Pollution Prevention Regulations* (2017). Furthermore, marine navigation is a shared mandate among federal departments. While maritime authorities (Transport Canada and Canadian Coast Guard) continue to govern marine traffic, other federal departments, such as the Fisheries and Oceans Canada (DFO), Parks Canada Agency and Environment and Climate Change Canada, have also created regulations and policies addressing shipping-related environmental issues. These regulations and policies will be discussed in detail in Chapter 2 and Chapter 3. Furthermore, provincial powers under the Section 92 of the Constitution Act (1982) can affect shipping concerning local undertakings, property and civil rights, such as labour (including occupational health and safety), fisheries and aquaculture (e.g.,

fish processing, occupational health and safety), as well as provincial boating (Shan et al., 2019). Municipal regulations can also be applied concerning some aspects of shipping and their impacts on local communities and the environment. For example, port users and vessels are required to comply with provincial and municipal laws according to the Public Ports and Public Port Facilities Regulations (2001). Cooperation between different departments/sectors, and between different levels of government, is crucial not only to deal with the complexities of governing Arctic shipping, but also to comply with Canada's mandates regarding integrated management and engagement of local and Indigenous communities (Kearney et al., 2007; Ricketts & Harrison, 2007).

Indigenous treaties, and comprehensive land claims, that concern indigenous marine title claims, rights and access to marine resources, must also be considered when shipping and shipping governance measures are affecting indigenous interests and practices, which is always the case in Arctic shipping, as most of existing shipping routes are located within Inuit Nunangat (Bankes, 2020; Simon, 2011). The Government of Canada has committed to building a nation-to-nation partnership with Indigenous Peoples, including Inuit, through reconciliation, through which, Indigenous Peoples and the Crown can work cooperatively (Government of Canada [GoC], 2021). To fulfill this promise, Transport Canada has developed the Oceans Protection Plan (OPP) with an emphasis on facilitating stronger partnerships among Indigenous Peoples and coastal communities (TC, 2020a). Progress has been made to involve Inuit in Arctic shipping governance, but numerous challenges remain (Beveridge, 2020, Carter et al., 2022; Porta et al., 2017). Several initiatives under the OPP involve Inuit contributions of knowledge, observations and perspectives in Arctic shipping initiatives, such as the Northern Low-Impact Shipping Corridors initiative, the Cumulative Effects of Marine Shipping (CEMS) initiative, the Enhanced

Maritime Situational Awareness (EMSA) initiative, and the Proactive Vessel Management (PVM) initiative. However, true engagement is difficult to attain, and participatory approaches are also riddled with complexity in terms of both conception and effective implementation (Aporta et al., 2018).

Canada has made commitments to adopting ecosystem-based management approaches, comprehensive planning and an integrated ocean governance framework in national ocean laws (e.g., in the *Oceans Act,* 1996). Shipping governance, as a key area of focus in ocean governance, needs to comply with these commitments. In this regard, Canada has established several area-based measures for vessel traffic management, including Traffic Separation Schemes (TSSs), voluntary Tanker Exclusion Zone (TC, 2020b), seasonal slowdown zones (DFO, 2022), search and rescue areas, and other requirements and restrictions (e.g., speed limit) (TC, 2022). There are several types of initiatives being developed in the Canadian Arctic, including environmental assessments (e.g., the Beaufort Regional Environmental Assessment) (BREA, 2022; Doelle et al., 2013), ocean zoning and planning initiatives (e.g., the Tallurutiup Imanga National Marine Conservation Area [TINMCA]) (Parks Canada, 2022), land and marine spaces use plans (e.g., the Nunavut Land Use Plan) (Nunavut Planning Commission, 2021), and shipping governance initiatives and pilot projects (e.g., the PVM initiative and its pilot project in the Cambridge Bay [Greenley, 2021]). As important as they are individually, it is critical to consider how these initiatives and measures can be applied under an overarching framework for Arctic shipping governance.

Meanwhile, theories, research methods and scientific models for assessing, evaluating and mitigating shipping risks and their cumulative effects on marine environments and communities are always evolving (Afenyo et al., 2022; Browne et al., 2020; Fu et al., 2021; Fu et al., 2022;

Olse et al., 2019). However, the evolution and improvement of governance and management tools still face several challenges in Arctic Canada, where the context of shipping risk assessment must be extremely comprehensive, not only because of the lack of data to understand the Arctic marine environment (Kettle, 2019), but also because the risk assessment of shipping is shaped by different visions, values, interests and missions of shipping activities (Goerlandt & Pelot, 2020). Furthermore, Arctic socio-political and ecological environments are unique, and cultural values of Indigenous Peoples are often fundamentally different from those of industry and government (Aporta et al., 2020). While several types of shipping risks, such as ship-based pollution, accidents, and interruptions, can be somewhat analyzed through scientific models, some socio-cultural risks of shipping can only be assessed by using Indigenous experience- and context-based knowledge (Goerlandt & Pelot, 2020). As the growing risks of Arctic shipping have placed more diverse demands on governance, there is a need to develop a policy or a governance framework that can deal with contemporary issues and envision future governance scenarios for Arctic shipping. This thesis is particularly concerned with what and how an appropriate governance framework can take into account the voices and interests of those whose livelihoods and cultural identities depend on the integrity of the environment and ecosystems.

In the existing literature related to Arctic shipping governance, studies have focused on the following five categories, namely 1) the history of Arctic shipping and the existing context of shipping governance (Lajeunesse, 2016; Lasserre & Faury, 2019; Wright, 2016), 2) objectives and principles of shipping governance (Bai, 2015; Chircop et al., 2020; Chircop, 2022), 3) risk assessment, risk-mitigating strategies and scenario analysis for Arctic shipping (Copland et al., 2021; Mudryk et al., 2021; Mussells et al., 2017), 4) risk frameworks, measures, techniques and approaches for shipping risk governance (Fu et al., 2021; Fu et al., 2022; Goerlandt & Pelot,

2020), and 5) effects of shipping on Inuit (Dawson et al., 2020; van Luijk et al., 2022). Furthermore, since the 1970s, due to the impacts of climate change, the Arctic marine environment has undergone dramatic changes that must be taken into account (Anisimov et al., 2007). Consequently, the context of Arctic shipping governance is also evolving rapidly, requiring a more dynamic and equitable governance strategy. The need to consider all these dimensions of Arctic shipping in the context of both climate change and Indigenous participation (which are particularly important in the Arctic), makes shipping governance particularly complex, interrelated, and encompassing a multitude of stakeholders, interests, political and economic interests, and Indigenous rights (AC, 2009; VanderZwaag et al., 2008). Thus, it is necessary (and urgent) to explore how Arctic shipping governance can be improved. Canada's ocean policy is looking towards developing a whole-of-government approach and co-governance arrangement to govern environmental, economic, social and international affairs (GoC, 2010). This approach should be particularly pursued in dealing with Arctic affairs and Arctic shipping to enable government departments to fulfill their shared mandates in marine navigation and to produce vertical and horizontal collaborative frameworks involving federal, provincial/territorial and indigenous authorities in governing Arctic shipping activities.

Indigenous Peoples are still mostly underrepresented in the governance of Arctic affairs generally and climate change affairs specially, both in Canada and at global governance level (Dorough, 2010; Vogel & Bullock, 2021). Indigenous Peoples are not adequately involved in the decision making for Arctic shipping governance (Beveridge, 2020). Thus, it is essential for Canada to develop a framework for Arctic marine shipping governance that also takes into account reconciliation as one of the policy goals (Beveridge, 2020). This framework should be able to recognize Indigenous Peoples' role as rights holders, decision-makers and government

partners in Arctic shipping. Canada has developed a road map to reconciliation by adopting a federal legal framework to implement the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP, 2007) and responding to the *Truth and Reconciliation Commission 94 Calls to Action* (Crown-Indigenous Relations and Northern Affairs Canada [CIRNAC], 2022). These policies and actions should apply to all affairs relating to Indigenous Peoples, including the management of Arctic shipping activities. In this sense, indigenous rights and perspectives will impact policies and laws for Arctic shipping (Beveridge, 2020). However, there is still a lack of a clear governance framework or an institutional arrangement that will effectively give the Inuit greater authority in making decisions for Arctic shipping activities. A reconciliation process is, as per its definition, a process which will be lengthy, complex and nuanced (Balint et al., 2014; Davis et al., 2017). Clear policies and governance frameworks are, therefore, essential to ensure that the end result is not only, in this case, a good instrument to regulate and manage shipping, but also an arrangement to empower Inuit community members whose marine spaces are traversed by shipping activities. This process should also take into account Inuit knowledge of marine environments and ecosystems that has been acquired and transmitted through countless generations.

Indigenous knowledge has now been recognized in Canadian law through the *Indigenous Knowledge Policy Framework for Project Reviews and Regulatory Decisions* (GoC, 2022). Canada is required to consider indigenous knowledge when making legislative changes relating to the *Impact Assessment Act*, the *Fisheries Act,* the *Canadian Energy Regulator Act* and the *Canadian Navigable Waters Act* (GoC, 2022). In this regard, it is critical that Inuit policies guides Arctic shipping governance, that Indigenous knowledge also informs decision-making, and that operational plans for Arctic shipping are informed by indigenous values that can reflect

local and regional realities. Currently, Inuit engagement in shipping management is mostly taking place in the form of government-led top-down consultation (e.g., through the indigenous engagement process under the Oceans Protection Plan). Inuit have been providing their own Indigenous knowledge to optimize policies and area-based measures related to Arctic shipping (Dawson et al., 2020). However, processes of knowledge integration and (ideally) knowledge co-production are not straightforward, and they involve long-term relationships, trust, and engagement at different levels (Aporta et al., 2020; Carter et al., 2019). Furthermore, Inuit traditional values regarding governance are reflections of broader and unique ontologies that will also influence conceptualizations of marine spaces in general and of shipping risks in particular (Dawson et al., 2020; Inuit Circumpolar Council, 2014; ICC-Canada, 2008). Overall, political, ontological and methodological challenges exist for meaningful Inuit engagement (Aporta et al., 2020).

This thesis argues that a comprehensive and an integrated area-based governance framework is needed to implement inclusive and effective shipping governance in Arctic marine areas that are used by Indigenous Peoples, because only an integrated framework can account for the comprehensive nature of the problems that are associated in Arctic shipping activities within the Inuit homeland. It is therefore necessary to analyze what theoretical and practical frameworks can support an integrated shipping governance, enhance collaboration among government departments, respect indigenous rights and consider Inuit knowledge. Canada has abundant experience in adopting integrated ocean governance frameworks and applying area-based measures for marine shipping (Wang et al., 2022). These initiatives and measures have proved to be advantageous in governing marine shipping activities through government collaboration and Indigenous Peoples'/First Nations' engagement (Zhang, 2022). However, applying a

comprehensive spatial planning framework for shipping governance is far from becoming a common practice. This thesis is a contribution to the debate on if and how marine spatial planning as an area-based management approach and a comprehensive planning framework in ocean management can be used to manage shipping in Canadian Arctic waters while taking into account the many dimensions involved in the regulation and management of this activity.

Research questions

Canada is at a crossroads in the history of its relations with Indigenous Peoples, where decision-makers and policy-makers should explore what kind of governance strategies or frameworks are appropriate for dealing with issues that affect Indigenous rights, including Arctic shipping. In this context, beyond the logistical and operational priorities of protecting both ships and the environment, this study examines issues of collaborative Arctic shipping governance, including the history of shipping activities in the Canadian Arctic, the engagement of Indigenous Peoples, and the many issues and challenges associated to using area-based measures for Arctic shipping.

The main research question that this dissertation aims to answer is how Marine Spatial Planning, as an area-based management tool, can improve shipping governance in the Canadian Arctic in a way that respects indigenous rights and considers indigenous perspectives. In order to answer the main research question, four sub-questions are devised, each of which is the focus of the four standalone papers (Chapter 2 to Chapter 5), as follows:

- Sub-question 1 (Chapter 2): How have multiple actors and different types of activities influenced governance objectives of shipping in the Canadian Arctic?

- Sub-question 2 (Chapter 3): How did specific political and historical contexts influence the enactment of certain maritime regulations in Canada and what are the identifiable trends in the development of legal and political instruments for shipping governance?
- Sub-question 3 (Chapter 4): How will Inuit rights, as articulated in the UNDRIP, affect and guide the governance of the Northern Low-Impact Shipping Corridors initiative?
- Sub-question 4 (Chapter 5): How can Canada's experiences in integrated spatial planning and area-based management inform shipping governance in the Canadian Arctic through a marine spatial planning framework?

Thesis structure and methodology

Answering these research questions requires a comprehensive analysis of literature and data on the political, economic, socio-cultural and environmental impacts of Arctic shipping activities, as well as legal and political instruments for Arctic shipping governance. This study adopts a qualitative analysis approach to explore, review and analyze multidisciplinary sources, which include maritime laws and policies, peer-reviewed literature, books, project reports, government reports, political commentaries, dissertations, biographies, conference presentations and documents, interview transcripts, and other library and web resources.

This interdisciplinary research is based on both primary and secondary sources. The methodologies adopted by this research include legal methods which consider international and Canada's legislations and policies as primary sources and involve comparing, analyzing and synthesizing the content of laws and policies (McConville, 2017). This research is also based on secondary sources, which involve analysis, evaluation and synthesis of primary sources or direct

field research projects. These methods are adopted to address unexpected challenges and constraints faced by the author, including the inability to conduct field research. First, the ongoing global pandemic of coronavirus disease 2019 (COVID-19) resulted in limited access to the northern communities. For instance, the Government of Nunavut issued a ban on travel for everyone except residents and critical workers in March 2020. It was a critical time to establish the topic and methodology of this research. The author sincerely believed that learning from Inuit relies on compliance with the research protocol and the development of a trust and personal relationship with community members. But these practical challenges associated with prolonged COVID-19 constraints did not allow the author to establish personal connections with community members in a remote way. Second, there have been ongoing research and consultation projects about Arctic shipping governance within Inuit communities. These projects have collected primary information and data about shipping effects on Inuit and Inuit perspectives of shipping risks. After reviewing existing literature and rethinking the research questions and objectives of this study, the author found that studies and reports related to Arctic shipping governance and Inuit marine uses can provide sufficient details and contents to support the analysis conducted in this thesis. Moreover, Inuit communities have recognized research fatigue as a serious concern (Quinn, 2022). The author is aware of the seriousness of research fatigue and is looking not to overload participants that are already burden by processes of consultation and research. Therefore, one objective of this study is to maximize the use of best data available, analyze the issue of shipping governance from different perspectives, and provide new insights.

This thesis is structured into four major chapters that are complemented by this introduction (Chapter 1) and a conclusion (Chapter 6). This research adopts a “manuscript format” or “paper-

based" thesis structure. Each major chapter (Chapter 2 to Chapter 5) is designed to answer one sub-research question and organized as a standalone publishable paper to be submitted to peer-reviewed journals. Because different chapters will answer different research questions, the methods that are used in each chapter will differ.

Chapter 2 focuses on the question of how multiple actors and different types of activities have promoted Arctic shipping and influenced governance objectives of shipping in the Canadian Arctic. This chapter provides a historical review and a textual analysis of shipping activities in the Canadian Arctic by using multidisciplinary sources from peer-reviewed literature, historical documents and government reports. This review highlights some critical historical events and their effects on Arctic shipping, as well as main actors and types of activities that have driven Arctic shipping. It analyzes how these actors and events have made the context of Arctic shipping governance more diverse. Therefore, Canada has established different governance objectives and adopted various governance strategies and approaches to manage Arctic shipping activities. Chapter 2 also summarizes these governance objectives and strategies to provide better understanding of the current situation of Arctic shipping governance.

Chapter 3 examines what is the social-political context for Canada to develop and implement different maritime laws and policies. This chapter uses policy review and analysis as major approaches to understand how and why the Canadian government has enacted certain maritime regulations and political instruments and their effects on Arctic shipping governance. This chapter uses legal research methods, which use Canada's and international legislations and policies as primary data for review and analysis. Literature on this policy analysis comes mainly from the analysis of regulations and policies, peer-reviewed articles, and government reports. This chapter proposes that there is a need to develop a collaborative stewardship approach for

Arctic shipping governance, which can address complex interactions among ocean users, while mitigating marine shipping risks and respecting indigenous rights related to marine spaces.

Chapter 4 analyzes how Canada's commitments regarding indigenous rights and legal obligations to engage with Indigenous Peoples should and will affect and guide Arctic shipping governance in Canada. It also discusses how Inuit perspectives of shipping and Inuit engagement can strengthen Arctic shipping governance. To answer these questions, there is a need to understand Inuit rights, that are affirmed in the UNDRIP, and Inuit conceptualizations of shipping risks to properly define governance framework for Arctic shipping. This chapter is primarily based on analyzing previous research findings and existing materials, including Canada's regulations and policies, government reports, land use project material, research project reports, and literature on Inuit oral history. Chapter 4 proposes that Canada's existing shipping governance initiatives, such as the Northern Low-Impact Shipping Corridors initiative (Corridors initiative), can become an opportunity to engage Inuit communities in marine shipping governance.

Finally, Chapter 5 aims to answer the question of how to use integrated spatial planning and area-based measures to improve shipping governance in the Canadian Arctic. This chapter reviews and analyzes Canada's past and existing area-based management tools for shipping, as well as marine spatial planning initiatives that include management of marine traffic. It compares these initiatives and draws lessons to inform Arctic shipping governance. This chapter uses the Corridors initiative as a case study to propose that marine spatial planning, as an area-based management tool and a comprehensive planning framework, can improve decision-making and facilitate Arctic shipping governance from several aspects.

The concluding chapter reviews how each chapter answers the research question and summarizes key findings from previous chapters. It also gives a summary of the contributions of this study to the growing body of literature about Arctic shipping governance and the limitations of this research. The conclusion chapter further uses the Corridors initiative as an example to identify potential policy directions. It argues that the future development and governance of the Corridors initiative need to start from three areas, including identifying areas of priority for implementation, enhancing Inuit involvement, and developing a collaborative governance framework. Findings from this research can provide in-time theoretical analysis and recommendations for the Corridors initiative.

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Chapter 2 Arctic Marine Shipping Development and Governance in Canada: A Historical Overview

2.1 Introduction

The *Arctic Waters Pollution Prevention Act* (AWPPA) defines the boundaries of Canadian Arctic waters by the 60th parallel of north latitude, the 141st meridian of west longitude and the outer limit of the exclusive economic zone (EEZ) of Canada. Within this boundary, Canadian Arctic waters include the territorial sea, internal waters of Canada, and waters within Canada's EEZ (AWPPA, 1985). To enhance Arctic shipping safety control, under the *Northern Canada Vessel Traffic Services Zone Regulations* (2010), Hudson Bay, mostly located south of the 60th parallel north, is also considered part of Arctic waters. Thus, the Canadian Arctic waters include major water bodies, such as Baffin Bay, Hudson Bay and the Beaufort Sea, as well as waters within narrow straits or between islands, that are mostly covered by seasonal and multi-year sea ice (Derksen et al., 2019). As the impacts of climate change intensify, Arctic waterways are gradually opening. Driven by longer navigable seasons, increasing resource exploitation and community needs, the past two decades have witnessed a rapid development of the Arctic marine shipping industry with longer seasons and more routes (Mudryk et al., 2021; Pizzolato et al., 2014). Historically, Arctic shipping has involved a variety of different activities, including historic and ongoing coastal community (mostly indigenous) marine harvesting and travel, Arctic exploration, commercial whaling, trading, and, importantly, community resupply. Climate change is now marking the beginning of a new era, in which shipping is more associated with mining, marine tourism, research, military, and government services (Wright, 2016).

Arctic shipping governance is now facing unprecedented challenges due to increasing marine traffic volume and vessel size. First, increasing marine shipping activities inevitably intensify shipping risks and put pressure on the Arctic marine environment and coastal communities. These risks have yet to be fully understood and investigated, making it challenging for risk prevention and mitigation. Second, there is no clear definition of what 'good Arctic shipping governance' exactly means. It is critical (if challenging) to develop an appropriate policy framework that can better assess shipping risks, cope with potential shipping-based risks and consequent adverse impacts, respect indigenous marine uses, mitigate conflicts and facilitate shipping governance.

Accordingly, this chapter aims to provide an overview of the different types of Arctic shipping and emerging governance concerns. It is structured in two major parts, proposing two key arguments. First, through a historical review, this chapter shows that multiple actors and types of activities have promoted marine shipping activities in the Canadian Arctic. Section 2.2 aims to understand the historical context of shipping governance, as this can contribute to a better understanding of the past and current situations of marine shipping in the Canadian Arctic.

Second, this chapter argues that the evolution and diversification of shipping in Canadian Arctic waters are reshaping the governance of Arctic shipping from one dominated by national maritime administration to a more collaborative governance regime, which is more integrated, inclusive, and equitable. Based on the historical review, section 2.3 will explain how objectives of shipping governance have changed over time according to changing social and political contexts, and how these changes could inform better policy-making for current shipping governance issues. The conclusion of this chapter will propose future research directions and opportunities for Arctic marine shipping governance.

2.2 Arctic Shipping: A Historical Overview

Arctic shipping has included numerous activities, actors, and motivations, which are connected to historical contexts and events. While each activity could merit a full-length manuscript, this section only aims to present an overview insofar as it is believed that providing a historical context is important to understand the processes that contributed to the present state of, and issues around, Arctic shipping.

2.2.1 Inuit

The circumpolar Arctic is called home by more than forty different ethnic groups of Indigenous Peoples (Serreze et al., 2007). They have been using and exploring Arctic marine and coastal environments extensively since time immemorial for food, supplies, and settlement areas (Arctic Council [AC], 2009). The Arctic marine environment has been used by Inuit and their ancestors for at least 4,000 years, both in open water and on sea ice, all the way from Chukotka to Greenland, and from the high Arctic to regions south of the 60-degree parallel in Canada.[1]

Inuit are in fact the original explorers and inhabitants of what we now call the Canadian Arctic. Before the arrival of Europeans, Inuit and their ancestors were the only humans to use the Canadian Arctic lands, waters, and sea ice. It is not surprising, therefore, that they have developed a deep understanding and connection to the marine and coastal environments where

[1] Inuit homeland also includes some regions south of the 60-degree parallel because several Inuit communities are located there. This is a very important political consideration for Inuit and an essential step towards reconciliation.

they live. Inuit have always connected to the marine environment through hunting, fishing, and traveling by boat in the open water and by sled during the sea ice seasons. Inuit can fish and hunt marine mammals throughout the year. They depended on these marine environments for seals, polar bear, and walrus on sea ice or in and around polynyas or open water (Aporta, 2002). Inuit also harvested whales in the open waters by large open skin boats called *umiak* (Bonesteel & Anderson, 2008).

This marine-oriented culture and Inuit periodical seasonal mobility are central to Inuit history and identity. Seasonal use of the marine and land environments makes land and sea spaces and resources inseparable in Inuit culture (Aporta, 2009). The importance of the connections between land and marine spaces is shown, for instance, in networks of trails (which are mostly well-established routes) that allow Inuit to reach fishing and hunting grounds, settlements and other significant places (Aporta, 2009). The sea ice (especially the landfast ice which attaches to the land for several months) is integral to Inuit culture and sense of homeland, making marine spaces a continuum or an extension of their lands (Aporta, 2010; Aporta et al., 2018). Inuit have made historical use of the sea ice, including for traveling, accessing resources, interacting with other communities, and even establishing their own seasonal settlements (Aporta, 2002; Inuit Circumpolar Council [ICC], 2008).

Inuit well-established and historically rooted experiences have contributed to their unique ways of knowing, conceptualizing, and utilizing their homeland. Although seldom recognized, the Inuit, through their knowledge of the marine environment, eventually became critical enablers of European Arctic shipping activities, including exploration, whaling and trading. For instance, Arctic exploration relied significantly on Inuit guides and map makers that helped non-Inuit

navigate through the intricate and dynamic waterways across the Canadian Arctic (Aporta & Higgs, 2005).

Since the 1950s, because of dramatic social, political, and (lately) climatic changes, Inuit have gone through huge transformations, such as moving to permanent settlements, that have deeply affected their lives. Regardless of those changes, Inuit communities are still using the marine environment as part of their livelihoods on a regular basis. An indirect effect of climate change has been the steady growth of non-Inuit human activities and associated risks to coastal Inuit communities and the marine environment. Because of the nature of the Canadian Arctic, most (if not all) new non-Inuit human activities in the region are associated with shipping. While Arctic shipping has brought significant economic benefits to the Arctic, the pollution and noise from shipping have also harmed the Arctic ecosystem and Inuit communities in direct and indirect ways.

Thus, managing marine shipping activities, reducing shipping impacts and protecting Inuit rights in marine spaces have become paramount. As Inuit (like other Indigenous Peoples in Canada) have fought for and regained rights over their lands, the political context against how shipping is managed has also changed. The next few sections will overview different historical events regarding shipping in the Arctic, with the objective of providing a historical background to understand identifiable trends and objectives in Arctic shipping governance. It is important to note that some of these events were occurring simultaneously and interacted with each other.

2.2.2 Arctic Exploration

Exploring the Arctic waterways in the Western hemisphere has been a long historical process. As early as 325 B.C., the Greek navigator Pytheas reached the vicinity of Iceland and perhaps even Greenland (AC, 2009). Around the ninth century, the Vikings visited Iceland and the west coast of Greenland (AC, 2009). However, it was not until the Age of Discovery (meaning European exploration starting in the fifteenth century) that advanced cartography and navigation techniques and technologies encouraged European countries to launch voyages of global exploration with the objective of increasing maritime trade. The dramatic expansion of trading then triggered explorers' motivation to find new and shorter trading routes between Asia and Europe through the Arctic ocean.

In the 1490s, John Cabot first proposed the existence of the Northwest Passage (NWP) as an inter-oceanic pathway between Europe and Asia (AC, 2009). In the 1570s and 1580s, Martin Frobisher completed three voyages to explore the NWP and search for "mineral treasures" in what is now the Canadian Eastern Arctic (Marsh & Panneton, 2008). During his first voyage, Frobisher "discovered" Labrador and part of Baffin Island around the present city of Iqaluit (previously known as Frobisher Bay), in today's Nunavut. Frobisher landed on Baffin Island and assumed there should be gold mines (Marsh & Panneton, 2008). Therefore, the following two voyages were driven by the prospect of gold (Marsh & Panneton, 2008). Starting with Frobisher's voyage, the notion of the economic importance of the NWP became a driving force of exploration, leading to increasing shipping activities to discover the NWP (Lajeunesse et al., 2012).

Explorers and navigators spent several centuries attempting to search, locate and chart the NWP. For example, in the 1770s, James Cook explored the NWP from the Pacific coast, revealing its potential for the fur trade (Marsh, 2008). But explorers were mostly defeated by the harshness of the weather, the presence of ice, and the shortness of summers, and they were unable to locate a full pathway. Systematic exploration of the NWP started in the early nineteenth century. The expeditions of John Ross (1818) and William Edward Parry (1819) successfully crossed Baffin Bay and showed European whalers the way to the Lancaster Sound (Francis, 2006). Parry and Lyon set out on an expedition in 1821 in search of the NWP through the way of Hudson Strait and Foxe Basin. Although the voyage only proceeded to Igloolik Island due to heavy ice blocking the waterways, it was historically significant as the crew had considerable contact with Inuit. A substantial amount of information about Inuit lifestyle was collected (Parry, 1824). These early expeditions contributed to increasing the body of knowledge about Arctic coastal geography, ocean currents, and ice regimes (Lamson, 1990), which were needed to practice and expand shipping in Arctic waters.

Perhaps the most significant historic milestone for Arctic shipping was John Franklin's lost expedition in 1845. Departing from England, Franklin's expedition was determined to discover the NWP. However, Franklin and his crew were trapped in the sea ice for over a year (McConnell, 2021). They abandoned one ship and headed to the Canadian mainland before disappearing (McConnell, 2021). The loss of the Franklin expedition provided an excuse or a motivation for numerous search expeditions that eventually ended up discovering the waterways of the NWP and mapping out a significant proportion of the Canadian Arctic waterways, leading to an increase in Arctic marine traffic (AC, 2009). The NWP was navigated for the first time by Amundsen (1903-1906) (Kløver, 2018). However, the practicality of the NWP as a regular

trading route has been limited by the intricacy of the Canadian Arctic Archipelago, bad weather, and the presence of ice (Baldassarri, 2017). This situation has only started to change recently with climate change and the retreat of Arctic sea ice. This changing Arctic navigation environment provides opportunities for more shipping within the NWP (Herrmann, 2019), although its value as a practical inter-oceanic passage is still debatable (Lu et al., 2014).

European explorers were key actors in the early history of Arctic shipping, and they triggered significant social and environmental changes in the Canadian Arctic. Their efforts were devoted to discovering, locating and charting Arctic waterways. In so doing, they constantly interacted with, depended on, and impacted Inuit communities. The presence of outsiders and the establishment of new colonial dynamics significantly changed the way that Arctic marine areas were being used, with a focus on political claims, commercial opportunities, and economic gains. These changes then brought significant social impacts on Inuit communities.

Nowadays, marine shipping operators are aware of the unpredictable and risky marine navigational environment of the Canadian Arctic. Thus, the economic benefits of the NWP and other Arctic waterways are still limited, at least in terms of an interoceanic passage. On the other hand, with increasing marine traffic, the geopolitical significance of the Arctic is increasing, mostly as new resources and tourism become more feasible (Barry et al., 2020; Ebinger & Zambetakis, 2009). With the increase of shipping activities and risks, marine safety, security, and environmental protection have also become major considerations in shipping operations and maritime policy.

2.2.3 Commercial Whaling

In addition to Arctic exploration, European commercial whaling was the most extensive and sustained Arctic marine shipping activity for about 300 years. Since the seventeenth century, European whalers visited Baffin Island, where Inuit had been hunting whales (sustainably) for food and materials (AC, 2009). As regular contact between European and American whalers and Inuit began, Inuit communities provided whalers with clothing, food, and advice (Wright, 2016). Inuit were also hired by whalers as marine pilots, crewmen, hunters, dog drivers, and seamstresses (Francis, 2006).

In the eighteenth century, the commercial whaling industry had further expanded. The use of steamships greatly increased the whalers' ability to hunt farther (Francis, 2006). The demands for baleen, whale oil and bone stimulated thousands of voyages for hunting bowhead whales in Arctic waters (Wright, 2016). Some permanent stations were established onshore (e.g., the Kekerten Island Whaling Station in the Cumberland Sound, Nunavut and the Blackhead Island Whaling Station located on Baffin Island in Nunavut). These land-based stations sheltered whaling vessels in winter (Nunavutparks, 2021). Inuit were also hired in these stations to process whale products (Tagalik, 2009). Overall, commercial whaling was the most important driver for the increasing volume of marine shipping in the Canadian Arctic through the nineteenth and early twentieth centuries.

Crucially, commercial whaling led to significant economic and environmental consequences for the Canadian Arctic. The demand for whaling products allowed whalers and traders to earn significant profits (Huntington et al., 2021). Driven by economic benefits, trading companies sent more ships north and introduced different types of vessels for whaling, accelerating Arctic

marine traffic. However, whaling activities severely decimated the bowhead whale population and harmed the Arctic marine ecosystem.

Whaling also resulted in profound social changes in Arctic communities. Inuit became more dependent on wages from whaling stations and income from selling whale products (e.g., narwhal ivory) (Reeves, 1992). Inuit had to change their seasonal residence and traveling patterns to accommodate whaling activities. As commercial whalers landed and lived in the Arctic, other issues emerged, including whalers' unfair treatment of Inuit and non-compliance with Canadian law (Lajeunesse, 2016). The effects of alcohol were felt by Inuit communities, as many became dependent on the liquor supplied by whalers, which engendered important social problems (Morrison, 2011).

Whaling also had some political impacts on Canada's sovereignty over Arctic waters. The Canadian government was concerned about whalers' illegal actions and decided to extend its legal authority over Arctic waters. For example, in 1903, Canada demonstrated a formal presence in Hudson Bay by sending ships to patrol and establish authority (Lajeunesse, 2016). Canada then amended the *Fisheries Act* in 1906 and started collecting license fees from foreign whalers (Lajeunesse, 2016). Even when commercial whaling was decreasing in importance in the twentieth century, the act of regulating foreign whalers was a symbol of Canadian authority and an exercise of sovereignty in the Arctic.

Until the outbreak of the First World War, commercial whaling remained a primary activity in the Eastern Canadian Arctic (Francis, 2006). However, with the rapid decline of whale populations, by 1914 commercial whaling was conducted only sporadically by some Inuit hunters who were associated with or hired by trading posts (Wright, 2016).

Since the 1970s, Canada has introduced more regulations to control and manage commercial whaling operations. For instance, the Canadian government outlawed all commercial whaling operations based in all Canadian ports in 1972 (Francis, 2006). Although the government decided to withdraw from the International Whaling Commission (IWC) in 1982, Canada continues to ban commercial whaling activities and conducts scientific research to protect whale stocks (Francis, 2006). Inuit continue to participate in subsistence whaling under a strict quota since 1991 (Wernick, 2014). Inuit communities hunt bowhead whales in a heavily regulated context and they have voluntarily limited their traditional whale hunting activities (Fu, 2018).

2.2.4 Trading

The fur trade flourished from the early seventeenth century to the mid-nineteenth century when trading companies sprang up throughout the North American Arctic (Wright, 2016). In 1668, the voyage of the British trading ship *Nonsuch* explored the potential of using Hudson Bay as an access point for the fur trade, leading to the creation of the Hudson's Bay Company (HBC) (Foster & Eccles, 2013; Ray, 2009). A vast territory named Rupert's Land[2], was assigned as HBC's commercial domain by King Charles II of Great Britain and Ireland in 1670 (Mclntosh & Smith, 2006).

HBC played a major role in developing continuous contacts with Inuit (Damas, 1993). HBC maintained relationships between Inuit and Europeans, provided necessary services, and helped

[2] Rupert's Land is a vast area comprising the Hudson Bay drainage basin. After being purchased by Canada in 1870, Rupert's Land was eventually divided among Quebec, Ontario, Manitoba, Saskatchewan, Alberta and the Northwest Territories (Mclntosh & Smith, 2006). This land transfer helped Canada expand its frontiers to the north and west.

to establish and maintain British and later Canadian sovereignty claims in the Arctic. HBC did the work of territorial exploration, government, and knowledge exchange, and even contributed to the nation-building of the Métis (Gismondi, 2020). Merchant governors of HBC had exclusive rights to colonize this region and in so doing they promoted British culture, social values, and lifestyles across the Arctic. The fur trade was one of the most economically significant events in the post-contact history of the Canadian Arctic. There was no other private company that had the same influence as HBC, which became a critical enabler of Confederation and Canada as a country.

Trading had deep economic and socio-political impacts on Inuit communities. Inuit groups were actively involved in the fur trade and greatly increased trapping as part of their seasonal activities. HBC established hundreds of trading posts across the Arctic, and Inuit started to travel seasonally for hundreds of miles to nearby posts to barter items (Damas, 2002). HBC shipped rifles, tea, sugar, tobacco, dry goods, clothes, barrels of wine, meat, fruit, and vegetables to trading posts, and exchanged them with Inuit for skins, furs, whalebones, art and fish (Bonesteel & Anderson, 2008; Wright, 2016). Fur trade provided income to Inuit communities and their dependence on Western goods increased. Trading also had negative impacts on Inuit communities, including introducing European diseases to Inuit (e.g., smallpox) (Ray, 2009). Furthermore, the establishment of Rupert's Land and the HBC's trading system increased European influence in the Arctic, while not considering Inuit sovereignty and rights over their homeland (Mclntosh & Smith, 2006), ultimately reducing Inuit power on the governance of Arctic issues.

In terms of the impact of trading on Arctic shipping, the establishment of more trading posts introduced more commercial shipping activities. Most of the trading posts' locations were

connected to coastal places that were suitable for ships to anchor (Aporta, 2009). These trading posts became critical hotspots for developing new (permanent) settlements, which finally became the most important destinations for ships. According to HBC's Archives, HBC sent ships regularly to several trading posts in the Eastern Arctic, including today's Pond Inlet, Arctic Bay and Clyde River (Wright, 2016).

In addition to HBC, some other companies joined the fur trade and deployed some vessels. However, they were neither capable of handling large cargo shipments, nor of transporting large quantities of trade goods (Wright, 2016). Due to the harsh Arctic marine navigation environment and the presence of heavy ice, the overall level of activity of non-HBC companies remained relatively low (Wright, 2016).

2.2.5 Community Resupply and Relocation

Community resupply has a long history in the Canadian Arctic, and it is connected to the post-contact development of Arctic trading posts and settlements. To support its trading posts, HBC had been providing annual sea lifts in James Bay since the mid-1600s. Each season, there were three to four Arctic-bound cargo ships carrying goods to trade with Inuit for furs (Wright, 2016). For example, HBC steamship *Nascopie* provided services in the Eastern Arctic between 1912 and 1947 (see Figure 1). HBC's sea lifts were the origin of community resupply. HBC continued to provide this service for several centuries until the Canadian government took over the responsibility.

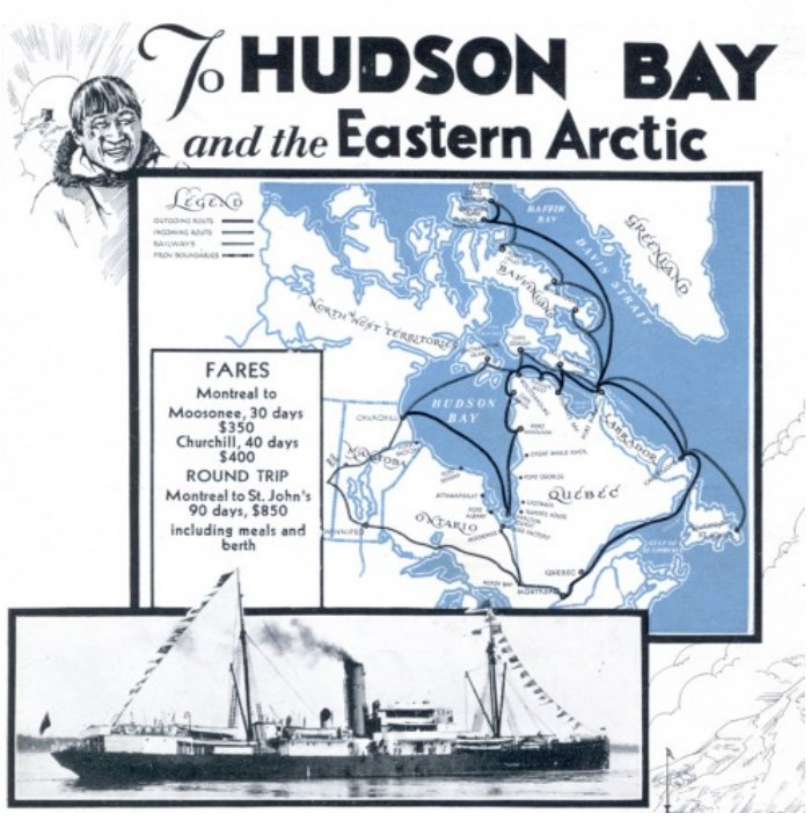

Figure 1: HBC's supply ship Nascopie and its supply trips in 1933
Source: HBC History Foundation, 2016

Motivated by sovereignty concerns, starting in the 1950s, the Canadian government adopted a relocation strategy to move Inuit to permanent settlements with the promise of better healthcare, schools and other government services (Bonesteel & Anderson, 2008). Inuit left their semi-nomadic patterns to relocate and live permanently in town (Searles, 2010). Most Inuit permanent settlements were established in coastal areas along the major Arctic waterways. Therefore, marine shipping (supply ships) became the dominant way to transport necessary materials and supplies through annual sea lift services.

The establishment of the Canadian Coast Guard (CCG) in 1962 facilitated the safety of community resupply activities. Since then, CCG has patrolled Canada's coasts to enhance marine safety and provide necessary services (CCG, 2022). In the Canadian Arctic, CCG's major duties include supporting navigation, icebreaking, search and rescue, and marine pollution response. These are critical supporting services for all Arctic ships, including community resupply vessels. As communities grow and the need for shipping expands, the CCG has committed to build new heavy icebreakers to provide year-round support for vital services to northern communities (CCG, 2021).

Moving to permanent settlements created several challenges for Inuit to maintain their traditional ways of living. Inuit lost part of the flexibility of seminomadic life, including the ability to adopt different residence patterns (e.g., building igloos for winter dwelling) according to the seasonal availability of animals (Qikiqtani Inuit Association [QIA], 2013). In most cases, Inuit moved to permanent settlements that were within the geographic scope of their seasonal residence patterns. However, the federal government compelled Inuit from some communities to move to high Arctic locations and did not inform Inuit before implementing these policies (Suluk & Blakney, 2008). Once settled in high Arctic locations, Inuit had multiple challenges to continuing their seasonal harvesting practices due to the increased travel distances required to find animal resources on their land, sea, and sea ice.

With the continuous expansion of Inuit communities, the demand for external supplies and materials, including fuel, considerably increased Inuit dependence on outside products and services, stimulating more resupply requirements and encouraging the development of Arctic dry cargo and tanker traffic. The annual sea lifts provide food (groceries) that are necessary to sustain people in the context of the settlements, as well as supplies (vehicles, fuels, construction

materials, etc.) that Inuit need for living in settlements (Kelley & Ljubicic, 2012; Newton et al., 2002). Aporta and Higgs (2005) noticed that relocation coincided with the introduction of the snowmobile, which partially compensated for the longer distances to be traveled by Inuit. However, snowmobiles exacerbated Inuit dependence on fuel and the outside world. More resupply vessels are expected with the opening of Arctic waterways and a longer navigable season, which could improve adequate community resupply and services (Brooks & Frost, 2012).

Meanwhile, Inuit have expressed concerns over increasing marine traffic coming to their communities. The 2016 draft *Nunavut Land Use Plan* (Nunavut Planning Commission [NPC], 2016) recommended extending some seasonal restrictions in the Lancaster Sound Polynya and creating areas to be avoided (ATBAs) for ecologically and culturally sensitive sites. However, the Government of Canada is concerned that these proposed prohibitions could negatively impact navigation safety, government surveillance and law enforcement operations, and community resupply operations (GoC, 2017). The tension between Inuit concerns regarding the environmental, social and cultural impacts of shipping and the need to sustain resupply and other (ever-increasing) shipping services are at the core of the main issues regarding shipping governance. Therefore, Inuit are increasingly voicing their concerns about respecting their values and exercising self-governance rights in managing marine traffic. The recent inclusion of the Inuit Circumpolar Council (ICC) in the International Maritime Organization (IMO) with a Provisional Consultative Status (ICC, 2021a) is a clear indication of the Inuit political drive to have their marine and maritime interests recognized in national and international arenas. It is expected that, through the federal government's collaborative partnership-building with

Indigenous Peoples, Inuit will be increasingly involved as a partner in Arctic maritime governance, but the challenges are substantial.

2.2.6 Climate Change and A New Era for Shipping

The deepening impacts of climate change have caused a rapid decline in Arctic sea ice coverage (extent) (Downing, 2019; Lajeunesse, 2012). Climate change is marking the beginning of a new era with a potential for more Arctic shipping activities. From 2013 to 2016, the total number of vessels transiting in the Canadian Arctic increased by forty-four percent (Protection of Arctic Marine Environment [PAME], 2021). Most shipping activities are destinational and driven by fishing, resource exploration and exploitation, marine tourism, and government services (Lasserre, 2019). What follows is a brief description of some of the shipping activities that are increasing or projected to increase due to the decrease of ice in Arctic waters.

Fishing

Fishing is a key economic sector and driver in the Canadian Arctic (Babin et al., 2020). Fishing vessels are one of the fastest-increasing vessel types in the Canadian Arctic waters (Dawson et al., 2017). Nowadays, fishing activities mostly concentrate along the east coast of Baffin Island and have extended northward to Lancaster Sound with the retreating sea ice and the expansion of open waters (Dawson et al., 2018). Offshore commercial fishing is considered as an opportunity by Inuit. For years, the Nunavut Wildlife Management Board, one of the four co-management boards in Nunavut, has been providing reports and suggestions to require DFO to make an appropriate decision on quota allocation according to the Nunavut Land Claims Agreement (NLCA, 1993). As of 2021, DFO has assigned Nunavut a slight majority (52%) of the total

combined quota for shrimp and turbot in Canada's exclusive economic zone in Baffin Bay and Davis Strait (Bernauer, 2020). Three Nunavut-based companies have participated in the offshore shrimp and turbot fisheries to profit directly from commercial fisheries and share benefits with Inuit communities (Bernauer, 2020). The Government of Canada has invested in Nunavut fisheries to expand the scale of the fishing industry and encourage economic growth (GoC, 2022). However, increasing non-Inuit commercial fishing activities are triggering worries among Inuit concerning the risk of depleting healthy stocks of fish, causing serious harm to the ecosystem and the well-being of Inuit communities (ICC, 2014).

Mining

Retreating sea ice has increased the possibility of natural resource extraction, which is a critical driver in a new round of Arctic exploration (Babin et al., 2020). Resource extraction and transportation activities use bulk carriers, container ships, and general cargo to move natural resources, such as ore, oil, and gas (Hannah et al., 2020).

Among the Arctic resource extraction industries, mining has a long history, and it is one of the fastest-growing sectors. As early as the sixteenth century, trading companies like the HBC started to undertake sporadic mining activities on the Eastern shore of Hudson Bay and Baffin Island (Wright, 2016). An artisanal coal mine was set up in 1906 in Pond Inlet, and its products had been transported and sold by the HBC until the 1950s (Wright, 2016). Bulk cargo shipping became the dominant transportation for moving materials in and out of these regions. The mining industry grew rapidly from the 1950s to the 1970s in the Canadian Arctic to extract asbestos, ore,

and other minerals. The Department of Indian Affairs and Northern Development (DIAND)[3] also developed a strategy to provide Inuit with more employment on mining sites (Green, 2013). Canada's first community mine was established in Nanisivik (in Nunavut, near the Arctic Bay), which was assessed to be rich in ore, including zinc, lead, and silver (Wright, 2016).

Shipping is one of the most important means of transportation for some mining sites. Mining projects initiated massive inbound and outbound marine transportation supported by icebreaking ships. For example, Baker Lake (Qamini'tuaq) is not a coastal community, but its mining sites, including the Amaruq Gold Project and the Meadowbank Mine, are connected to global markets through seasonal shipping lanes (Peterson, 2012). These shipping lanes connect to the Rankin Inlet airport, ports in Hudson Bay, and on to other ports through the Atlantic Ocean (see Figure 2 from Muteb et al., 2017). Similarly, the Mary River project relies on large bulk carriers to ship millions of tons of ore every year through the Eclipse Sound (see Figure 3).

Figure 2: Location of the Meadowbank Mine

Source: Muteb et al., 2017

[3] DIAND was replaced by the Indigenous and Northern Affairs Canada (INAC), which was replaced later by the Crown–Indigenous Relations and Northern Affairs Canada (CIRNAC) along with Indigenous Services Canada (ISC).

Mining projects have historically provided job opportunities for local Inuit and helped to develop a wage economy (GoN, 2012), but Inuit responses to mining developments have been diverse. Despite economic benefits, more pollution has been associated with increasing mining transportation, leading to more discharges of sewage, garbage, and waste (Baffinland, 2016; ICC-Canada, 2008). Pressure from mining companies to expand the shipping season at both ends has also generated resistance from several Inuit communities and organizations. For example, Inuit communities have expressed their concerns over the expansion of the Mary River mining, particularly regarding potential threats to the populations of caribou and narwhal, which are highly important in terms of food security and cultural practices (Cecco, 2021). Thus, as tensions between Inuit and the mining company intensified, some Inuit hunters even took action to blockade the airstrip and service road of the Mary River ore mine (Cecco, 2021).

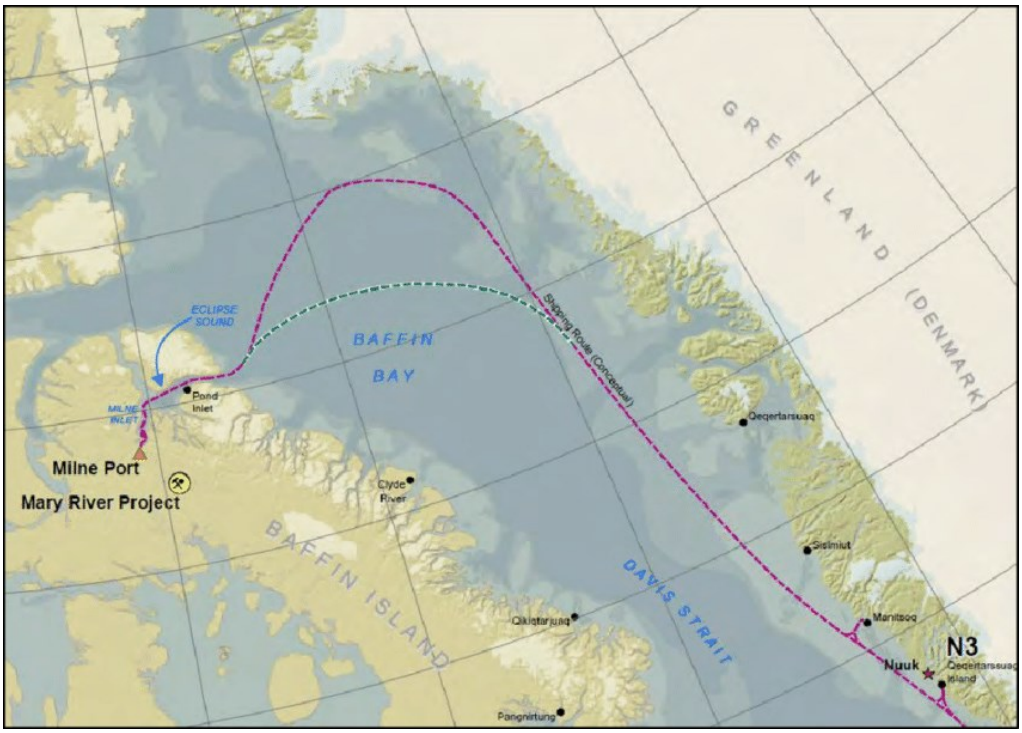

Figure 3: Shipping routes to the Mary River Project

Source: Lajeunesse, 2012

Tourism

Arctic tourism has a long history, originated from northern Europe. In the 1850s, Arctic marine tourism by commercial steamship was initiated in Norway as a result of the development of navigational tools and techniques (AC, 2009; Lajeunesse, 2012). In 1900, Arctic tourism expanded to Alaska's Glacier Bay, the Canadian Yukon, Baffin Bay, Greenland, and Iceland (Snyder, 2008). Since the 1980s, Norway and Alaska have enjoyed rapid and continuous growth in cruise tourism (Snyder, 2008). Emerging Arctic tourism markets, including Greenland and Iceland, have embraced Arctic marine tourism as a driver of developing and sustaining local economies (Snyder, 2008). In Northern Europe, the last decade has witnessed unprecedented growth in cruise tourism (James et al., 2020).

Overall, Canada's Arctic cruise tourism market is growing, interspersed with periods of slower activity in some years (Lasserre, 2019). In 1984, the *M/S Lindblad Explorer* became the first expedition cruise visiting the Baffin Bay region of Nunavut, which is long renowned for its Arctic scenery (Maher, 2012). In the past two decades, the number of Arctic marine tourism ships and pleasure craft substantially increased (Babin et al., 2020), with thousands of visitors coming to Inuit communities. Cruise ships and pleasure crafts have become the fastest-developing type of vessel transiting the NWP (Lasserre, 2019).

Cruise ship companies made Pond Inlet, which is located at the eastern entrance of the NWP, a preferred destination for expedition tourism. Booming tourism is bringing some evident benefits to Inuit communities. For example, cruise tourism has brought passengers to Inuit communities, increased local income, and developed the local economy and infrastructure (Alvarez et al., 2020). At the same time, the pressures generated by an increasing number of tourists visiting

isolated communities with little supply capacity and almost no infrastructure, are worrisome and have triggered the concern of communities. For instance, Inuit community members and hunters have observed that, with cruise ships coming to and transiting in their campsites and hunting ground, animals and marine mammals will be scared away (ICC-Canada, 2008), making it difficult for Inuit to hunt. Inuit have also expressed concern about safety risks associated with the growth of passenger vessels and the potential loss of life/injury related to the influx of visitors. For example, the grounding accidents of the *Hanseatic* (1996) (Transportation Safety Board [TSB], 1998), *Clipper Adventurer* (2010) (TSB, 2012) and *Akademik Ioffe* (2018) (TSB, 2021) put pressure on Inuit as first responders and reflected Inuit communities' limited disaster response capabilities (ICC, 2014), as well as their vulnerability in case of accidents or other unexpected events.

Foreign interest and government services

The prospect of an increase in international shipping is also concerning. Large foreign vessels have navigated and explored the NWP, including the U.S. flagged supertanker *SS Manhattan* in 1969 (Lajeunesse, 2016), the U.S. Coast Guard icebreaker *Polar Sea* in 1985 (Lajeunesse, 2016), and China's icebreaker *Xue Long* (Snow Dragon) in 2017 (Geddert, 2019). It is expected that foreign voyages with research and commercial purposes will continue to increase in the NWP. Given this increase in shipping activities, as well as for research, and the need to support search and rescue activities, the Canadian government's icebreakers and other service ships are also increasing in the Arctic waterways.

With the impacts of climate change and the increasing accessibility of Arctic waterways, a variety of types of shipping activities are expected, presenting more challenges and opportunities

for shipping governance. Meanwhile, the geopolitical importance of the Arctic is increasing because of interests in commercial development (e.g., new maritime shipping routes and resource extraction). This situation eventually leads to some tensions among Arctic states about claiming sovereignty and resources in land and ocean. The legal status of hot spots, chokepoints, and channels, such as the NWP, is at the center of debate (Ebinger & Zambetakis, 2009).

Processes to resolve conflicts promoted the development of national Arctic policies, international standards, legally binding agreements, and codes of conduct for the Arctic generally and for Arctic shipping specifically (e.g., the Polar Code [IMO, 2014] Ebinger & Zambetakis, 2009). Furthermore, increasing non-indigenous activities also raised the significance of protecting the interests and rights of Arctic Indigenous Peoples on land and in marine spaces.

2.3 Discussion: Shifts in Shipping Governance

This chapter proposes that the general historical background of certain times motivated or shaped the production and tone of the legal and regulatory framework that have been developed in Canada over time to regulate and govern Arctic shipping. Based on this historical review of Arctic shipping activities, there are three key motivators in Canada's Arctic shipping governance, namely: 1) governance for economic development, 2) governance for sovereignty and security, and 3) indigenous rights and engagement. This section outlines changing strategies for achieving these objectives during different periods and contexts. These motivators have had, more or less, significance and have changed emphasis in different historical periods. The results of this section will stimulate a discussion of how Arctic shipping governance has shifted to a more collaborative governance regime.

2.3.1 Governance for Economic Development

Economic and commercial interests have always been the main factors in attracting Arctic exploration and shipping. The governance of commercial shipping activities, therefore, has long become one of the key areas of focus in the Canadian Arctic.

HBC used to adopt an active policy to encourage trade with Inuit and maintain a relationship with Inuit. For instance, HBC's Committee in London encouraged fur trade by "guaranteeing the captains a 25% commission" (Barr, 1993, page 237). As a result, more ships made contact with Inuit and more goods were delivered by HBC ships. However, the ultimate goal of this policy is to encourage shipping activities, thereby further boosting the whaling industry and fur trade and increasing profits, without any consideration for protecting the Arctic ecosystem and respecting Canada's sovereignty and Inuit rights. Therefore, the intensified trading and whaling activities of foreign whalers in the Canadian Arctic caused sovereignty concerns to the Canadian government, who established Detachments of North-West Mounted Police to maintain order (Francis, 2006). At that time, the main purpose of regulating commercial activities in the Arctic was based on safeguarding Canada's Arctic sovereignty.

Interests in the commercial shipping industry remain critical for the new era of Arctic shipping under the impacts of climate change. Nowadays, the need to develop more sustainable shipping governance regime has increased. There has been a recent shift from focusing on economic and commercial shipping activities to encouraging types of development that are more sustainable for communities and ecosystems.

The UN General Assembly adopted 17 interlinked Sustainable Development Goals (SDGs) (UN, 2020) for promoting prosperity while protecting the environment. These goals are also important

for the Arctic. Sustainable development has been widely recognized as a long-term goal for all human activities in Canada's marine spaces, including shipping in the Canadian Arctic. Shipping governance also needs to be in line with Canadian overarching ocean laws and policies, such as the Oceans Act (1996), Oceans Strategy (DFO, 2002), and Oceans Action Plan (DFO, 2005). These laws and policies favor integrative and engagement approaches; thus, Arctic shipping is meant to adopt more integrated governance frameworks to expand economic benefits, engage Indigenous Peoples, and achieve sustainable development. For example, Canada's *Arctic and Northern Policy Framework (ANPF)* (CIRNAC, 2019) and the *Blue Economy Strategy* (DFO, 2023) share a view that shipping is a substantial driver of Canada's blue economy. Meanwhile, these policies also demonstrate that the marine shipping industry needs to be developed in a way that meets safety and environmental protection standards and considers and protects indigenous marine use and cultural practices.

2.3.2 Governance for National Sovereignty and Security

Navigation and shipping are within federal jurisdictions under Canada's constitution. Protecting national security and sovereignty has always been the priority of the Canadian government's Arctic strategy. National security became more important after the second World War and during the Cold War, leading to more military activities and heavier shipping traffic for sovereignty purposes. At that time, Canada's policy centered on protecting the integrity of national sovereignty and demonstrating the government's influence in the Arctic.

In the 1970s, Canada claimed waters within the Canadian Arctic Archipelago as internal waters on a historical basis (Pharand, 1988). To strengthen this claim, the federal government then

introduced the *Arctic Waters Pollution Prevention Act* (AWPPA) in 1970 to implement a prohibition on any type of waste-dumping from all vessels within 100 nautical miles[4] of Canada's Arctic coast (Byers, 2010a). In 1976, the Northern Canada Vessel Traffic Services Zone (NORDREG) was established as a voluntary method[5] to allow Canada to track vessels in Arctic waters (Lajeunesse, 2016). In 1985, the Mulroney government's declaration of straight baselines was recognized as a key development in defining and strengthening Canada's sovereignty claim over Arctic waters (External Affairs Canada, 1985; Lajeunesse, 2018). Internationally, Canada also actively participated in the formulation of Article 234 in the UNCLOS (1982) to prevent marine pollution from vessels in ice-covered areas within coastal states' EEZ. The creation of Article 234 successfully legitimized the AWPPA and enhanced Canada's authority in and surveillance over Arctic waters (Lajeunesse, 2016).

Climate change and the gradual opening of Arctic waterways have brought several new challenges regarding Canada's national sovereignty and security in the Arctic. Huebert (2011) asserted that Canada's claim over the NWP as historical internal waters would be adversely affected by the reduction of ice cover in the Passage. But the federal government is moving away from a hard defence of sovereignty towards using a comprehensive approach and exercising 'soft' sovereignty (Lackenbauer, 2021). Instead of continually enhancing military presence or artificially accelerating peopling of the Arctic, the federal government has emphasized a focus on marine safety and security, environmental protection, and protection of indigenous subsistence practices (Lackenbauer, 2021).

[4] AWPPA was amended in 2009. The prohibition was extended to 200 nautical miles offshore.
[5] NORDREG was made mandatory in 2010, with the reporting zone extended from 100 to 200 nautical miles offshore.

Legally and practically, the Canadian government is playing a more influential role in governing Arctic marine shipping activities. Canada created domestic maritime laws and policies to enhance sovereignty in Arctic waters while protecting the Arctic marine environment from the negative impacts of shipping (see Table 1).

Table 1: Selected maritime laws and policies of Canada affecting Arctic shipping governance

Categories	Title	Contents
Federal statutes	Canada Shipping Act (CSA, 2001)	The principal legislation governs safety of marine transportation and protects the marine environment.
	Marine Liability Act (2001)	Collects statutory liability issues such as apportionment of liability, limitation of liability, civil liability for pollution, and liability for carriage of passengers.
	Oceans Act (1996)	Defines Canada's maritime zones, the concept of "ship" and establishes fundamental rules of direction and detention of ships, liability of ship owners, operators, masters and chief engineers of ships.
	Marine Transportation Security Act (1994)	Regulates marine transportation with security measures and rules.
	Arctic Waters Pollution Prevention Act (1985)	Prevents pollution within a 200-mile zone of the waters adjacent to the mainland and islands of the Canadian Arctic.
	Canadian Navigable Waters Act (1985)	Identifies navigable waters and regulates obstructions in navigable waters and defines Arctic waters.
	Canada Transportation Act (1996)	Regulates all modes of national transportation including shipping and transportation in the Arctic.

Categories	Title	Contents
Regulations	Northern Canada Vessel Traffic Services Zone Regulations (2010)	Regulations under the CSA (2001): Creates the Northern Canada Vessel Traffic Services Zone as a mandatory approach to keep track of ships travelling though Canadian Arctic waters.
	Arctic Shipping Safety and Pollution Prevention Regulations (2017)	Regulations under the AWPPA (1985) and CSA (2001): Incorporates the Polar Code into Canada's domestic maritime regulations to maintain Canada's high standards for marine shipping in the north.
Policies	National Marine Policy (TC, 1995)	Aims to modernize Canadian marine transportation system for the future.
	Oceans Protection Plan (2020)	Aims to ensure that the commercial shipping operations are taking place in a way that is safe for mariners, protects and sustains the economic, environmental, social and cultural health of Canada's oceans and coasts.

The Canada Transportation Act (1996) constitutes overarching legislation and policy for all modes of transportation, including shipping, land and air transportation. The *Canada Shipping Act* (TC, 2001a) is the principal legislation to promote sustainable growth of the shipping industry, to help reduce marine pollution and protect the safety of the marine environment (National Vessel Registry, 2018). The *Marine Liability Act* (TC, 2001b), *Marine Transportation Security Act* (1994), and *Canadian Navigable Waters Act* (1985) ensure that shipping operations are conducted in a safe and environmentally sustainable way in navigable waters. These regulations provide some fundamental guidelines for all shipping activities in Canada to enhance safety and security.

Federal legislation on the marine environment and ecosystem conservation, including *Canadian Environmental Protection Act* (1999), *Fisheries Act* (1985), *Migratory Birds Convention Act* (1994) and *Marine Conservation Areas Act* (2002), also regulate marine shipping activities in the Arctic regarding environment protection, waste discharge, and spatial-temporal restrictions for shipping.

In 2016, TC introduced the Oceans Protection Plan (OPP). OPP is Canada's newest national ocean policy and the largest investment that was ever made to protect coasts and waterways in the country (TC, 2020). Three priority goals of the OPP include improving marine safety, protecting the marine environment and offering new engagement possibilities for Indigenous and coastal communities (TC, 2016). The OPP also identifies main priorities, which indicate future research fields and orientations for academics and other specialists to focus on. The Northern Low-Impact Shipping Corridors Initiative is a comprehensive initiative for governing Arctic shipping under the OPP.

2.3.3 Indigenous Engagement and Inuit Rights in Shipping Governance

Arctic shipping is also becoming more diverse and complex, involving various types of vessels, different human uses, and multiple actors in shipping governance. A good indicator is the growing Canadian Marine Advisory Council (CMAC). CMAC is Transport Canada's national forum for consulting stakeholders. CMAC national and regional meetings advise the federal government on navigation, security, and marine pollution concerns. Over the years, CMAC has expanded to involve six regional meetings, including one in the Arctic (i.e., the CMAC Prairie and Northern Regional meeting) (TC, 2010). Furthermore, CMAC has gradually become the

government's principal forum for consultations with various stakeholders, including industry partners, NGOs, academics, unions, the general public, and rights holders, such as Inuit organizations.

The pioneer Inuit politicians and leaders were acutely aware of the lack of Inuit engagement in policy-making and started to fight for their inherent rights and to expand their influence in the political arena, especially since the 1970s (Lough, 2020). Nowadays, shipping governance must also align with and operate within Canada's constitutional framework, which also includes the fundamental rules and principles for protecting Indigenous rights.

Canada recognizes the rights of Indigenous Peoples in Section 35 of the *Constitution Act* (1982), or Duty to Consult, to affirm that the Crown has a legal obligation to consult with aboriginal peoples for decisions or actions that may impact aboriginal rights. It suffices to say that Inuit have inherent rights of self-governance and self-determination, which are protected under the *Constitution Act* (1982) and must have an impact on any policies, governance frameworks and management approaches regarding marine affairs, including in shipping governance. Therefore, compared to other stakeholders, Indigenous Peoples, including Inuit, are recognized as *rights holders*, and they have exclusive rights to their lands and waters (including marine areas and sea ice), and rights to make decisions for any affair that will affect their well-being (Fabbi, 2015).

From the 1970s to the 2000s, Inuit successfully negotiated four comprehensive land claims agreements with Canada. The land claims agreements in all regions of the Canadian Arctic have provisions regarding Inuit rights over marine spaces (see Aporta & Watt, 2020). In 2009, ICC announced a *Circumpolar Inuit Declaration on Sovereignty in the Arctic* to ask states to respect Inuit right to self-determination (ICC, 2009). Since then, the Canadian federal government

started to establish comprehensive and integrated government policy frameworks and initiatives to enhance indigenous engagement and apply indigenous knowledge through reconciliation. In 2010, Canada recognized that Inuit long-time presence in the Arctic since time immemorial was a critical foundation for Canada's sovereignty claim over Arctic waters (GoC, 2010a).

Inuit have expressed their concerns over icebreaking activities and associated impacts on Inuit food and other requirements (Jull, 1990). Since then, Inuit have been in the process of asserting inherent rights in shipping governance. They have made some achievements, including their involvement in integrated management plans (i.e., in the Beaufort Sea Large Ocean Management Area [LOMA], see [Beaufort Sea Partnership, 2009]).

As mentioned above, in 2021 ICC became the first Indigenous organization to receive an IMO "Provisional Consultative Status." This has been seen as a victory for Inuit. They are now in a position to potentially influence IMO's decision-making for Arctic shipping (ICC, 2021a) in a more direct way, without depending on other actors. It is expected that Inuit will be able to provide their expertise, insights, perspectives, and knowledge for IMO's strategic directions and decisions regarding Arctic shipping (ICC, 2021b).

In Canada, the federal government has declared its goal to build a nation-to-nation partnership with Indigenous Peoples, including Inuit, through reconciliation (GoC, 2021). Reconciliation is about restoring the relationship between Canada and Indigenous Peoples through the recognition of rights, cooperation, and respect, in order to find common ground and move forward (Truth and Reconciliation Commission of Canada [TRC], 2015). Nowadays, Canada continues to achieve reconciliation through its commitment to implementing the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP, 2007) on federal and provincial levels, as well as

developing legal implications for the *Truth and Reconciliation Commission's 94 Call for Action* (GoC, 2021).

This overarching policy mandate has made some progress in involving Inuit in shipping governance. For example, the OPP is facilitating stronger partnerships among Indigenous Peoples and coastal communities (TC, 2016) in shipping governance. Several initiatives under the OPP, such as the Corridors initiative, have involved Inuit contributions of knowledge, observations, and perspectives through participatory mapping and area-based management.

So far, Inuit reflections and observations on Arctic shipping have been somewhat explored from the perspectives of: 1) Inuit uses of marine spaces (Dawson et al., 2020; ICC, 2014); 2) shipping's economic benefits for Inuit (Alvarez et al., 2020); and 3) conflicts between shipping and Inuit traditional practices on the sea and ice (Aporta et al., 2018; van Luijk et al., 2022). Future research and policy formulation need to explore how Inuit should and could be engaged as government's key partners in policy and decision-making processes of Arctic shipping governance.

2.3.4 Looking forward: Collaborative Shipping Governance

The Canadian shipping governance regime is not static. From a historical perspective, diverse types of shipping have evolved in the Canadian Arctic, and so have the possibilities and risks associated with shipping. A comprehensive regulation system is now managing and governing Arctic shipping. In response to the challenges of climate change and the need to develop integrated approaches as required by the OPP, the governance of Arctic shipping is shifting from

one dominated by a national maritime administration to a more collaborative governance regime, which is more integrated, inclusive and equitable (Chircop, forthcoming). To elaborate, this chapter proposes that Arctic shipping governance in Canada can be better facilitated with a more collaborative framework that is: 1) more integrated into supporting cross-sectoral and inter-departmental collaboration (Beveridge, 2020); 2) more inclusive in complementing unilateral and multilateral measures in regulating Arctic shipping (Chircop, 2018); and 3) more equitable in enhancing indigenous engagement through reconciliation (Chircop, forthcoming).

Shipping has traditionally been regulated and administrated in a top-down manner, mainly by a national maritime administration. Presently, efforts are being made to develop an integrated Arctic shipping governance framework through interdepartmental and cross-sectoral collaboration. Table 2 indicates that, aside from TC, federal departments such as Fisheries and Oceans Canada (DFO), CCG, Environment and Climate Change Canada (ECCC), Parks Canada Agency, Department of National Defence (DND) and the Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) have policies and guidelines for Arctic shipping activities.

Table 2: Federal departments in Arctic shipping governance

Departments	Roles in Arctic shipping governance
DFO	DFO has mandates in managing shipping activities for the purpose of integrated ocean governance under the *Oceans Act* (1996). DFO developed the Oceans Strategy (2002) and Oceans Action Plan (2005), reinforcing the need for developing a sustainable shipping industry. DFO can also influence shipping governance by creating Marine Protected Areas (MPAs) and environment conservation measures.

Departments	Roles in Arctic shipping governance
DFO-CCG	CCG was transferred to DFO in 1995. Along with TC, CCG continues to play a critical role in enhancing marine security and safety, facilitating navigation and assuming responsibilities of search and rescue.
ECCC	ECCC has impacts on shipping governance by creating regulations and standards on environment protection and MPAs.
Parks Canada	Parks Canada also shares the mandates of creating MPAs for conservation.
DND	DND safeguards national defence, sovereignty and security, and supports maritime search and rescue with CCG.
CIRNAC	CIRNAC's ANPF emphasizes the need to improve ship operations in Northern waters and bring benefits to Indigenous Peoples socio-culturally and economically.

Table 2 shows that a collaborative governance regime for Arctic shipping involves federal departments that have mandates in protecting the marine environment (DFO, ECCC and PC), responsibilities in search and rescue (DND) and obligations in dealing with Indigenous affairs (CIRNAC). This chapter argues that Arctic shipping governance will benefit from a more integrated framework or a "whole-of-government" framework, which is capable of embracing Canada's whole-of-government approach to enhance safety and soft security in the Canadian Arctic. For example, TC successfully collaborated with multiple departments and Northern communities and published the new Guidelines for Passenger Vessels Operating in the Canadian Arctic (TC, 2018a) to govern cruise shipping, regulate passenger vessel operations and protect the Arctic Coast and environment. The development of these guidelines showed how

departments with different mandates could work across their respective jurisdictions, priorities and mandates to achieve the shared goal of Arctic shipping governance.

Second, Arctic shipping governance needs to be more inclusive in terms of adopting and complementing both unilateral and multilateral measures in regulating Arctic shipping and enhancing Arctic sovereignty claims. Unilateral and multilateral regulations are not necessarily conflicting with each other. Some of Canada's unilateral policies have been recognized and accepted by the international community as approaches to improve navigation practices in the Arctic. For example, as a unilateral policy, the AWPPA (1985) was legitimized through multilateral negotiations with the U.S. and the former Soviet Union and the creation of Article 234 in the UNCLOS (1982) (Lajeunesse, 2016). Canada's unilateral policies reflect the national vision and interests in preventing marine pollution and protecting the marine environment by addressing pollution forms that have not yet been sufficiently subjected to international regulations, such as underwater noise and grey water (Chircop, 2018). This will support Canada in maintaining a higher level of protection of the marine environment and governance of Arctic shipping.

On the other hand, Canada is adopting a multilateral approach by incorporating international standards. VanderZwaag et al. (2008) pointed out that Arctic shipping governance involves efforts to promote conformity and consistency of international and domestic maritime laws. With the growth of the global shipping industry, Canada has harmonized domestic marine safety and environmental policies with international maritime laws. Canada introduced new *Arctic Shipping Safety and Pollution Prevention Regulations* (TC, 2018b) to implement IMO's *International Code for Ships Operating in Polar Waters* (the *Polar Code*) and maintain Canada's high standards for marine shipping management in the north (see Table 1).

Looking forward, Canada could benefit from a collaborative and intergovernmental mechanism, which can integrate both unilateral and multilateral measures. This chapter proposes that the Arctic Council and IMO are two critical intergovernmental platforms for Canada. First, through the Arctic Council and its projects, Canada can promote the implementation of the Polar Code and identify best practices for Arctic shipping. Canada should actively participate in developing IMO's policy regarding Arctic shipping, which includes implementing the Polar Code and the ban on the use of heavy fuel oil (HFO) and its carriage for use by ships in Arctic waters (IMO, 2021). Second, through the IMO and Arctic Council, Canada can take a unique perspective to observe and practice how to accommodate Inuit rights, interests, and values and apply Inuit knowledge in Arctic shipping governance as required by the UNDRIP (2007). Furthermore, multilateral measures, such as international standards and best practices from other Arctic countries, can provide assets to Canada's reconciliation and partnership-building with Inuit.

Unfortunately, the discussion about how marine shipping policies can address indigenous sovereignty, equity, and equitable decision-making rights is limited. Thus, shipping governance in the Canadian Arctic must become more equitable in recognizing Inuit rights to make decisions in the shipping governance regime. UNDRIP (2007) affirms Indigenous Peoples' rights to self-governance over land historically occupied and resources traditionally relied upon (Article 26). These rights can possibly expand to include rights to marine spaces (Chircop et al., 2019) as Article 25 of UNDRIP does explain Indigenous Peoples' right to maintain and strengthen their relationship with "*their traditionally owned or otherwise occupied and used lands, territories, waters and coastal seas*" (emphasis added). Future research can explore the potential interface between UNDRIP and Canada's domestic maritime laws in terms of equally recognizing Inuit rights in their waters, on the sea ice and in Arctic shipping governance.

UNDRIP also recognizes the need to develop and apply Indigenous knowledge (Article 31). There have been some attempts to incorporate Inuit knowledge and voices in optimizing the Northern Low-Impact Shipping Corridors (the "Corridors" initiative) (Dawson et al., 2020) through consultations and participatory mapping (Dawson et al., 2019). The Arctic Corridors and Northern Voices (ACNV) project (see Carter et al., 2019 and Dawson et al., 2020) has identified Inuit communities' concerns and suggestions for the future development of shipping corridors. In the near future, applying Inuit knowledge and perspectives will remain as the most common way to support and enhance Inuit engagement in the decision-making process for Arctic shipping.

2.4 Conclusion

This chapter looked back at the history of shipping and explored trends that have resulted in contemporary shipping governance. There have been several identifiable trends in the focus of shipping governance. These trends (some of which are still taking place) include: from encouraging commercial activities to emphasizing national security; from resource exploitation to sustainable development; from top-down to participative; and from single-sector to integrated. During this historical process, different actors have played different roles in Arctic marine shipping activities, resulting in multiple objectives and measures in shipping governance.

As sea ice recedes, the past decades have witnessed increasing human activities in the Canadian Arctic, placing immense pressure on Arctic ecosystems, infrastructure development, and northern communities. Even if the overall level of shipping operations in the Canadian Arctic is relatively low, potential shipping risks could adversely impact Inuit subsistence activities and the fragile Arctic environment and ecosystem. Thus, the significance of formulating a collaborative

governance framework, which can address the complexity of shipping and involve all stakeholders and rights holders, has become paramount. As proposed in this chapter, this framework should be more integrated to support interdepartmental collaboration, more inclusive in accommodating unilateral and multilateral measures, and more equitable in involving Inuit in shipping governance.

The results of this chapter show that Arctic shipping is particularly complex, involving different actors, multiple ways of marine use, various types of vessels, and dramatic seasonal and weather variations. Thus, Arctic shipping governance needs to improve collaboration with multiple stakeholders and consider the particular spatio-temporal dynamics of the Arctic environment, considering both the changes in the ecosystem due to climate change and the seasonality of marine resources and Inuit marine uses. As a result, the overall complexity of shipping governance has increased and will increase even more, along with the growth of shipping activities. However, there is no perfect framework to account for all the circumstances described above, which shows that further research is needed to explore Canada's maritime regulations and policy frameworks for shipping. This is particularly true regarding the existing gaps and challenges in current shipping governance in the Canadian Arctic. An extensive and timely review of Canada's Arctic shipping regulations and policies is needed to stimulate the analysis and discussion of an appropriate framework for dealing with shipping risks, strengthening interdepartmental collaboration and engaging Inuit in a meaningful way.

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Chapter 3 Arctic Shipping: Towards a Collaborative Stewardship Approach

3.1 Introduction

Shipping in the Canadian Arctic has been driven by historical events and recently, by the retreating sea ice and needs from expanding northern communities. Arctic waterways have become more navigable and favourable to marine shipping activities in open-water season, which has resulted in an increase of marine traffic in the Canadian Arctic in the past few decades (Dawson et al., 2018; Pizzolato et al., 2016; Pizzolato et al., 2014). At the same time, the risks associated with Arctic shipping are significant due to the harsh conditions for safe navigation in the marine environment (e.g., seasonal sea ice, unpredictable weather and inadequate charts) and the limited capacity for search and rescue. Potential adverse impacts on the Arctic environment and coastal communities can be magnified due to the fragility of the environment, lack of infrastructure, and geographic remoteness. Furthermore, shipping risks may lead to adverse impacts on indigenous communities who have limited capacity to respond to, and deal with, these risks. Thus, managing Arctic traffic and dealing with the complex interactions between shipping and other ocean users have always been concerns of the Canadian government. To balance multiple interests, Canada has enacted several maritime laws/regulations and policies to achieve multiple governance objectives, including but not limited to economic and sustainable development, environmental protection, enhancing marine safety and security, and protecting national sovereignty and security.

In Canada, shipping is predominantly governed by maritime authorities (Transport Canada and the Canadian Coast Guard) and regulated by domestic legislations, industry regulations, the *United Nations Convention on the Law of the Sea* (UNCLOS, 1982), and international conventions on marine pollution, navigation safety, sea seafarer rights and liability. Various groups of industry stakeholders and rights holders are regulated by, or contribute to, the implementation of these regulations and conventions. However, the governance of Arctic shipping in Canada could be better served by an integrated governance framework that could deal with the complex interactions among shipping and other ocean users, mitigate shipping risks, and satisfy multiple interests in marine spaces. Furthermore, with fast-increasing Arctic marine shipping activities and their impacts on a fragile and changing ecosystem, along with the reality of small, isolated indigenous communities along the coast, it is being recognized that it is critical to establish comprehensive and holistic governance models to balance multiple interests in marine spaces.

Thus, this chapter argues that there has been a clear trend for governing Arctic marine traffic in Canada, namely from "government to governance." This trend means that Canada's approach to Arctic shipping governance has gradually shifted from stronger government control to an integrated and collaborative stewardship model. This trend can be reflected from the development of Canada's laws and policies for Arctic affairs generally and for governing shipping activities specifically. This chapter aims to understand this trend and examine how this trend has influenced today's marine shipping governance in Canadian waters.

This chapter is organized in three key sections. Section 3.2 and section 3.3 analyze different legal and political instruments that address safety and security issues in Arctic waters and the political context in which they were proposed and implemented. Ensuring safety and security in the

unique Arctic marine environment is the most important consideration in the development of Canada's maritime laws and policies for Arctic shipping. A legal review of Canada's maritime laws and policies is conducted in each section, outlining the historical and political contexts for enacting these regulations and different approaches adopted to enhance safety and security in Arctic waterways. Findings from the legal review and the policy analysis indicate that Canada initially adopted relatively strict approaches to enhance government control over Arctic waters, but changes in the international arena and domestic context have enticed Canada to gradually shift to a collaborative stewardship model to improve Arctic shipping governance.

This chapter then proposes that a collaborative stewardship approach favours Arctic shipping governance. Therefore, section 3.4 explores the concept of stewardship and analyzes its meaning in shipping governance in Canadian waters. Based on the results from the policy analysis, this chapter proposes that, to develop a collaborative stewardship framework for Canada, several aspects that involve multiple sectors, departments, international cooperation, and Indigenous Peoples, need to be considered. More importantly, this framework could be implemented through a spatial planning framework to inform better shipping governance and decision-making for shipping activities.

3.2 Sovereignty

3.2.1 Claiming Canada's Sovereignty in the Arctic

Sovereignty reflects a state's ability to exercise a recognized supreme authority, power, or title of "exclusive jurisdiction" within a territorially bounded space (Griffiths, 2008; Philpott, 2003).

Nowadays, the meaning of sovereignty has also been expanded to include economic sovereignty, cultural sovereignty and knowledge sovereignty (Latulippe & Klenk, 2020), and to describe a state's absolute rights over economic, social and cultural development (Fallon, 2009).

Arctic sovereignty has traditionally referred to the eight Arctic states[6]' political control over the remote North, focusing on maritime boundary disputes, territory claims, foreign threats, and access to natural resources (Lackenbauer & Greaves, 2016). Canada's claim over the Arctic is built on two core historical events. The first one is Canada's purchase of Rupert's Land from the Hudson Bay Company in 1870. Taking control of this land allowed Canada to expand its Arctic frontiers to the north and west (Mclntosh & Smith, 2019). Second, in 1880, the British government transferred the rest of its Arctic possessions, including all islands north of the Canadian mainland, to Canada through an Imperial Order-in-Council (Inch, 1962). Since then, Canada has gradually taken responsibility for the surveillance of, and sovereignty over, the Arctic Archipelago. However, due to insufficient exploration and mapping of the archipelago, the Order did not draw a precise definition of the islands' boundaries (Grant, 2017). Thus, Canada's earliest motivations in Arctic waters included defining the scope of Canada's sovereignty in the Arctic, as well as claiming and exercising sovereignty. These interests and motivations ultimately triggered some shipping operations.

At the beginning of the twentieth century, the Government of Canada showed powerful signals of exercising sovereignty rights in the Arctic waters. From 1905 to 1911, Canada conducted several patrols in Arctic waters. Ships sailed to the Arctic Islands, symbolizing government presence and enhancing the exercise of sovereignty by raising the flag and leaving official

[6] Canada, Greenland (Denmark), Finland, Iceland, Norway, Sweden, the Russian Federation, and the United States.

documents in stone cairns (Grant, 2017). In 1906, Canada amended the *Fisheries Act*, which required foreign whalers to obtain licenses when operating in the Hudson Bay and waters north of the 55th parallel (Lajeunesse, 2011).

After the Second World War, the ever-changing international situation prompted Canada to take some actions to safeguard sovereignty in the Arctic. In collaboration with the U.S. government, Canada started to develop the Distant Early Warning (DEW) line of radar stations to detect potentially intrusive military activities of the former Union of Soviet Socialist Republics (USSR) (Arctic Council [AC], 2009). Establishing the DEW line indicated that the focus of Canada's national security gradually expanded to northern lands and waterways. The creation of the DEW line triggered more Arctic shipping to transport materials and supplies to build those stations. These operations developed knowledge and valuable experiences for Arctic shipping, including vessel design, crew competency, and vessel maneuverability in sea ice (AC, 2009).

From the 1930s to 1960s, without consulting Inuit beforehand, Canada implemented a policy to relocate Inuit into permanent settlements to enhance effective occupation of the Arctic, especially the High Arctic[7] (Grant, 2017). At least part of the relocation policy was driven by national interest in claiming and exercising Canada's Arctic sovereignty. As most Inuit settlements are located on or close to major waterways, marine shipping became the major way to move necessary materials and supplies for housing and living in permanent settlements. Later, the Canadian government gradually took over the responsibility for organizing resupply vessels for Inuit communities (Wright, 2016).

[7] Several Inuit families from Pond Inlet and northern Quebec moved to Resolute on Cornwallis Island and Grise Fiord on Ellesmere Island (Fenge, 2007; Freeman, 1976).

3.2.2 Enhancing Arctic Sovereignty in Arctic Waters

The *Manhattan* incident in 1969 was the trigger encouraging Canada to move further by clearly claiming and enhancing its Arctic sovereignty. The oil tanker *SS Manhattan*, accompanied by Canadian and U.S. icebreakers, sailed through the Northwest Passage (NWP) without requesting permission from the Canadian government (Lajeunesse, 2011). This voyage proved that, with support from icebreakers, the NWP has the potential to be used as a year-round inter-oceanic passage for moving oil (Rozell, 2013). The successful voyage of the *SS Manhattan* also raised an important issue: the fact that Canada was poorly positioned to regulate foreign shipping activities in the NWP (Byers, 2010a).

Thus, the Canadian government enhanced sovereignty claims by securing jurisdictions in Arctic waters. Canada also amended the *Territorial Sea and Fishing Zones Act* (1964) to adopt a twelve-nautical mile limit of the territorial sea from the baseline or low-water line along the coast. This is a critical step in history because, with this wider limit, the eastern and western entrances of the NWP are covered by Canada's territorial sea (Lajeunesse, 2016). In 1970, Canada enacted the *Arctic Waters Pollution Prevention Act* (AWPPA, Bill C-202). At that time, the Act created a 100-mile pollution prevention zone of the waters adjacent to the mainland and islands of the Canadian Arctic.

In 1973, the Canadian government claimed waters within the Canadian Arctic Archipelago as internal waters on a historical basis (Bureau of Legal Affairs, 1973; Pharand, 1988). Compared to an international strait, internal waterways are subject to full control under the coastal state's national jurisdiction (Byers, 2010a). Full control is of great significance for Canada to regulate shipping activities through domestic laws (Byers, 2010a). However, this claim had yet to be

reaffirmed in any treaty or legislation (Pharand, 1988). Thus, Canada decided to take more pragmatic and official approaches to promote international recognition and acceptance of its claims and exercise of sovereignty (Lajeunesse, 2016). In 1976, the *Northern Canada Vessel Traffic Services Zone Regulations* (NORDREG, 1976) were enacted. Under this regulation, the NORDREG zone was initially established as a voluntary approach[8] to allow the Canadian government to keep track of ships travelling through Arctic waters. Vessels that meet NORDREG requirements must provide information to, and obtain clearance from, Canadian authorities before entering the NORDREG zone. The Canadian Coast Guard (CCG) will provide necessary services, assistance and information for navigation and routeing.

In 1985, the U.S. Coast Guard icebreaker *Polar Sea* transited through the NWP without seeking Canada's prior consent. This voyage triggered a diplomatic controversy and resulted in Canada's decision of delineating straight baselines to define "the outer limits of Canada's historic internal waters" (Lajeunesse, 2016). In September 1985, the Foreign Affairs Minister, Joe Clark announced several new policies to the House of Commons as the Canadian government's official response to the voyage of the *Polar Sea* (External Affairs Canada, 1985). This statement introduced an immediate adoption of an order-in-council to establish straight baselines (External Affairs Canada, 1985). The system of straight baselines is considered as the primary legal argument for strengthening Canada's Arctic sovereignty (Bonesteel & Anderson, 2008; Killas, 1987). This order also included an initiative to build a Polar Class 8 icebreaker to pursue effective control over the waters enclosed by straight baselines (External Affairs Canada, 1985).

[8] NORDREG became mandatory in 2010.

Although this order triggered a major controversy in the U.S., the U.S. government still expressed a willingness to participate in a bilateral negotiation with Canada over the status of the NWP (Rothwell, 1993). This negotiation led to a 1988 "Arctic Cooperation Agreement (ACA)" between the U.S. and Canada, in which both countries agreed to share information on Arctic navigation and research and protect the Arctic environment and inhabitants (ACA, 1988). This Agreement particularly highlighted that, within waters claimed by Canada to be internal, "the navigation of U.S. icebreakers would be undertaken with the consent of Canada" (ACA, 1988, cl. 3). Under this Agreement, the first request for transit was made by the *Polar Star* in 1988 (Lajeunesse, 2016).

However, Canada has faced the issue of not having enough capacity to enforce these policies or persuade other countries to respect these claims (Griffiths et al., 2011). Notably, according to Huebert (2011), Canada's claim on the NWP is being adversely influenced by the gradual opening of Arctic waters and the retreating sea ice.

At the beginning of the twenty-first century, the Canadian government expressed the need to reinforce and defend Arctic sovereignty. In 2008, Bill C-3 was introduced to Parliament, as an Act to amend the AWPPA and part of the government's strategy to assert and strengthen sovereignty over Arctic waters (Becklumb, 2009). This amendment clearly defined Canada's Arctic waters and extended AWPPA's original 100 nautical miles application zone to 200 nautical miles (Becklumb, 2009). With this amendment, Canada is asserting and exercising rights to a larger area of Arctic waters by enforcing pollution prevention and shipping safety laws. In line with the change of AWPPA application zone, the NORDREG reporting zone was also extended from 100 to 200 nautical miles offshore. As a result, Canada's Exclusive Economic Zones (EEZs) are covered under both policies. In 2010, Canada made NORDREG

mandatory, requiring vessels with a gross tonnage of 300 tonnes or more to provide information to the CCG to enhance safety and prevent pollution (Bai, 2015; Exner-Pirot, 2010; Griffiths et al., 2011).

In 2009, the Harper government announced its new overarching Arctic policy entitled *Canada's Northern Strategy: Our North, Our Heritage, Our Future* (GoC, 2009). This policy reinforced the need to exercise sovereignty in the Canadian Arctic (Livermore, 2017). Under this Strategy, Canada planned to take stronger actions and measures in the Arctic. Relating to shipping governance, this Strategy proposed to expand the Canadian Ranger program[9] and improve the search-and-rescue capacity in the NWP (GoC, 2009). In collaboration with the U.S., Canada expanded surveillance over maritime waterways (Livermore, 2017).

Table 3 summarizes some selected Canadian laws and policies for Arctic marine shipping activities. It is worth noting that some of them have yet to be discussed in this section, such as the Oceans Act, Oceans Protection Plan (OPP) and the Arctic Shipping Safety and Pollution Prevention Regulations (ASSPPR). These policies are established not only to enhance Canada's sovereignty in Arctic waters but also for pollution prevention, protecting the Arctic environment and guiding the future development of Arctic shipping. The details of these policies are discussed in the next few sections.

Table 3: Summary of selected laws and policies for Arctic shipping governance

Laws and Policies	Contents
Fisheries Act (1906)	Requires foreign whalers to obtain licenses in Northern waters.

[9] The Canadian Rangers constitute a subsidiary element of the Canadian Army Reserve. Canada Rangers are living and working in remote and coastal regions of Canada.

Laws and Policies	Contents
Territorial Sea and Fishing Zone Act (1970)	Extends the limit of territorial sea to 12-nautical-miles.
AWPPA (1970)	Creates a 100-nautical mile pollution prevention zone of the waters adjacent to the Canadian Arctic (eventually amended to 200 nautical miles).
Northern Canada Vessel Traffic Services Zone Regulations (1976)	Creates the NORDREG reporting system as a voluntary approach to track marine traffic (eventually amended to a mandatory reporting system).
Oceans Act (1996)	Recognizes the Arctic Ocean is the common heritage of all Canadians and finalizes Canada's maritime zones including the territorial sea, contiguous zone, Exclusive Economic Zone (EEZ) and continental shelf.
Canada's Northern Strategy (2009)	Highlights the need to reinforce sovereignty.
Oceans Protection Plan (2020)	Aims to keep Canadian waters and coasts safe and clean for current demands and for future generations. Develops the Northern Low-Impact Shipping Corridors initiative as a newest governance framework for Arctic shipping.
Arctic Shipping Safety and Pollution Prevention Regulations (2017)	Implements Polar Code[10] and amendments to the SOLAS[11] and MARPOL[12] with Canadian modifications for applicable Canadian and foreign vessels.

3.2.3 Sovereignty in Today's Shipping Governance

Protecting Arctic sovereignty has always been a top priority in developing Canada's northern policies and maritime policies, and it continues to be (Lajeunesse, 2011). The definition of

[10] The International Code for Ships Operating in Polar Waters (the Polar Code) (International Maritime Organization, 2014).
[11] International Convention for the Safety of Life at Sea (SOLAS, 1974).
[12] International Convention for the Prevention of Pollution from Ships (MARPOL, 1973/78).

sovereignty changes over time, depending on the socio-political context (Grant, 2017). Nowadays, claiming and exercising sovereignty rights also means that Canada takes action to protect the Arctic environment and the welfare of its inhabitants, support socio-economic development in the region, and improve Arctic research (GoC, 2010). Regarding shipping, as the increasing foreign interests in transiting the NWP may result in sovereignty challenges for Canada, protecting national sovereignty also means avoiding sovereignty threats that may occur due to increasing international shipping (Griffiths et al., 2011). Then, the defense of Arctic sovereignty involves ensuring the safe passage of vessels through waterways (Grant, 2017), and mitigating shipping risks through effective management (Griffiths et al., 2011).

Canada also recognizes Inuit's role in strengthening Canada's Arctic sovereignty. Even though Inuit were the only inhabitants of the Arctic before Europeans arrived, Inuit occupation and use of Arctic terrestrial and marine areas were not traditionally considered in the concepts and definitions of national sovereignty (Morrison, 2006). Canada's northern policies used to rarely consider Indigenous Peoples' inherent rights and titles to their territories. But gradually, Canada began to realize that recognizing indigenous presence and occupation could strengthen Arctic sovereignty. The preamble of the AWPPA (1985) explicitly notes "Canada's responsibility for the welfare of the Inuit and other inhabitants of the Canadian Arctic," as well as for preserving the ecological integrity of Arctic water, ice and land. In its *2010 Statement on Canada's Arctic Foreign Policy*, the Government of Canada reaffirmed that Inuit and other Indigenous Peoples' long-time presence in the Canadian Arctic since time immemorial was a critical foundation for Arctic sovereignty (GoC, 2010a). Inuit inherent rights on their lands, sea and sea ice contributed to the establishment of Canada's historic title to Arctic lands and waters (Morrison, 2006).

The Canadian government has adopted a cautious strategy to exercise sovereignty rights (Lackenbauer & Kikkert, 2011). In the 1970s, the Trudeau government adopted a functional sovereignty approach to building capacity in the Arctic. Instead of increasing military presence and activities, this strategy aimed to protect Canada's Arctic sovereignty and exercise jurisdiction by creating and enforcing domestic laws to regulate Arctic human activities (Lackenbauer, 2021). Regarding shipping governance, applying and enforcing domestic shipping safety and environmental laws was recognized as an effective way to address and mitigate shipping risks (Byers, 2010a). Although some historians have criticized this cautious strategy or functional sovereignty approach as quiet, ad hoc and ineffective (Lackenbauer & Kikkert, 2011), this strategy and domestic maritime policies (i.e., NORDREG and AWPPA) did enhance Canada's influences in the Arctic by establishing laws, and authorities over shipping and pursuing international acceptance of Canada's domestic laws.

Overall, Canada used to take a more assertive approach to protecting the integrity of Arctic sovereignty. But since the 1970s, while Canada continued to strengthen Arctic sovereignty, the Canadian government has begun to search for international cooperation regarding Arctic affairs, especially with the United States. Subsequently, Canada has further strengthened its de facto control in the Arctic waterways through developing legislations to enhance navigation safety and marine pollution prevention and recognizing Indigenous Peoples' occupancy of the Arctic. Overall, Canada's Arctic policies and maritime regulations for strengthening Arctic sovereignty have gradually shifted from strict government control, which relies on military presents and police patrols, to a functional strategy, which considers effective control of Arctic shipping activities. Characteristics of this functional strategy also reflect key features of an integrated

governance regime and a collaborative stewardship model, which will be elaborated in more detail in the section 3.4.

3.3 Security

3.3.1 Safety and Security in Arctic Marine Policies

Arctic security traditionally refers to national security and military defense, especially for protecting national borders and sovereignty over Arctic land and waters (Lackenbauer & Greaves, 2016). After the Second World War and during the Cold War, Arctic security was inseparable from national and military security in response to threats from other countries (mostly the Soviet Union) (Huebert, 1999). However, since the 2000s, an Arctic policy with an exclusive focus on sovereignty is neither appropriate for stimulating social and economic development nor effective for dealing with challenges triggered by climate change (Griffiths et al., 2011). Thus, Canada adopted a 'soft-sovereignty' approach to ensure maritime safety and security in Arctic waterways.

The AWPPA is a typical example of how the Canadian government can exercise its jurisdiction by addressing environmental security and concerns related to increasing Arctic marine traffic (Lackenbauer, 2011a). The AWPPA was enacted in 1970 with anti-pollution and marine safety standards. This Act creates shipping safety control zones in Arctic waters with regulations for safe operations within these zones (Becklumb, 2009). Initially, AWPPA introduced the strictest 'zero discharge' requirements on all vessels within 100 nautical miles of Canada's Arctic coast

(Byers, 2010b). The scope of the pollution prevention zone was extended to 200 nautical miles in 2009 through the Bill C-3.

AWPPA is an effective law for preventing ship-based pollution in Arctic waters. The Act imposes a prohibition on the deposit of waste of any type, such as garbage or oily water, in Arctic waters (Becklumb, 2009). No ship or person shall deposit or permit the deposit of waste. It is the principal regulation for Arctic marine pollution prevention. But most importantly, AWPPA provides a practical solution and some broad powers for the Canadian government to regulate shipping activities and exercise its sovereignty through enforcing pollution control standards and enhancing environmental security. For instance, pollution prevention officers are appointed under this Act. They have the right to board ships within the safety control zones for inspection purposes (Lajeunesse, 2016). These officers will decide whether a ship can come in, remain outside of, or be excluded from these zones.

However, initially, this "zero-discharge" ban had some exceptions. AWPPA "was permissible to release untreated sewage into Canadian Arctic waters from on board any ship, perhaps the only domestic standard that was lower than a MARPOL (73/78) standard" (Chircop et al., 2018, page 446). Furthermore, oil might be discharged depending on certain circumstances, such as saving lives and preventing the loss of a ship. Waste disposal may also be permitted with the appropriate authorizations under federal legislation.

Canada modified the pollution prevention measures and discharge requirements of oil, sewage and garbage from vessels by enacting the Arctic Shipping Safety and Pollution Prevention Regulations (ASSPPR, 2017). ASSPPR introduces some pollution prevention measures from the

Polar Code. But exceptions remain as both the AWPPA and ASSPPR are still not applicable to government vessels such as icebreakers, research vessels and military vessels.

AWPPA established a control zone for better and more effective pollution control (Carnahan, 1970). However, AWPPA was Canada's unilateral action. The U.S. government considered the AWPPA as "a dangerous precedent which might be imitated" by other countries (Lalonde, 2004, page 62). Therefore, Canada decided to take a multilateral approach to legitimize the AWPPA (Lajeunesse, 2016), and the third UN Conference on the Law of the Sea (UNCLOS III) was an opportunity. In 1975, the Canadian delegation proposed a concept of "special maritime areas" (areas with exceptional navigation hazards), over which a coastal state could exercise jurisdiction on pollution control (Sanger, 1987, page 114). Canada then started to negotiate with the U.S. and the Soviet Union. The outcome of this trilateral negotiation was an agreement over an "Arctic Exception", which ultimately became the Arctic 234 of the UNCLOS (1982).

Article 234 is a specific provision. It affirms coastal states' right to adopt and enforce non-discriminatory domestic laws and regulations to protect and prevent pollution in sensitive ice-covered waters within exclusive economic zones (EEZs) (UNCLOS, 1982). Canada considers Article 234 a political victory because it legitimized the AWPPA and allow Canada to develop policies that are not bound by international standards (Lackenbauer, 2011a; Lajeunesse, 2016; Lalonde, 2004). The focus on enhancing navigation safety and environmental security was a result of the functional or 'soft' approach to exercising sovereignty.

Table 4 summarizes Canada's safety and security regulations and policies in the Canadian Arctic. These policies increase the Canadian government's capacity and control of human activities in Canadian Arctic waters.

Table 4: A summary of Canada's efforts in enhancing marine safety and security in Arctic waters

Laws, Policies and Acts	Contents
AWPPA (1970)	Created shipping safety control zones with regulations for safe operations and 'zero discharge' requirements.
Article 234 (UNCLOS, 1982)	Allowed coastal states to develop domestic legislation to protect sensitive ice-covered waters within EEZs.
Bill C-3 (2009)	Legislated in 2010 and extended the AWPPA zone and NORDREG reporting zone from 100 to 200 nautical miles offshore.
NORDREG (2010)	NORDREG was made mandatory to strengthen Canadian sovereignty in the Arctic.
ASSPPR (2017)	Incorporated the Polar Code into Canada's regulatory framework with modified shipping safety and pollution prevention measures.

3.3.2 Safety and Security in Today's Shipping Governance

The evolution of Canadian safety and security regulations for Arctic shipping also reflects the general trend described above, namely from government control to a collaborative stewardship approach. First, in addition to enhancing Arctic sovereignty, addressing safety and security issues has gradually become another focus of Canada's Arctic shipping regulations and policies. For example, under the *Northern Strategy* (2009), CCG followed an 80/20 rule, which means that only twenty percent of CCG's efforts will be directly devoted to protecting Arctic sovereignty. The other eighty percent of the Coast Guard's capacity is meant to enhance marine

security and demonstrate effective management of Arctic waters (Griffiths et al., 2011). The diversification of policy-making priorities is also indicating Canada's gradual shift to a collaborative stewardship model which can not only address the need for safeguarding Arctic sovereignty through hard defense, but also promote economic and social development in the Canadian Arctic through ensure the safety and security of human activities in Arctic waters.

Compared to defending sovereignty, which is relying on strict government controls, the Canadian government has adopted several different approaches, including legal instruments and zoning measures to emphasize safety and security issues. As described previously, AWPPA and ASSPPR are two strong and effective legal instruments to control marine pollution and ensure marine safety by creating pollution control zones and allocating officers with on-board inspection authority. Especially, the zoning and reporting systems have proved their effectiveness of enhancing government surveillance over Arctic waters and gained international acceptance and recognition.

Shipping governance has become more inclusive and integrated by expanding the definition of security to include environmental protection and Indigenous communities' welfare. The traditional and narrow concepts of security have expanded to include some socio-cultural and environmental indicators, resulting in several new definitions, such as environmental security, economic security, and cultural security (Griffiths et al., 2011). The Canadian government's official language has adopted these definitions of security and created legislations in environmental and human dimensions (Lackenbauer, 2020). For instance, TC's existing mandates on Arctic shipping include several acts and regulations focusing on Arctic environmental protection, safe operation, and transportation security (see Table 5).

Table 5: Transport Canada's acts and regulations for protecting marine environment and enhancing marine safety

Acts and Regulations	Contents
ASSPPR (2017)	Includes safety measures and pollution prevention measures that incorporate the Polar Code into Canada's regulatory framework.
AWPPA (1985)	Prevents pollution in Arctic waters.
Canada Shipping Act (2001)	The principal legislation governs safety of marine transportation and protecting marine environment.
Marine Liability Act (2001)	Includes rules covering liability issues for marine incidents, such as civil liability for pollution, passengers, and wrecks.
Marine Transportation Security Act (MTSA, 1994)	Mandates TC with the role to establish measures and regulations for marine transport security.
Canadian Navigable Waters Act (CNWA, 1985)	Defines navigable water, prohibits activities that could interfere with the navigability of water, and increases the protection of navigable waters.
Pilotage Act (1985)	Regulates pilot services to enhance safety of navigation and protect human health and the environment.
Wrecked, Abandoned or Hazardous Vessel Act (2019)	Protects coastal communities and the environment in Canadian waters and EEZs.

The definitions of security have also expanded to include a 'human dimension,' which is prioritized by Arctic Indigenous Peoples. In the Canadian Arctic, security is also related to economic development, individual safety, social welfare and other Aboriginal issues (Lackenbauer, 2011b). More recently, definitions of social and cultural security have begun to appear more frequently in the Canadian government's Arctic policy. For example, in 2000,

Canada's Department of Foreign Affairs and International Trade (DFAIT)[13] announced the *Northern Dimension of Canada's Foreign Policy* to enhance the security and prosperity of northerners and Aboriginal peoples and to develop the Arctic in a sustainable way (DFAIT, 2000). This policy specifically addressed human security, threats to individual safety and indigenous well-being, and the Canadian government promised to facilitate partnership and create an ongoing dialogue with Northerners (Lackenbauer, 2011b).

Despite these advances, Indigenous Peoples' concerns over increasing large-vessel traffic have yet to be sufficiently addressed (ITK, 2017). The growing recognition of Indigenous rights have generated the need for developing integrated governance frameworks of Arctic shipping, which go beyond the original scope of sovereignty and navigation security. These frameworks would allow Canada to balance sovereignty and security objectives and seize the opportunities for economic and sustainable development (Griffiths et al., 2011). Also, these frameworks create the conditions for the collaboration of different stakeholders and ensure that their interests, values and needs can be respected and protected. The 2009 Strategy somewhat reflected the concept of "integration" by clearly stating Canada's vision in the North with objectives of sovereignty, socio-economic development, environmental protection, and improved governance (GoC, 2009). This coherent policy indicated a shift from narrow sovereignty and security concerns toward more integrated governance with equally important and mutually reinforcing priorities (Griffiths et al., 2011), which include respect for indigenous rights and interdepartmental collaboration in governing Arctic shipping activities. Thus, recent years have witnessed Canada's adoption of collaborative stewardship approaches and frameworks in shipping governance.

[13] DFAIT was replaced by Global Affairs Canada.

3.4 Collaborative Stewardship

3.4.1 Developing a Collaborative Stewardship framework in Canada's Arctic

The conventional definition of stewardship involves careful and responsible management (see, for instance, Merriam-Webster, 2022 and Saner & Wilson, 2003). Regarding public administration, the meaning of stewardship includes administrators' ability to earn public trust (Kass, 1988) by developing an interactive collaboration among government, industry and the general public (Saner & Wilson, 2003). Through a stewardship approach, the government is expected to have dialogue with stakeholders and maintain a meaningful liaison with industry partners (Saner & Wilson, 2003; Simpkins et al., 2021). Today, in different contexts, various meanings of stewardship have been developed. For example, reinterpreted by environmental ethics, environmental stewardship involves responsible use of the environment through sustainable practices and conservation (Chapin III et al., 2010; Henriksen, 2016). The UNCLOS (1982) assigns coastal states with legal responsibilities of protecting the marine environment and exercising "environmental stewardship" in their territorial waters (Henriksen, 2016). Indigenous stewardship, on the other hand, involves Indigenous Peoples using their well-established approaches to manage their lands, waters, sea ice and resources (Schuster et al., 2019). Indigenous stewardship has facilitated the sustainable management of natural resources and environmental protection (Schuster et al., 2019).

In the Canadian Arctic, the issues of sovereignty, security, environmental protection and social well-being are beginning to be conceived as interconnected. Thus, Canada's policy-making is trending toward stewardship, and this trend has resulted in political gains obtained by the embrace of more integrated approaches to marine management and ocean governance by the

Canadian government. Furthermore, Arctic marine management is in need of an ethical approach that actively involves/engages Inuit communities that live close to the waterways. The concept of stewardship, therefore, becomes critical as it implies a multidimensional approach that involves engagement with Inuit and other Arctic indigenous groups. In this sense, Arctic stewardship is evolving towards a new governance model to especially promote cooperation among Arctic states and Indigenous Peoples on dealing with common Arctic issues, such as sustainable development and environmental protection (Eichbaum, 2013). This stewardship model should not only allow Canada to pursue opportunities for Arctic socio-economic development in a sustainable way, but also to gain greater political influence in the circumpolar Arctic.

Griffiths (2011) explained that Canada needs to build capacity for adopting collaborative stewardship as an approach toward Arctic governance. According to Griffiths, this approach includes three key aspects: 1) improving pan-Arctic cooperation on transboundary issues, such as protecting migratory species, preventing oil spills and managing cruise tourism; 2) enhancing coordination of federal departments; and 3) respecting and involving Indigenous Peoples (Griffiths, 2011). This section builds on Griffiths' approach and further proposes what key aspects a collaborative stewardship approach for shipping in the Canadian Arctic should focus on. First, Arctic shipping activities are transboundary by their nature. Governing marine traffic relies on enhanced international cooperation with other Arctic states and non-Arctic states. Only then, will Canada's Arctic shipping regulations be further recognized and international conventions, such as the Polar Code, be better implemented. Second, in Canada, federal departments are sharing mandates in marine navigation and protecting safety and security in marine environment. Thus, a whole-of-government strategy should be considered in this collaborative stewardship approach to facilitate interdepartmental collaboration. In addition to

preventing shipping risks and enhancing navigation safety, it is equally important to govern Arctic shipping activities by taking necessary measures to prevent shipping-related marine pollution and to protect indigenous socio-cultural and subsistence activities from the potential adverse effects of shipping. In this sense, this stewardship model should be able to further improve engagement with Indigenous Peoples, respect indigenous rights and support the Canadian government to fulfill its commitment to truth and reconciliation. Arctic shipping and the development of Inuit communities are closely related. Inuit recognize and welcome benefits of Arctic shipping. On the other hand, Inuit are expecting more authority being allocated to community or representative organizations to be involved in decision-making processes and improve shipping governance with their knowledge of Arctic marine environment. The following three sections will discuss these three aspects in order.

3.4.2 International Cooperation

One key aspect of building a collaborative stewardship framework over Arctic marine shipping governance is that Canada needs to strengthen international cooperation and actively participate in developing international regulations related to Arctic shipping. Canada's strategies and policies for the Arctic are "essentially domestic in nature" (Griffiths et al., 2011, page 217) to protect the integrity of Arctic sovereignty and the environment. However, Canada needs to be actively involved in developing international laws, enhancing international cooperation and maintaining good relationships with other Arctic states. As early as in the 1990s, it was suggested that Canada should address pressing environmental and safety challenges in the Arctic through multilateral governance (Lackenbauer, 2011b). Establishing the Arctic Council was first

proposed by the Mulroney government in the 1990s as a potential solution to enhance international collaboration (Lackenbauer, 2011b). Arctic states reached a consensus through the Ottawa Declaration (1996) to create the Arctic Council in 1998 (Eichbaum, 2013). Since its establishment, the Arctic Council has become a major intergovernmental forum for international cooperation in the Arctic circumpolar region.

Canada collaborated with Finland and the United States in the Arctic Council in leading the *Arctic Marine Shipping Assessment* (AMSA) report (see AC, 2009). Canada is also a member of the Arctic Council's Arctic Shipping Best Practice Information Forum (the Forum). In 2020 and 2021, Canada co-chaired with the U.S. in the Forum's fourth and fifth annual meeting with a focus on implementing the Polar Code (PAME, 2020; PAME, 2021a). Canada has also become a part of a pan-Arctic Low Impact Shipping Corridors project, which is developed by Protection of the Arctic Marine Environment (PAME, 2021b), one of the six working groups of the Arctic Council. Canada can benefit from sharing domestic approaches and best practices on Arctic shipping governance, including efforts in implementing the NORDREG, the ACNV project, Large Ocean Management Areas (LOMAs), Marine Protected Areas (MPAs) and NMCAs, with other Arctic states (i.e., Iceland, Norway and Russian, etc.) (PAME, 2021b). These examples can demonstrate Canada's achievements in governing Arctic traffic, increasing international recognition of Canada's national maritime laws (i.e., AWPPA), acceptance of Canada's major role in Arctic shipping governance, and improving Canada's regional and political influence in the circumpolar Arctic.

Furthermore, highlighting international cooperation is particularly critical in facilitating Arctic marine shipping governance as there have been growing international interests in the Canadian Archipelago. Recent years have witnessed evolving intergovernmental relations built for Arctic

shipping through the Arctic Council and the implementation of the Polar Code. In addition to developing domestic regulations, Canada is adopting international standards and pursuing acceptance from the international community for Canada's practices in the Arctic. The bilateral relationship between Canada and the United States is critical to Arctic shipping management. Griffiths et al (2011) identified that bilateral stewardship activities between Canada and the U.S. could be developed in marine rescue operations, joint monitoring, and strategic planning for international shipping in Arctic waters. In 2016, the *Trudeau-Obama Joint Statement on Environment, Climate Change, and Arctic Leadership* articulated several priorities in developing a partnership and joint leadership between Canada and the U.S. in the Arctic (GoC, 2016). This statement particularly addressed the need to collaborate with Arctic Indigenous Peoples and incorporate Indigenous knowledge into decision-making (Lackenbauer, 2017). This Joint-Statement has not made substantial progress to date because the Obama administration ended in 2017. But this statement has influenced Canada's Arctic and shipping policy. Most of these principles have been reflected in, and implemented through, the OPP and its initiatives.

Furthermore, Canada is selecting and incorporating successful international laws and practices into the Canadian context for better Arctic marine shipping governance. In 2017, TC introduced the ASSPPR, which implements IMO's Polar Code to maintain Canada's high standards for marine shipping management in the north. Canada is also looking for international acceptance and consensus of its *de facto* sovereignty in the Arctic through international cooperation and negotiation on regulating the increasing marine traffic (Kikkert, 2011; Grant, 1988). Strengthening international cooperation and expanding regional political influence have become an integral part of Canada's Arctic policy goals. Pursuing international cooperation will remain as a key objective in a stewardship framework for governing shipping in Canada's Arctic waters.

3.4.3 Interdepartmental and Cross-sectoral Collaboration

At an inter-departmental level, to achieve and balance multiple objectives in the governance of Canada's Arctic, it is critical for different departments to work across their jurisdictions and responsibilities through an integrated framework. Since the 1980s, a whole-of-government approach has been proposed to facilitate collaboration between federal departments, territorial governments and Northern Indigenous organizations in mitigating environmental contaminants in the Canadian Arctic (Everett & Yamashita, 2017). This approach has been further developed by bringing in various levels of government, Indigenous rights-holders and other northern community stakeholders in dealing with Arctic security issues (Lackenbauer & Koch, 2021). The Government of Canada has adopted, in principle, a whole-of-government approach that can integrate different federal departments by aligning their program activities as a whole to achieve some defined high-level outcomes (GoC, 2010a).

Canada's national policies regarding ocean governance provide a foundation for governing shipping through an interdepartmental collaboration at the federal level. For instance, Bill C-98 (1995) and Bill C-26 (1996) were introduced to the Parliament to require a coherent statutory framework for Canada's governance over marine spaces and resources (Chircop et al., 1995). The latter finally led to the creation of the *Oceans Act* (1996), which makes Canada the first country in the world to have comprehensive ocean legislation. *Oceans Act* (1996) finalizes Canada's maritime zones, including the territorial sea, contiguous zone, EEZ and continental shelf, in line with the UNCLOS (1982), which came into force in 1994. It also assigns the Department of Fisheries and Oceans (DFO) the leading role of implementing integrated ocean management in Canada. To implement the *Oceans Act* (1996), DFO developed the Oceans

Strategy (DFO, 2002) and the Oceans Action Plan (DFO, 2005), which all consider the management of marine shipping activities as a component in the integrated ocean governance framework. In 2004, the Canadian government implemented its *National Security Policy* (GoC, 2004) and promised to provide more funding for better vessel tracking, CCG's on-water presence, and DFO's aerial surveillance. Under this policy, the Marine Security Operation Centres (MSOCs) were established to collect, analyze, and exchange information to enhance maritime security (Griffiths et al., 2011). DND, the Royal Canadian Mounted Police (RCMP), TC, CCG, DFO, and the Canada Border Services Agency all became partners in MSOCs to develop several initiatives on maritime security (Everett & Yamashita, 2017; Griffiths et al., 2011).

In 2016, TC introduced the Oceans Protection Plan (OPP), further highlighting the need to achieve cross-sectoral and cross-jurisdictional integration among federal departments (TC, 2020a). While OPP is led by TC, federal departments such as DFO, CCG, ECCC, and Public Services and Procurement Canada have joined in developing several initiatives in the Canadian Arctic (see Table 6).

Table 6: Selected Initiatives under the OPP

Initiative	Objectives	Departmental Lead
Enhanced Arctic Auxiliary	Enhance marine safety, achieve better control of shipping and greater protection of Canada's Arctic through a partnership with Indigenous Peoples.	TC, DFO, CCG
Northern Low Impact Shipping Corridors	Achieve safer navigation in the Arctic Archipelago and vessel tracking through designed shipping Corridors.	TC, DFO, CCG, Canadian Hydrographic Service (CHS)

Initiative	Objectives	Departmental Lead
Community Boats Program	Enhance community-based maritime search and rescue response capacity.	DFO, CCG
Cumulative Effects of Marine Shipping (CEMS)	Identify and assess issues associated with marine shipping activities and their impacts on the environment.	TC, with advice from DFO, ECCC, etc.

Source: TC, 2020b

In 2019, Canada's new *Arctic and Northern Policy Framework* (ANPF) (CIRNAC, 2019) was announced as an overarching and high-level Arctic strategy. This framework also provides some guidance for the development of Arctic shipping, especially for resource transportation, community supply and cruise tourism. This framework proposes to regulate vessel traffic transiting the NWP and set up safety and environmental protection standards (CIRNAC, 2019). Furthermore, this policy reaffirms that these waterways are Canada's internal waters, and that Canada will continue to enhance safe navigation through domestic and international maritime laws.

Policies and laws created by various departments have influenced shipping governance and provide a foundation for cross-sectoral and inter-departmental collaboration. Thus, departments can potentially collaborate in a more meaningful manner to overcome the complexities brought about by intensified Arctic marine traffic.

3.4.4 Engaging Inuit in Shipping Governance

The fast-growing Arctic shipping industry has increased the possibilities of potential interactions between shipping and indigenous traditional uses of sea and sea ice (AC, 2009). Inuit should

engage in Arctic shipping governance because they are rights holders to their sea and sea ice, knowledge holders of the changing Arctic environment, and first responders to risks and accidents. In the past, indigenous rights in ocean spaces were overlooked. After years of unremitting efforts, in international legal arenas, there has been increasing recognition of Indigenous Peoples' rights over marine spaces. Canada is now moving forward to fulfilling its commitment to implementing the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP, 2007) into federal legislation and developing legal implications of the *Truth and Reconciliation Commission's 94 Call for Action* (Truth and Reconciliation Commission of Canada, 2015). This changing political context produces more efforts dedicated to engaging Indigenous Peoples as key actors in governing the Arctic.

The adoption of UNDRIP is opening some opportunities for Indigenous Peoples to assert and exercise their rights in marine spaces. The UNDRIP reaffirms the indigenous right to govern their internal affairs through decision-making (Article 18). UNDRIP recognizes Indigenous Peoples' rights to their land and resources in Article 26, which could potentially be applied to marine spaces (Chircop et al., 2019). Article 25 specifies that Indigenous Peoples have a "spiritual relationship" with their waters and coastal seas. UNDRIP also acknowledges that states have the obligation to respect indigenous knowledge (Article 31) to achieve sustainable and equitable development and proper management of the environment (Article 29), which for Inuit certainly includes marine environments.

Arctic Indigenous Peoples, including Inuit, have been involved in the management of general Arctic affairs. For example, the Inuit Circumpolar Council (ICC) have received the status of "Permanent Participant" on the Arctic Council and contributed their knowledge and perspectives in setting up objectives and the agenda for Arctic development (Lackenbauer, 2011b).

Intergovernmental forums and organizations, such as the Arctic Council, have also encouraged Inuit to "internationalize" and play a critical role in more Arctic affairs, including Arctic shipping governance. In 2021, the ICC became the first indigenous organization to receive a "Provisional Consultative Status" from IMO (ICC, 2021). Inuit will provide their insights, knowledge and perspectives to support IMO's decision-making regarding shipping in Arctic waters (ICC, 2021).

In Canada, Aboriginal peoples' rights to self-determination and self-government is recognized under Section 35 of the *Constitution Act* (1982). Aboriginal peoples have the inherent right to govern and make decisions for internal issues concerning their lands, waters, traditional practices and cultures (CIRNAC, 2010; GoC, 2010b). As Canadian citizens, Inuit inherent rights do not conflict with Canada's sovereignty claims in the Arctic lands and waters. Inuit historic and ongoing use and occupancy of marine areas can support Canada's assertion that the waters within Canada's Arctic Archipelago are internal waters (GoC, 2009; Senate Canada, 2019). Thus, Inuit can become a partner with the federal government to defend and protect Arctic sovereignty (Loukacheva, 2009).

Beyond the issue of sovereignty, Canada is committed to achieving reconciliation with its Indigenous Peoples, a process that involves recognition of Indigenous rights, respect, cooperation and partnerships (CIRNAC, 2022; TRC, 2015). Policies that recognize Inuit rights in marine spaces constitute the context for reconciliation with Inuit in Arctic shipping governance. Inuit's rights to access and use marine spaces (including the landfast ice) and resources have been recognized through several comprehensive land claims (see Labrador Inuit Land Claims Agreement [2003] and Nunavut Land Claims Agreement [1993]).

However, existing maritime legislations and policies are insufficient in achieving further integration among all ocean users, especially for Indigenous Peoples. Canada's whole-of-government approach mostly refers to collaboration among federal departments, rather than involving Indigenous administrations. Furthermore, the Government of Nunavut does not have jurisdiction over shipping in marine spaces adjacent to Nunavut. Under the NLCA (1993), the Government of Nunavut and co-management boards can only develop some policies and frameworks to influence Arctic shipping associated with resource exploitation projects (i.e., mining), and marine cruise tourism. For example, in 2015, the Nunavut Impact Review Board assessed the Baffinland Iron Mines' proposed shipping operation for ore. Later, the Nunavut Planning Commission (NPC) rejected Baffinland's proposal to expand shipping (Bell, 2015). The Government of Nunavut created the Nunavut Marine Tourism Management Plan (GoN, 2016) to highlight the critical role of Inuit in marine tourism and included four goals to develop a sustainable marine tourism industry. Overall, the Government of Nunavut and Inuit co-management boards have taken multiple measures to govern certain types of marine traffic. However, it is still not clear how these mechanisms ensure collaboration betweenInuit authorities with federal departments and jurisdictions.

Currently, in the context of reconciliation, building an integrated and participatory planning framework that can meaningfully involve Inuit will become the focus of developing this collaborative stewardship for shipping. Canada's commitment to reconciliation, implementation of the UNDRIP, OPP and several collaborative initiatives can provide some opportunities for overcoming these issues. Nunavut Marine Council (NMC), a mechanism to coordinate the four co-management boards on issues affecting marine spaces, is well-positioned to become a key

voice in representing Inuit and shaping shipping policy-making from the perspectives of respecting Inuit rights and culture (NMC, 2018).

Increasing meaningful involvement of Inuit and application of Inuit knowledge in Arctic governance are the major ways to implement policies and actions for reconciliation. More recently, incorporating Inuit knowledge into marine environmental protection and marine resource management is becoming a priority in Canada's Arctic integrated ocean planning and governance initiatives. In the Beaufort Sea Integrated Management Planning Initiative (BSIMPI), Inuit knowledge was considered a critical and valuable contribution to develop the spatial plan (Bickford, 2017). In the Eastern Arctic, Parks Canada and DFO are documenting Inuit use and integrating Inuit knowledge to support the implementation of the Tallurutiup Imanga National Marine Conservation Area (TINMCA) (Nunavut Impact Review Board [NIRB], 2020).

In the Canadian Arctic, with relatively low levels of scientific baseline data, Inuit knowledge, generally, has been studied as continuous observations and complementary knowledge to fill gaps in scientific research. For example, in Nunavut, Inuit knowledge has been applied in assessing narwhal stocks (see Armitage, 2005) and the polar bear population (see Nirlungayuk & Lee, 2009). Applying Inuit knowledge is also a way of involving Inuit in shipping governance. Inuit knowledge should be incorporated in co-defining shipping risks and coordinating integrative responses. For example, the Arctic Corridors and Northern Voices (ACNV) project (see Carter et al., 2019 and Dawson et al., 2020) aims to identify Inuit communities' concerns and suggestions for the designated Northern Low-Impact Shipping Corridors. Through participatory approaches, Inuit community members identified areas that are significant to wildlife and Inuit traditional activities and helped to determine shipping risks in Inuit communities (Carter et al., 2019). Inuit perspectives and recommendations could be used for

setting up further regulations and restrictions for safe marine shipping operations (Dawson et al., 2020).

However, it is still difficult to devise appropriate models to incorporate the depth and breadth of Inuit knowledge into decision-making mechanisms regarding shipping. In Nunavut, the most pressing issue is how to meaningfully apply Inuit knowledge and values in understanding shipping risks, planning and governing Arctic marine shipping activities, and considering variations regarding scales and seasonality among communities.

Inuit knowledge is also critical to Arctic search and rescue (SAR). Inuit community members are first responders who play an essential role in Arctic SAR and Inuit have a long history of working with the Canadian Rangers program and training for SAR operations (Byers, 2010a). The Canadian Rangers, community-based Ground Search and Rescue (GSAR) teams and CCG Auxiliary units constitute the foundation of SAR in Canada's Arctic (Kikkert & Lackenbauer, 2021). Inuit communities can provide the human and material resources for SAR and their intimate knowledge of the local marine environment, including geography, and sea and ice conditions to improve response effectiveness (Kikkert & Lackenbauer, 2021).

Unpredictable hazards in the harsh Arctic marine environment and the lack of infrastructure development in the Arctic could lead to less effective SAR response, and higher costs in shipping operations (Kelley & Ljubicic, 2012). Inuit can help TC and CCG improve the enforcement of Arctic regulations and support maritime SAR in the NWP. Under the OPP, Canada continues to make progress in increasing community safety and SAR capabilities to respond to emergencies and pollution incidents (Lackenbauer, 2017; Lackenbauer & Koch, 2021).

3.5 Discussion

By analyzing key events and reviewing Canada's Arctic policies and regulations, this chapter argues that a trend has emerged in the development of Arctic shipping regulations and policies. Canada is gradually moving from the traditional centralized governance by maritime administrations to a more integrated and inclusive governance regime for Arctic shipping. This trend reflects a gradual diversification of priorities on shipping governance according to different historical and socio-political contexts.

Priorities in policy-making identified in this chapter are not mutually exclusive. These priorities are intertwined and reflected in how Canada has responded to Arctic shipping. For instance, Canada's regulations on maritime safety and security not only reduce potential shipping risks and enhance navigation security but also strengthen government's presence in and sovereignty control over the Canadian Arctic (Grant, 2017; Lajeunesse, 2016). Recently, these domestic shipping regulations for safety and security have also incorporated international regulations on Arctic shipping (i.e., the Polar Code). Future implications of the international instruments regarding indigenous rights in marine spaces (as required by the UNDRIP) are also expected to shape Canada's maritime regulations and policies to address environmental safety and cultural security of Northerners.

The implementations of policies, laws and a stewardship model still need to be supported by a collaborative framework, which can consider those three perspectives analyzed above, namely international cooperation, interdepartmental collaboration, and indigenous engagement. This discussion section argues that this collaborative stewardship model can be built by developing an integrated spatial planning framework.

Using spatial planning to facilitate Arctic shipping governance is based on Canada's rich experiences in using route measures and area-based measures to guide shipping activities. However, conducting comprehensive and strategic planning for the vast Arctic waterways is no easy task as it is still facing several challenges: Large planning initiatives always try to tackle too many issues at the same time, making it difficult to be enforced (O' Leary et al., 2018). Compared to the west and east coasts of Canada, implementing and monitoring plans with a large spatial scale is particularly challenging due to the Arctic's geographic remoteness coupled with insufficient funding and infrastructure (Fidler & Noble, 2012). Funding and resources play a pivotal role in spatial planning: For instance, due to insufficient funding, the outcome of Canada's Pacific North Coast Integrated Management Area (PNCIMA) initiative was moved from a spatial-based management plan to a non-spatial, strategic framework with general guidance (Diggon et al., 2020). Similarly, the Eastern Scotian Shelf Integrated Management (ESSIM) initiative took more monetary resources and time resources than expected to consider different stakeholders' interests, resulting in insufficient capacity when implementing the plan (Stephenson et al., 2019). There is an urgent need for developing an overarching collaborative framework to coordinate all possible monetary and human resources to support spatial planning for shipping governance in the Arctic.

The Canadian Arctic has become a favored location for implementing integrated planning in marine spaces. However, in the past few decades, spatial or area-based planning initiatives, such as the BSIMPI, were mainly established in the western Canadian Arctic. This focus on the Beaufort Sea led some authors to note that there was a disparity in the state of ocean management between the western and eastern Arctic (Daoust et al., 2010).

In the eastern Arctic, discussions about establishing a protected area in the Lancaster Sound started in the 1960s. The Lancaster Sound (Tallututiup Imanga in Inuktitut) is not only an area with enormous ecological and socio-cultural significance but also the eastern entrance of the NWP. As the number of ships transiting this region continues to increase, negative impacts on the marine ecosystem have been identified (Kochanowicz et al., 2021). After decades of studies and negotiations, the TINMCA was designated in 2017. As of the time of this writing, environmental standards and strategies are under development for regulating shipping activities and mitigating shipping risks in the TINMCA. For example, TC has several ongoing projects to conduct baseline research on shipping and its impacts on ecosystem subsistence fishing and harvesting in TINMCA (Nunavut Impact Review Board, 2020). Partnering with Inuit, TC is developing a joint Arctic Maritime Management initiative to address community concerns on vessel movement and improve marine navigation (Parks Canada, 2020).

Domestically and internationally, many studies have explored the application of area-based approaches (such as in bounded spaces or shipping lanes) in managing shipping activities. For instance, Vanderlaan et al (2008) analyzed how designated shipping lanes in a transportation separation system can direct commercial traffic safely through the Bay of Fundy and significantly reduce the risk of vessel strikes with the endangered North Atlantic right whale. IMO has adopted routeing systems, including traffic separation schemes, precautionary areas and areas to be avoided, to improve safety navigation and protect the marine ecosystem (IMO,2019). Along with this trend, and under the OPP, Canada is now developing the Northern Low Impact Shipping Corridors initiative (hereafter “Corridors initiative”) as a policy framework to guide investments and improve navigation safety in Canada’s Arctic Archipelago.

The Corridors initiative is developed based on the Northern Marine Transportation Corridors Initiative (NMTCI), which was created and led by CCG, CHS and TC in 2012. These departments co-developed five hierarchical levels of shipping corridors based on historical shipping data derived from the Automatic Identification System (AIS) (Chénier et al., 2017). In 2016, the Pew Charitable Trusts developed the Integrated Arctic Corridors Framework as a complementary to the NMTCI, highlighting the significance of involving Inuit, infusing Inuit knowledge and building a step-by-step approach to building Arctic Corridors (Dawson et al., 2019; Pew Charitable Trusts [PCT], 2016). The term 'low-impact' was added to the Corridors' official name after the *Trudeau-Obama Joint Statement on Environment, Climate Change, and Arctic Leadership* (see below for more information). Both countries shared a common vision that establishing low-impact shipping corridors and developing consistent policies for ship operations are contributors to building a sustainable economy in the Arctic (Lackenbauer, 2017). Therefore in 2016, the Low Impact Corridors became an initiative co-led by TC, CCG and CHS under the OPP.

Managing Arctic shipping through area-based Corridors is a promising idea because, with about eighty percent of historical Arctic traffic found in these proposed Corridors, this initiative can regulate vessels' operations through well-charted and reliable waterways and mitigate potential shipping risks (Chénier et al., 2017). However, indigenous use of marine spaces was not given sufficient consideration in the preliminary design of the Corridors, resulting in overlaps with several socio-culturally sensitive areas for Inuit communities (PCT, 2016). Therefore, at the federal level, TC and CCG have been leading engagement with Inuit organizations and authorities (DFO, 2021). At a community level, the ACNV (see more information in Chapter 4) provides a platform for documenting Inuit observations for shipping impacts and co-developing

Inuit strategies for optimizing Corridors (Dawson et al., 2020). TC continues to develop a governance model to implement the Corridors initiative, aiming to identify priorities for future actions (TC, 2020c). Area-based approaches, because of their comprehensiveness, may also be compatible with Inuit ways of relating to their environments and capable of applying Inuit knowledge and perspectives in the governance of Arctic shipping.

Within Canada, collaboration from different jurisdictions is required to understand and mitigate shipping risks to the Arctic marine environment, national security and coastal communities. However, Canada's legal framework for Arctic shipping largely remains fragmented except for some initiatives, such as the Arctic Corridors, which are in the process of pursuing a collaborative approach to develop policies and institutional measures. In the near future, the proposed Corridors initiative is the mostly likely opportunity for Canada to develop and implement an integrated framework and a collaborative stewardship model for governing Arctic shipping.

3.6 Conclusion

Looking forward to the near future, governing marine shipping activities in the Canadian Arctic remains a complex issue in terms of remoteness, accessibility, economic benefits, environmental sensitivity, indigenous well-being and existing limited capacity. Shipping governance relies on cooperation between other Arctic states, collaborations among multi-level governance authorities and departments, engagement of Arctic Indigenous Peoples, and contributions from various stakeholders. More research is needed to understand cross-cultural and ontological differences between Inuit perspectives and scientific assessment of Arctic shipping risks.

Thus, it is necessary for future research to rethink shipping governance and design a collaborative stewardship framework to embrace sovereignty defense, security and environmental protection, Indigenous Peoples' involvement, interdepartmental collaboration and international cooperation. To develop a collaborative stewardship framework for Arctic shipping governance, it is worthwhile to review and analyze how indigenous rights and perspectives will influence maritime policy-making and improve decision-making. Furthermore, it is necessary to analyze Canada's past and existing experiences in governing marine traffic through comprehensive and collaborative area-based management. From the Pacific coast to the Atlantic coast, several area-based measures and Marine Spatial Planning (MSP) initiatives have demonstrated their advantages in effectively governing marine traffic. Future research could potentially explore how spatial planning and area-based management can facilitate collaboration, Inuit engagement and decision-making for Arctic shipping governance generally and for the Corridors initiative specifically.

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Chapter 4 UNDRIP Rights to Guide the Governance of the Northern Low-Impact Shipping Corridors Initiative

4.1 Introduction

The impacts of climate change are triggering a diversification and intensification of marine uses in the Canadian Arctic (Chan et al., 2019). In particular, the fast-retreating sea ice is greatly accelerating maritime shipping activities. Over the past three decades, the total distance traveled by ships in the Canadian Arctic has tripled (Dawson et al., 2018). The growth of Arctic marine traffic is also due to the increased use of vessels associated with various industries, such as commercial fishing, cruise tourism, oil and gas exploration, mineral resource extraction and transportation, as well as government services, including community resupply, research, ice breaking, and search and rescue (SAR) (Wright, 2016).

Arctic shipping has been observed to bring economic benefits to northern Canada and Arctic communities (Ritsema et al., 2015), while disrupting local subsistence fishing and hunting practices and threatening the food security and safety of Arctic Indigenous Peoples (Dawson, Carter, van Luijk, Parker, Weber, Cook et al., 2020). Several adverse effects of shipping in the Arctic marine ecosystems have also been documented and projected, such as disturbances from breaking sea ice, increased mortality of marine animals, the introduction of marine pollution, and disruption of marine mammals' behaviour with underwater noise (Tiller et al., 2022).

Studies about Arctic shipping have indicated that a more holistic and collaborative framework is needed to support the sustainable development of the Arctic shipping industry, coordinate multiple marine uses, and reduce potential adverse effects caused by shipping (Arctic Council

[AC], 2009; Berkman et al., 2020; Zhang et al., 2020). In Canada, the governance of Arctic shipping is shifting from mainly being led by the national maritime administrations (Transport Canada and Canadian Coast Guard) to an integrated regime that involves different sectors, departments, stakeholders, and rights holders (Beveridge, 2020; Chircop, forthcoming).

Under the Oceans Protection Plan (OPP), the Northern Low-Impact Shipping Corridors (Corridors) initiative is Canada's comprehensive governance framework for Arctic shipping. The Canadian Coast Guard (CCG), Transport Canada (TC), and the Canadian Hydrographic Service (CHS) are the co-leaders of the Corridors initiative. These corridors are established to mitigate shipping risks and support safer marine navigation by providing better infrastructure and emergency response services (TC, 2017). This initiative has also set up a specific objective to engage Indigenous Peoples and minimize the effects and risks of shipping on culturally and ecologically sensitive areas (TC, 2017), which are crucial to the livelihoods and cultural identity of Indigenous Peoples. To address Indigenous Peoples' concerns, and to comply with Canada's obligations regarding the rights of Indigenous Peoples, CCG and TC are developing a governance model for the corridors, including undertaking consultation and engagement programs with indigenous groups (Department of Fisheries and Oceans Canada [DFO], 2021).

Most of the indigenous population alongside shipping corridors are Inuit, who have used the marine areas designated as corridors for millennia. Therefore, Inuit engagement in the development and governance of these shipping corridors is crucial. Inuit are not opposed to developing these corridors, but they have also identified some critical areas for improvement. Inuit communities and organizations have also expressed their desire to have more control over the corridors' governance and placement (Networks of Centres of Excellence [NCE-RCE], 2017).

Several studies have identified priority areas regarding enhancing Inuit engagement in the governance of shipping corridors, including: 1) developing an integrated governance framework with Inuit as co-chairs or government's partners (Pew Charitable Trusts [PCT], 2016); 2) engaging Inuit in identifying shipping and shipping corridors' risks to Inuit community subsistence activities (van Luijk et al., 2022); and 3) incorporating Inuit knowledge and values into the development of policies and measures within the shipping corridors (Dawson, Carter, van Luijk, Parker, Weber, Cook et al., 2020). However, there has been little research to date regarding the interaction between Inuit rights and the governance of shipping corridors. While Canada continues its journey to reconciliation, the federal government's Act to implement the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP, 2007) and response to the Truth and Reconciliation Commission's *94 Calls to Action* (Crown-Indigenous Relations and Northern Affairs Canada [CIRNAC], 2022; Government of Canada [GOC], 2021), should lead to changes in maritime regulations/policies and an increase of support for Canadian Inuit to exercise their rights in issues relating to Arctic shipping. Furthermore, TC is (at the time of this writing) seeking public comments on the Corridors initiative, which could be an opportunity for Inuit to propose that the government's actions for implementing UNDRIP could be used as roadmap in developing an Arctic shipping governance framework that respects their rights.

In this regard, there is a need for further discussion of how recognition of Inuit rights can improve the governance of shipping corridors. This chapter proposes that Inuit rights and provisions/articles established by the UNDRIP can guide, reshape and help establish a comprehensive and collaborative governance approach for the Corridors initiative.

4.2 Structure and Methodology

This chapter is largely based on an analysis of existing data and literature.

The main source of information for the analysis and discussion in this section is the Arctic Corridors and Northern Voices (ACNV) project, which is the result of ongoing and well-established partnerships between researchers from the University of Ottawa and Inuit organizations and communities. The main reason for using this resource as the main source of information for this chapter is that the ACNV reports provide unique access to the views of Inuit communities in a way that could not have been matched by an individual researcher outside of the project. A secondary reason was the lack of time and resources to engage with Inuit communities in a significant way during this project, including the possibility of extensive time in the field. The situation was made more challenging by public health restrictions regarding COVID-19, which made travel impossible during the time that field data could have been collected.

The community reports produced by the ACNV project are invaluable data sources, providing information on current Inuit uses of marine areas, as well as reflections, perceptions, and views from Inuit community members regarding Arctic shipping in general and the Corridors initiative in particular. The project has gathered the information through a collaborative approach, making use of several methods, including interactive mapping, interviews, and group discussions, with the aim of identifying governance priorities in developing the Corridors initiative and engaging a wide range of Inuit community members through research partnerships and interactive conversations.

Community reports and peer-reviewed papers produced by the ACNV project cover several topics, including shipping risks and impacts identified by Inuit communities, Arctic sovereignty and security (van Luijk et al., 2022; van Luijk et al., 2021), application of Inuit knowledge to scientific models and tools (Simonee et al., 2021; Kochanowicz et al., 2021), Inuit knowledge and recommendations for the placement of shipping corridors (Dawson, Carter, van Luijk, Parker, Weber, Cook et al., 2020), as well as community-based mapping methods and research partnerships (Carter, Dawson, Simonee et al., 2019; Dawson, Carter, van Luijk, Parker, Weber, Cook, 2020). In this chapter, the ACNV project is the primary source of information, but other sources have also been included.

In order to provide complementary material on the impact of shipping on Inuit communities, this chapter also analyzes peer-reviewed journal articles and reports published by intergovernmental organizations (e.g., Arctic Council), Inuit representative organizations (e.g., the Inuit Circumpolar Council) and other non-governmental organizations. Concerning the UNDRIP and Inuit rights, this chapter particularly examines the contents of UNDRIP and the views of Inuit organizations and representatives on how UNDRIP articles and principles can be effectively implemented in Canada. For better understanding of the Corridors initiative, this chapter explores the Canadian government departments' websites for information (including reports and press releases) on the Corridors initiative. This chapter also draws on transcripts and notes from workshops, conferences, and meetings related to Arctic shipping and shipping governance, focusing on presentations and discussions on the Corridors initiative. Policy analyses and reports from organizations that have been working on the Corridors initiative (e.g., the Pew Charitable Trusts and the Oceans North Canada) are also used for this chapter's proposition regarding the design of a governance framework for the Corridors initiative.

This chapter then discusses how Inuit rights, as established by UNDRIP articles, can potentially guide various aspects of governing shipping corridors (section 4.4). Finally, in section 4.5, several key provisions of the UNDRIP are selected to discuss how they can be considered to build a governance approach respectful of Inuit rights in the context of the Corridors' initiative.

4.3 Inuit, Arctic shipping and the Corridors initiative

One of the main consequences of the rapidly expanding shipping activities in the Canadian Arctic is the equally increasing possibilities of potential interactions between ships and Inuit (ASMA, 2009). Most types of shipping are identified as bringing both negative and positive impacts on Inuit communities. On the positive side, community resupply vessels provide Inuit communities with the necessary supplies for living in permanent settlements (Kelley & Ljubicic, 2012), and government ships conduct offshore patrols and provide several services such as ice breaking and search and rescue, that are identified as enhancing the safety of Arctic shipping and (to some degree), of Inuit communities (CCG, 2022; CCG, 2021). Cruise ships and pleasure crafts have made coastal Inuit communities preferred destinations for expedition tourism, providing opportunities for economic and (potentially) infrastructure development in Inuit communities (Alvarez et al., 2020). The development of commercial fishing and mining industries also has generated an increase of shipping activities while providing opportunities for economic gain for individuals and communities.

On the other hand, as shipping activities grow, ship-based pollution and operational discharges (e.g., ballast water and sewage) have been identified by Inuit as significant causes of the degraded Arctic environment, posing increasing threats to Inuit practices (ICC, 2014a). For

example, waste discharge and noise from cruise ships' operations can affect marine life (such as seabird colonies and marine mammals), which are key resources that sustain Inuit communities (ICC, 2014b). Furthermore, increased commercial fishing is also a concern for Inuit, as this activity can threaten to deplete healthy fish stocks, causing serious harm to the ecosystem and the well-being of Inuit communities (ICC, 2014b).

In addition, Inuit small boats are highly vulnerable to larger ships transiting Arctic waters (ICC, 2014b). Icebreaking activities are causing disruptions to marine animals and serious concerns to Inuit safety and security. Breaking sea ice can create disturbances to the integrity of sea ice, increasing hazardous ice conditions for Inuit travel and disturbing the movement and behaviour of sea mammals and of land-based migrations such as caribou (Bishop et al., 2022; Laidler et al., 2009; Panikkar et al., 2018). In Salluit, community members have advised icebreakers to stay in the shipping corridors and use a single ice-breaking route to reduce conflicts with Inuit on-ice practices (Greydanus et al., 2018).

Growing shipping associated with cruise tourism, research, and resource exploitation increases the risk of accidents and the probability of collisions between ships and marine mammals (ICC, 2014a; Kaltenstein, 2012). Shipping activities may lead to disturbances from ships to Inuit subsistence and socio-cultural activities and present risks to people traveling on and using land-fast ice and floe edges, leading to potential life and property loss (Choi, 2018). Furthermore, with increasing shipping activities, Inuit hunters have found it more difficult to harvest in their traditional fishing, hunting, and camping grounds (ICC-Canada, 2008). This situation threatens Inuit food security as Inuit are under threat of losing vital access to local food and supplies (Angell & Parkins, 2011). Table 7 summarizes five common forms of Arctic shipping along with their positive and negative impacts on Inuit communities.

Table 7: Types of existing Arctic marine shipping and their impacts on Inuit communities

Types	Positive impacts	Negative impacts
Resource exploitation and bulk transport of various types of ore	Resource industry, especially mining projects have provided more job opportunities to local Inuit and helped Inuit to develop a wage economy.	Mining projects have resulted in more pollution in the marine environment and threats to wildlife, which are highly important to Inuit food security and cultural practices.
Cruise tourism	Cruise tourism has brought passengers to Inuit communities, increasing local income, developing the local economy and infrastructure.	Marine mammals have been scared away when cruise ships coming to their habitats. Cruise ships introduce more marine pollution and put pressures on Inuit communities for emergency responses.
Fishing	Fishing is the fastest-growing sector and the key economic driver in the Canadian Arctic.	Increasing commercial fishing may deplete healthy fish stocks, threatening Inuit food security.
Resupply	Community resupply provides food (groceries) to enhance Inuit food security, and supplies (vehicles, fuels, construction materials, etc.) that Inuit need for living in the settlements.	Inuit become more dependent on external materials, putting Inuit food security in danger (i.e., country food).
Research and government services	Shipping services and research can enhance marine safety and security in the challenging Arctic marine navigation environment.	Ice-breaking may lead to late ice formation and present risks to people traveling on and using land-fast ice and floe edges, leading to potential life and property loss.

Sources: Choi, 2018; Government of Nunavut [GoN], 2012; Inuit Circumpolar Council (ICC), 2014a; ICC, 2014b; Inuit Tapiriit Kanatami (ITK), 2017

Table 7 shows that most of the benefits of Arctic shipping identified by Inuit are mainly in the forms of economic and infrastructure development in the community and support for Inuit community life. Negative impacts of shipping generally include damage to the Arctic marine ecosystem on which the Inuit depend, as well as threats to their safety and food security. Inuit are particularly concerned about several negative effects of shipping, notably regarding marine pollution (i.e., oil spill, waste dumping and noise), sea ice-breaking, and disturbances of traditional subsistence practices (e.g., fishing, hunting, and on-ice travel) (ICC-Canada, 2008).

The Corridors initiative, as an attempt to facilitate safe navigation and mitigate shipping risks in socio-cultural sensitive areas, has been generally well received by Inuit communities and organizations. But Inuit have also expressed that this initiative should be optimized with their input and should be conceived and implemented to reflect and protect their values and cultural practices (Dawson, Carter, van Luijk, Parker, Weber, Cook et al., 2020). For example, Inuit expressed concerns about the fact that these shipping corridors were initially created using Automatic Identification Systems (AIS) data on the historical spatial distribution of Arctic marine traffic without consultation with communities or considering their input (NCE-RCE, 2017). Considering that these corridors are designed to encourage vessels operating in specific areas to reduce navigational risk and enhance safety, Inuit community members strongly suggested revising the location of some shipping corridors to avoid introducing shipping into environmentally sensitive areas and Inuit hunting/fishing grounds (Carter, Dawson & Cook, 2019; Carter et al., 2017a; Carter, Dawson & Joyce et al., 2018). Furthermore, communities provided several recommendations for the Corridors initiative, such as setting up seasonal restrictions, speed control zones, and areas to be avoided (Dawson, Carter, van Luijk, Parker, Weber, Cook et al., 2020). Inuit communities are also expecting that the Corridors initiative will

expand community capacities by providing more resources for communities to purchase essential equipment for oil spill responses, as well as for search and rescue (SAR) (Carter, Dawson, Knopp et al., 2018). Under the OPP, it is expected that other shipping governance initiatives in the Canadian Arctic can contribute to the Corridors initiative by developing community training programs, expanding Canadian Coast Guard Auxiliaries (which are composed of Inuit), and increasing communities' SAR and environmental response capabilities (Beveridge, 2020).

Thus far, several frameworks have considered engaging Inuit and integrating Inuit perspectives into the governance of the Corridors initiative. For example, Oceans North Canada and Pew Charitable Trusts proposed an institutional arrangement in which Inuit were assigned a role as co-chair or co-partner with the federal government (PCT, 2016). Furthermore, the Nunavut Marine Council (NMC) is considering the Corridors initiative as an opportunity for NMC to engage with federal and territorial governments and provide government departments with Inuit feedback to improve shipping governance (NMC, 2018). In this sense, the Corridors initiative should be able to enhance marine navigation safety while respecting Inuit culture and practices, which ultimately means for Inuit to have more control and say in a collaborative shipping governance regime.

As Canada continues its journey to reconciliation, maritime regulations and governance initiatives for shipping should be aligned with Inuit rights that have been delineated in Canadian aboriginal laws and international conventions (e.g., the UNDRIP). This chapter argues that Inuit rights (as described in the UNDRIP) should influence and reshape Arctic shipping governance and inform the development of the governance framework for the Corridors initiative.

4.4 Inuit and UNDRIP rights

The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) was adopted by the United Nations General Assembly in 2007 as a non-binding declaration. UNDRIP provides an instrument to systematically outline and elaborate indigenous rights in governance, decision-making, education, and economic, cultural, and social development (UNDRIP, 2007).

In 2015, the Truth and Reconciliation Commission of Canada (TRC) issued 94 calls to action, which especially called on Canada to adopt and implement the UNDRIP (call 43 and call 44) (TOC, 2015). Canada officially endorsed the UNDRIP in 2016. However, UNDRIP is a non-binding declaration, and it must be complemented by state practice in order to form customary law. Meanwhile, Canada's domestic laws will need to be interpreted in a way that is consistent with the principles of UNDRIP (Townshend, et al., 2021). In 2020, Bill C-15 (GoC, 2021) indicated that the federal government was looking forward to promoting the full adoption of UNDRIP into Canadian law in accordance with the *Constitution Act* (1982) (Parliament of Canada, 2020). Bill C-15 came into force on June 21st, 2021, as the *United Nations Declaration on the Rights of Indigenous Peoples Act* (UNDA) (GoC, 2021).

UNDRIP places corresponding obligations on states that have endorsed this declaration to protect indigenous rights and to support Indigenous Peoples in the exercise of these rights (Cambou, 2019). It is anticipated that the ratification of UNDRIP and the implementation of UNDRIP principles will have implications for Canada in explaining and fulfilling its commitments to the duty to consult and obtain Indigenous Peoples' free and informed consent prior to implementing any project or initiative that may affect indigenous rights. In this sense, the explanation and interpretation of the UNDRIP and its principles could complement Canadian

maritime laws with respect to Indigenous Peoples' rights and indigenous participation in shipping governance.

The significance of implementing some of the UNDRIP articles for governing Arctic shipping (including shipping within the corridors) has been raised repeatedly by Inuit representative organizations. For instance, the Inuvialuit Game Council has mentioned the linkage between the UNDRIP and shipping, especially the significance of implementing the Article 18, which refers to the right to participate in decision-making, and Article 25, which speaks to the right to maintain and strengthen their spiritual relationship with waters and coastal seas (Zhang, 2022). These provisions would fundamentally support Inuit to engage in governing Arctic shipping and shipping corridors.

There are other articles that can guide the development and governance of the shipping corridors. For example, Article 7 and Article 20 support Indigenous Peoples to engage in traditional activities freely and safely. These activities are also essential to protect their rights to maintain culture integrity, as articulated in the Article 11 and Article 12 in the UNDRIP. These articles put an obligation on the federal government to develop and govern the Corridors initiative through a framework that respects Inuit culture and reduces disruption of Inuit traditional activities. Some of the UNDRIP articles indicate what aspects should be considered in this governance framework. For instance, in terms of managing Arctic shipping activities, the Corridors initiative should adopt measures that can assist Inuit in protecting the marine environment (Article 29 & 32) on which they depend through applying Inuit knowledge (Article 31) and providing resources to expand Inuit communities' capacity to respond to potential shipping risks (Article 39). Most importantly, government departments should be required to obtain free, prior and informed consent from Inuit through enhanced engagement (Article 19) before implementing the

Corridors initiative. Table 8 summarizes the text of these articles and categorizes them in different groups representing types of rights and obligations that UNDRIP imposes on Canada. The Corridors initiative is used in Table 8 as an example to propose how different UNDRIP articles can guide its development and governance.

Table 8: UNDRIP rights relevant to the governance of shipping corridors

UNDRIP rights and states' obligations	**UNDRIP Articles and relevance to the governance of shipping corridors**
Rights to live in freedom and maintain their traditional activities	These rights highlight the significance of protecting Inuit from adverse impacts and interruptions from shipping activities and allowing Inuit to freely pursue their traditional practices in a safe and secure way. Article 7: Rights to live in freedom and security. Article 20: Rights to freely engage in traditional economic activities.
Culture integrity rights	These rights illustrate the need to preserve Inuit culture and cultural practices especially in marine areas that are used both by Inuit and marine traffic. Article 11 & 12: Rights to practice their cultural traditions and have access to their cultural sites.
Decision-making rights	Inuit right to decision-making should be respected in the Corridors initiative by allowing Inuit to determine the priorities of and approaches for shipping governance. Article 3: Rights to self-determination, self-government and to participate in decision-making processes that affect their communities. Article 18: Rights to participate in decision-making. Article 23: Rights to determine development economic and social priorities.

UNDRIP rights and states' obligations	UNDRIP Articles and relevance to the governance of shipping corridors
Rights to lands and waters	Inuit special relationship with coastal waters, including sea ice, should be considered when developing and governing shipping corridors. Article 25: Rights to maintain and strengthen indigenous spiritual relationship with lands, waters and coastal seas.
Environmental protection right	One priority of the Corridors initiative should be minimizing shipping's impacts on marine environment and Inuit communities. Article 29: Indigenous peoples have the right to protect the environment. States have the obligation to take effective measures to reduce wastes and protect community health. Article 32: States should provide measures to mitigate adverse impacts on Indigenous Peoples.
Rights to apply traditional knowledge	Marine research related to the Corridors initiative should consider developing Inuit knowledge and protecting Inuit intellectual property rights and stewardship over data collected by and within Inuit communities. Article 31: Rights to develop and apply their traditional knowledge. States should take effective measures to protect the development and application of traditional knowledge.
Capacity-building right	Federal government should provide resources through the Corridors initiative to expand communities' capacity in decision-making and emergency response. Article 39: Rights to access to financial and technical assistance from states.
Right to give free, prior and informed consent (FPIC)	The Corridors initiative should be able to enhance Inuit engagement and implement the FPIC principles through improved communication among government, industry partners and Inuit. Article 19: States have the obligation to cooperate in good faith with the Indigenous Peoples and obtain their free, prior and informed consent before adopting measures that may affect them.

Source: UNDRIP, 2007

Canada's UNDRIP Act has just entered into force, and changes at an institutional level will be gradually taking place. UNDRIP and TRC's 94 calls to action can provide a roadmap for reshaping the governance approaches, laws and policies involved in Arctic shipping. The OPP and the Corridors initiative, including their components of Inuit engagement, provide evidence of the progressive implementation of UNDRIP principles in Canada. Other federal initiatives (e.g., the Proactive Vessel Management [PVM] initiative, the Enhanced Maritime Situational Awareness (EMSA) initiative, the Cumulative Effects of Marine Shipping, and their pilot projects) have begun to make progress towards meaningful indigenous engagement. Furthermore, TC has recognized that Indigenous Peoples have interests in actively managing local waterways (TC, 2022). In the spirit of reconciliation, these interests may be considered as part of TC's process to amend the *Canada Shipping Act* (2001) (TC, 2022).

At the time of writing this article, few studies have explored how the UNDRIP will influence ocean governance in Canada generally (Murray, 2021), and in the Arctic waterways particularly (Aporta et al., 2018). Moreover, there remain knowledge and information gaps, as few researchers have covered the discussion of interactions between shipping corridors and UNDRIP rights. Thus, section 4.5 focuses on several Inuit rights and analyzes what Canada should do to implement these rights and enhance Inuit engagement in the spirit of reconciliation, the implementation of UNDRIP, and obligations established in the comprehensive land agreements.

4.5 Inuit rights to facilitate integrated governance of shipping corridors

4.5.1 Integrating Inuit conceptualization of marine areas

Most of the designed shipping corridors overlap with major Arctic waterways. These waterways have traditionally been used and considered by Inuit as an extension of their lands (Aporta et al., 2018), and Inuit have inherent rights to use and develop their lands. However, the Corridors initiative was initially developed jointly by three federal government departments without considering Inuit views on Arctic waterways. These two different conceptualizations of the marine spaces may lead to different understandings of how Arctic shipping should be managed. Thus, it is critical to understand Inuit concept of 'land' and Canada's recognition of 'Inuit land' in the Canadian legal system. This section analyzes how the implementation of UNDRIP articles can help to integrate Inuit conceptualizations of marine areas into the governance of Arctic shipping and shipping corridors.

Inuit homeland has been described by Inuit as "[a]nywhere our feet, dog teams, or snowmobiles can carry us" (ICC-Canada, 2008, page 2). Defined by such movements, Inuit homeland encompasses both terrestrial and marine environments, and also includes the sea ice, where they find sources of sustenance (Aporta, 2002; Dorough, 2017). When the sea ice forms along the coasts, often connecting different land masses, the spatial scope of Inuit territories extends to the ocean in ways that are unique to the Arctic environment. Thus, Inuit consider sea ice (as well as other Inuit-used marine spaces) as part of their lands, in which they have constitutionally protected rights. Inuit conceptualizations of and dependence on sea and sea ice, therefore, will create significant challenges for governing the Canadian Arctic marine spaces generally, and the shipping Corridors initiative specifically.

Inuit's intimate relationship with marine areas, including sea ice, has been somewhat recognized in the Canadian legal system. In the Nunavut Land Claims Agreement (NLCA, 1993), Article 15 recognizes that Inuit are traditional and current users of certain marine areas, especially the land-fast ice zones (s. 15.1.1). Article 11 of the NLCA (1993) specifies that the land use planning provision applies to both land (including waters, see s. 11.1.2) and marine areas within the Nunavut Settlement Areas and the Outer Land Fast Ice Zone (see s. 11.1.4). Planning processes within these areas require opportunities for active and informed Inuit participation (see s. 11.2.1). These provisions provide a legal foundation for Inuit to participate in making decisions for marine uses. Furthermore, the establishment of the Nunavut Marine Council provides a platform for Inuit to provide advice and recommendations for the Canadian government (s. 15.5.1).

However, the Canadian legal system has not explicitly or clearly defined marine areas as part of Indigenous People's territories. The NLCA (1993) has "expressly extinguished Aboriginal claims to sea spaces" (Brown & Reynolds, 2004, page 463). The NLCA (1993) states in Article 15 and section 15.2.3 that "there shall be no Inuit Owned Land in marine areas." This section means that Inuit do not have ownership of marine areas. Consequently, land claim agreements can only provide Inuit with limited legislative capacity in relation to marine areas and marine uses (Bankes, 2019). The Labrador Inuit Land Claims Agreement (LILCA, 2003) provides Inuit with special rights in tidal waters of the Labrador Inuit settlement area under the definition of "Labrador Inuit Lands." These special rights are viewed as a path to creating a co-management regime for Inuit to manage waters and marine resources, although they do not include Inuit ownership of tidal waters (Campbell, 2015).

The lack of recognition of Inuit land in marine areas will inevitably create some impediment to the recognition of Inuit rights in marine spaces and Inuit engagement in the governance of the

Corridors initiative. Canada's commitment to implement the UNDRIP, on the other hand, can potentially support the integration of Inuit views and conceptualizations of marine areas in the Canadian legal system. The UNDRIP Article 25, affirms that Indigenous Peoples have the right to maintain and strengthen their *spiritual relationship with traditionally occupied and used lands, including waters and seas* (emphasis added). This relationship is especially relevant to Inuit who are self-identified as marine people and whose definition of land includes some coastal areas, land-fast ice, and floe edges. By implementing Article 25, Canada is obligated to recognize this relationship and protect Inuit rights to strengthen this relationship. Furthermore, the UNDRIP should be used as an interpretive tool for Canada's domestic laws (Townshend et al., 2021), which include sectoral laws that govern marine uses and marine areas. Article 25 may provide opportunities for legislators to consider recognizing Inuit conceptualizations of marine areas, incorporating these views when making sectoral laws, and providing a legal foundation for Inuit to engage in ocean governance and decision-making in different sectors.

Implementing Article 25 means the Canadian government needs to interpret this provision and respect Inuit intimate and spiritual relationship with the ocean when developing and governing these shipping corridors. The interpretation of Article 25 also provides an additional legal basis for the Canadian government to take measures for meaningfully engaging Inuit in Arctic shipping governance. Article 25 would certainly advance the recognition of Inuit as rights holders in marine spaces, therefore giving Inuit greater opportunities to exercise their multiple rights, including right to environmental protection (section 4.5.2), right to be informed (section 4.5.3), and decision-making right (section 4.5.4) in the governance of Arctic shipping corridors.

4.5.2 Rights to protect Arctic marine environment

In the past few decades, researchers have studied ship-based risks and their impacts on the Arctic marine environment and ecosystem. Some of these risks and impacts have been described in Table 7 (see section 4.3). According to their different triggers, these environmental risks can be categorized into several types, such as disturbances, dumping, oil spill, noise and invasive species (see Table 9). Through the ACNV project, Inuit have expressed their concerns about potential environmental risks associated with increasing shipping and the Corridors initiative. For example, Sachs Harbour community members are particularly concerned about the discharge of greywater into Arctic waters (Carter, Dawson, Parker, Cary, Gordon, Kochanowicz & Weber, 2018b). Arviat community members are concerned about oil spills and their adverse impacts on marine environment. Ulukhaktok community members manifested in the reports that they are concerned and wanted to know how Canada will deal with ship-based waste and pollution in Arctic waters (Carter, Dawson, Parker, Joyce et al., 2018).

Table 9: Shipping risks on Arctic marine environment and concerned communities

Shipping risks	**Impacts**	**Concerned communities**
Disturbances	Shipping activities bring interferences and disturbances to Arctic marine environment and affect marine mammals (e.g., seals, narwhals, and beluga whales) and other life in the Arctic Ocean (e.g., fish and polar bears), especially when vessels are passing through migration, feeding and breeding areas.	Arviat, Coral Harbour, Cambridge Bay, Gjoa Haven, Paulatuk, Resolute Bay, Sachs Harbour, Tuktoyaktuk, Ulukhaktok, etc.

Shipping risks	Impacts	Concerned communities
Dumping	Cruise ships and other shipping operations will leave contaminants in the sea through dumping garbage, grey water and sewage in the ocean.	Arviat, Cambridge Bay, Coral Harbour, Inuvik, Tuktoyaktuk, Sachs Harbour, Ulukhaktok, etc.
Oil spill	There will be oil spills from routine shipping operations or from catastrophic events, leading to negative ecological and socio-economic impacts on marine environment and coastal communities.	Arviat, Ulukhaktok, Tuktoyaktuk, Salluit, Sachs Harbour, Paulatuk, Inuvik, Goja Haven, Aklavik, etc.
Noise	Anthropogenic under water noise from shipping operations will potentially increase, resulting in disturbances in marine mammal behaviours.	Arviat, Coral Harbour, Inuvik, Cambridge Bay, etc.
Invasive species	Shipping introduces aquatic/nonindigenous invasive species by exchanging ballast water or through hull fouling.	Tuktoyaktuk, Sachs Harbour, Inuvik, etc.

Sources: Afenyo et al., 2022; Blair et al., 2016; Carter, Dawson, Parker, Cary, Gordon, Kochanowicz & Weber, 2018a; Hauser et al., 2018; Hird & Zahara, 2017; Ivanova et al., 2020; Nabi et al., 2018; Sweeney, 2021; Thiessen et al., 2020; van Luijk et al., 2022

Table 9 provides a synthesis of both scientific research and Inuit community assessments of some shipping risks and their impacts. Table 9 also lists some of the Inuit communities that have explicitly expressed concerns about specific types of shipping risks and their impacts. Two facts are noteworthy in Table 9. First, protecting the Arctic marine environment from negative shipping impacts is of vital importance to the Inuit. Second, concerns about the impact of shipping activities and environmental risks vary from community to community. Issues such as disturbances, dumping and oil spills are concerns for the vast majority of Inuit communities. On the other hand, the issue of invasive species was brought up only by a few communities. While

this paper cannot establish the reasons for some of those differences, it is fair to point out that, in the context of governing the Corridors initiative, local perspectives of addressing different issues of concern by Inuit communities may vary. Differences could be the result of different perceived risks or the characteristics of the marine environment around specific communities (e.g., some communities may live near areas were certain oceanographic or ice conditions are prevalent). Therefore, different measures may be needed to address various perceptions of shipping risks and to account for local realities along the geography of the Corridors.

Protecting the marine environment is not only one of the necessary objectives of Arctic shipping governance, but also one of the important ways in which Canada can fulfill its commitment to achieving reconciliation with Indigenous Peoples. Article 29 of the UNDRIP underlines that Indigenous Peoples have the right to the conservation and protection of the environment and resources, while stating that states are obligated to take effective measures to protect the environment and health of Indigenous Peoples (Article 32). In the Canadian Arctic, this right is particularly important for Inuit who have an intimate relationship with the environment but low capacity to protect the wide geographic scope of Arctic waters from cumulative impacts of increasing non-Inuit human activities, such as marine shipping. To support Inuit rights to environmental protection (according to the Article 29 and Article 32 of the UNDRIP), in the context of governing the Corridors initiative, the Government of Canada should consider taking two actions, namely: 1) taking effective measures to reduce ship pollution in marine environment and mitigate disruptions to Inuit traditional activities; and 2) providing assistance (e.g., resources, equipment and tools) to increase Inuit community capacity to respond to shipping risks and emergencies. Expanding community capacity for emergency response is also consistent

with Canada's obligation to provide financial and technical assistance to indigenous communities, as also mentioned in the Article 39 of the UNDRIP.

First, implementing the UNDRIP Article 29 implies that Canada should take effective measures to protect the Arctic marine environment when developing shipping corridors. The maritime laws and policies that Canada uses to effectively manage Arctic shipping have been analyzed in Chapter 2 and Chapter 3 of this thesis. More area-based measures and spatial planning frameworks for shipping governance will be analyzed in Chapter 5. But based on their knowledge, Inuit community members, taking into account the realities of their specific community, have also come up with a number of methods that they believe will effectively protect the marine ecosystem. For instance, Sachs Harbour community members recommended appointing an Inuit environmental monitor with the same authority as a DFO officer to get on board (such as foreign vessels and cruise ships) and provide reports to the local Hunters and Trappers Committees (Carter, Dawson, Parker, Cary, Gordon, Kochanowicz & Weber, 2018b). The Inuit monitor could help guide shipping operations in a way that protects sensitive marine environment and Inuit interests. A similar model has been implemented by the Baffinland Iron Mines Corporation (Baffinland), consisting of a ship-based observer monitoring program that can involve Inuit marine mammal observers and apply Inuit knowledge to protect marine mammals and marine ecosystem (Golder Associates, 2019). Having Inuit monitor onboard is one of many Inuit recommendations for improving shipping operations in local waterways and mitigating environmental risks. To implement Article 29 and other UNDRIP principles, Inuit recommendations on how to effectively protect the Arctic marine environment must be considered in the governance of the shipping corridors.

Similarly, to better implement the UNDRIP Article 32 and Article 39, the governance framework for shipping corridors must also support Inuit to play a key role in environmental protection and emergency response by providing resources and increasing community capacity. Through the ACNV project, Inuit community members highlighted the importance of expanding emergency-response and environmental protection capacity within the communities. Community members from Gjoa Haven and Cambridge Bay highlighted the necessity to increase community capacity to respond to spills, accidents, and groundings in marine areas (Carter et al., 2017a; Carter, Dawson, Parker, Cary, Gordon, Kochanowicz & Weber, 2018b). Arviat community members proposed that, through the Corridors initiative, they should receive financial support from government departments to purchase clean-up equipment as part of developing community-based spill-response plans (Carter et al., 2017a). Furthermore, Ulukhaktok community members recommended that expanding community capacity could be achieved by improving local skills in emergency response, specifically through the Canadian Coast Guard (CCG) Auxiliary training (Carter, Dawson, Parker, Joyce et al., 2018). Ultimately, supporting Inuit right to environmental protection can improve the Corridors initiative and enhance Inuit engagement in Arctic shipping governance.

4.5.3 Obtain Inuit FPIC

Inuit communities are highly vulnerable to shipping risks and the impacts of shipping accidents and incidents, such as collisions, groundings, and machinery damage (PAME, 2021). Therefore, shipping corridors are designed to mitigate shipping risks by redirecting ships and encouraging them to remain in certain waterways that are better charted and have improved navigation

services. However, Inuit still intensively use their traditional hunting grounds and on-ice travel trails, most of which overlap with the shipping corridors. Increasing Arctic marine traffic and use of shipping corridors increase the likelihood that Inuit will be exposed to these risks. Therefore, in order to reduce disturbance with Inuit cultural and subsistence activities, it is crucial to inform Inuit hunters, who are also using the same marine waters throughout the year, about when, where, and what kinds of ships will be using the corridors. Community members from Coral Harbour expressed their worry about the fact that TC had not sufficiently interacted and communicated with Inuit about the development and governance of these shipping corridors (Carter, Dawson & Weber, 2019). As the development and governance of the Corridors initiative unfold, it is critical to have effective communication and information-sharing mechanisms with Inuit communities.

The Government of Canada has a common law duty to consult indigenous groups as articulated by the Supreme Court of Canada (SCC) in order to protect indigenous rights. In 2004, the SCC stated that the Crown has the "duty to consult," which is a legal obligation to engage with Indigenous Peoples before making decisions or taking actions that may impact aboriginal rights (see Haida Nation v. British Columbia). With the implementation of the UNDRIP Act, Inuit community members have emphasized the importance of the Canadian government respecting and enforcing the principle of Free, Prior and Informed Consent (FPIC) to ensure Inuit participation in decision making with government (Obed, 2016). FPIC obliges states to consult with Indigenous Peoples in good faith before adopting any measures that may affect their well-being and interests (UNDRIP, Article 19). Indigenous Peoples have the right to give or withhold their consent. To achieve reconciliation with Inuit, Canada must implement the FPIC principle in its policies and laws. Implementing and enforcing the FPIC principle is also one of the ways in

which Canada can fulfil its obligation of "duty to consult" (Brideau, 2019). Likewise, considering and applying the FPIC principle can also improve the development and governance of the Corridors initiative in a way that respects Inuit interests and rights.

Through the ACNV project, Inuit community members have made some suggestions on how shipping governance can comply with FPIC principles. For instance, Gjoa Haven community members expressed their expectation that the government would inform them of the location of the shipping corridors (Carter et al., 2017b), so that the location of the shipping lanes can be adjusted according to local advice, avoiding areas that are of great cultural significance to Inuit.

Inuit have also expressed views on how the FPIC principle should be implemented for better communication between industry partners and Inuit through the Corridors initiative, particularly regarding shipping operations. Inuit communities have expressed that they would like cruise ships, yachts, and icebreakers to communicate with them about their schedule, location, and routes (Carter, Dawson & Knopp et al., 2018). Communicating and sharing operational information with Inuit communities beforehand could alert them about shipping activities in the surrounding waters, thus avoiding conflicts between shipping and subsistence and cultural activities. Inuit communities have also suggested that ship operators should communicate with local hunters regarding their schedule and routes by putting up posters in communities and reaching out to the Hunters and Trappers Organizations (HTOs) (Carter, Dawson, Parker & Joyce et al., 2018). With this information, HTOs can also notify federal and territorial governments for better surveillance over Arctic waterways. This information can also be used in supporting research about marine mammals, which in turn can positively influence food security (Carter, Dawson, Parker, Cary, Gordon & Kochanowicz, 2018). Furthermore, effective communication of ships' plans can help Inuit communities to use their knowledge and prepare

for emergency responses to shipping accidents (Carter, Dawson, Parker, Cary, Gordon, Kochanowicz & Weber, 2018b). Being informed and provided with resources, Inuit communities could better prepare for shipping accidents as well as playing a key role as first responders.

While challenges remain, a place to start would be for industry partners and maritime authorities to respect the FPIC principle and cooperate with Inuit in good faith throughout the development and governance processes of the Corridors initiative.

4.5.4 Inuit knowledge and Inuit right to self-determination and decision-making

Canada recognizes the inherent right of Inuit to self-determination under section 35 of the Canadian Constitution (1982). Self-determination right involves right to self-government and right to make decisions for community affairs. Thus far, efforts in recognizing Inuit self-determination right have been devoted to successful negotiation of land claim agreements and the establishment of co-management boards for the management of marine resources and wildlife. However, there are ongoing challenges to the exercise of Inuit self-determination rights in governing Arctic shipping in Canada.

The way in which shipping activities are governed can have significant implications for Inuit self-determination rights. In Canada, Arctic shipping is primarily regulated within federal and territorial jurisdictions, co-management boards and programs (Clear Seas, 2022). In many cases, decision-making processes related to shipping operations are dominated by government authorities and shipping industry practitioners. The lack of Inuit voices and perspectives in decision-making processes can lead to the development of policies and regulations that overlook

shipping impacts on Inuit traditional practices. This, in turn, can affect how Inuit can access their traditional marine resources and ultimately, impact Inuit self-determination right. To address this issue, it is important to recognize and respect the rights of Inuit communities to participate in decision-making processes related to shipping activities.

The lack of Inuit participation in the initial development and decision-making stages of the Corridors initiative has also been widely recognized as an area in need of improvement. For instance, Arviat community members have indicated that they should be and would like to be actively involved on an ongoing basis in the development, implementation, and governance of the Corridors initiative (Carter et al., 2017a). However, there is currently no institutional framework to guide Inuit's involvement in the governance of marine traffic within these corridors (PCT, 2016). To fill this gap, the Canadian government has placed an emphasis on engagement with Inuit, First Nations and Metis organizations when seeking inputs from stakeholders (DFO, 2021). TC and CCG are developing a governance structure or framework for governing the Corridors initiative. This section argues that this governance framework should enhance Inuit engagement, apply Inuit knowledge and support Inuit decision-making right.

Article 18 of the UNDRIP provides reference to Indigenous Peoples' right to participate in making decisions for issues that may impact their interests and affect their rights. Article 23 of the UNDRIP further describes the indigenous right to be actively involved in programs affecting them and to determine priorities and strategies for economic and social development. As summarized in Table 7 and Table 9, shipping has brought negative impacts on Inuit subsistence and social practices. Inuit are extremely concerned about Arctic shipping's negative effects on their interests and well-being, from environmental degradation to sea ice disturbances. Inuit, therefore, should be able to exercise their decision-making right to avoid infringements of their

interests and other inherent rights, as established by UNDRIP. Ultimately, strengthening Inuit engagement and ensuring Inuit decision-making rights are important steps towards Inuit self-determination in marine areas. According to Article 3 of the UNDRIP, one of the most fundamental rights of Indigenous Peoples is the right to self-determination. To further support Inuit self-determination right in Arctic shipping governance, Inuit input in decision-making is strongly needed. Canada needs to establish an appropriate governance framework with a proper mechanism to allow Inuit to determine priorities for their communities and to engage Inuit in governing Arctic shipping and the Corridors initiative through policy- and decision-making.

This section will discuss how the Corridors initiative can be improved through supporting and encouraging Inuit to exercise their decision-making right. First, Inuit engagement in making decisions for the Corridors initiative can begin with the application of Inuit knowledge. Indigenous knowledge is now part of Canada's regulatory systems and decision-making processes through the Indigenous Knowledge Policy Framework for Project Reviews and Regulatory Decisions (the "Framework") (GoC, 2022a). Inuit knowledge is now required to be considered when amending the Impact Assessment Act (2019), the Fisheries Act (1985) and the Canadian Navigable Waters Act (1985) (GoC, 2022a). Specific for Transport Canada, in the subsection 7(f) of the Canadian Navigable Waters Act (1985), the Minister is required to consider any Indigenous knowledge that has been provided when issuing approval or making decisions. Maritime administrations are also challenged to consider Inuit knowledge and perspectives when developing shipping policies and shipping governance initiatives, such as the Corridors initiative. Article 31 of the UNDRIP also emphasizes the importance and obligation of Canada to support Indigenous Peoples in the use of their Indigenous knowledge.

Compared to the limited baseline data on the changes of Arctic marine ecosystems (Heikkilä et al., 2022; Bilous et al., 2022; DiMento et al., 2016), the localized and context-based Inuit knowledge provides in-depth and precise insights into natural phenomena (Aporta, 2010; Bell et al., 2014; ITK & NRI, 2007). Both because of their proximity to the areas and their deep knowledge of Arctic ecosystems, Inuit can provide profound knowledge, unique ways of knowing and valuable feedback to improve Arctic shipping governance.

The ACNV project provides excellent examples of how Inuit knowledge can enhance safety and security of Arctic shipping operations, and therefore, strengthen shipping governance. First, Inuit knowledge and expertise can optimize the design and placement of shipping corridors near Inuit communities. Inuit in Iqaluit pointed out the issue of inadequate charting of Arctic waterways. They believed that Inuit knowledge about local waterways is a vital complement to support navigating and charting the Nunavut waterways (Carter et al., 2020). Inuit from Arviat addressed issues of shoreline erosion and falling sea level around their community (Carter et al., 2017a). If mariners overlook these issues when using shipping corridors, it can lead to navigational uncertainties, operational risks and accidents that can have adverse effects on and create damage to the Arctic marine environment. Paulatuk community members have indicated that individual community members with knowledge and local expertise have performed search and rescue (SAR) operations, but their roles and responsibilities in SAR needs to be further clarified (Carter, Dawson, Parker, Cary, Gordon, Kochanowicz & Weber, 2018c). Inuit from the Gjoa Haven community also suggested that Canada should seek input from community expertise and incorporate Inuit knowledge in oil spill response and containment (Carter et al., 2017b). The Corridors initiative provides not only the obligation but also the opportunity for incorporating

Inuit expertise and eventually co-producing knowledge using both the best available science and Inuit knowledge to better manage shipping activities within the corridors.

Inuit also expect to be involved in the decision-making process for Arctic shipping operations. Inuit communities are particularly concerned about who will be able to use these corridors and who will decide on the uses of these corridors. For instance, Pond Inlet community members noted that they would like to receive more information about which local organizations or levels of government will have authority over the governance of these shipping corridors (Carter, Dawson & Joyce et al., 2018). Another typical example is the interest of the Inuit to be involved in the decision-making process regarding the cruise industry. Cruise ships are one of the most likely types of vessels to visit communities through these shipping corridors.[14] Community members from Coral Harbour reflected that rather than being informed by the Kivalliq Inuit Association about the arrival of cruise ships, they would like to become part of the decision-making process (Carter, Dawson & Weber, 2019). Inuit community members even suggested that ship operators should obtain permits from the community before visiting (Carter, Dawson, Parker, Cary, Gordon, Kochanowicz & Weber, 2018b).

Inuit communities are aware of their limited capacity to make decisions about all aspects of Arctic shipping, which has already been highly regulated by maritime laws and industry standards. Inuit recommendations for changing the locations/placement of shipping corridors, including lines drawn on the map, represent only conceptual or imaginary routes, pending for adoption by government (Carter et al., 2017a). These proposed changes, eventually, need

[14] Cruise ships are still considered as one of the fastest growing types of shipping in the Canadian Arctic (Dawson et al., 2021), even though Canada implemented a two-year ban (from March 2020 to February 2022) on cruise ships and pleasure craft due to COVID-19 (GoC, 2022b).

government departments (e.g., the CHS) and shipping companies to find a way to accommodate them while ensuring safe navigation. Although Inuit communities, representative organizations and co-management boards have not yet been delegated with decision-making rights to directly manage shipping activities, they can be more involved in the decision-making process through an integrated institutional arrangement among governments, industry partners and other entities. In this sense, while maritime authorities and the shipping industry will continue to develop standards for Arctic shipping generally, Inuit communities could be more empowered and more engaged in decision-making and policy-making processes.

Canada continues to implement the UNDRIP Act and to interpret UNDRIP principles in Canadian legal system. In this context, the governance of the shipping corridors needs to further recognize and support Inuit in exercising their inherent rights as affirmed in the UNDRIP. A mechanism should be developed to facilitate policy implementation and also strengthen the role of Inuit as rights holders in the Corridors initiative.

4.6 Conclusion

Rapidly expanding Arctic maritime activities have had substantial impacts on Inuit communities and Inuit traditional practices. Meanwhile, the interface between Arctic shipping and Inuit rights has been manifested in several aspects of the governance of marine traffic. However, there is not yet a well-developed collaborative or co-governance arrangement to encourage Inuit to exercise their rights. The need to find a governance framework that can respect Inuit rights and engage Inuit in the governance of Arctic shipping has never been greater.

Using the Corridors initiative as a case study, this chapter analyzed and reinforced the need to understand how various indigenous rights outlined by the UNDRIP can improve shipping governance, focusing on the rights to maintain a spiritual relationship with marine waters (Article 25), FPIC (Article 19), environmental protection (Article 29) and decision-making (Article 18). This chapter has discussed that UNDRIP principles and the UNDRIP Act can guide Canada's domestic aboriginal laws and maritime regulations to reshape and improve ocean governance generally and shipping governance specifically.

This chapter particularly addresses that the Corridors initiative will provide a great opportunity to challenge the Canadian government to improve shipping governance in a way that can respect Inuit rights and engage Inuit in decision-making processes. The analysis provided in this chapter indicate that the proposed governance framework for the Corridors initiative should include a collaborative engagement mechanism or a co-governance institutional arrangement that can recognize various Inuit rights in marine areas, take Inuit perspectives of shipping risks into account, and provide Inuit with funding and the capacity to engage in decision-making processes for Arctic shipping governance. Achieving reconciliation and building trust with Inuit is a long road ahead. The Corridors initiative can become an initial step towards collaborative governance framework to meaningfully engage Inuit and respect Inuit inherent rights in governing Arctic shipping activities.

4.7 References

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Chapter 5 Marine Spatial Planning in Canadian Arctic Shipping Governance: Exploring its Application in the Northern Low-Impact Shipping Corridors Initiative

5.1 Introduction

Climate change is having serious impacts on Arctic marine environments and providing a wider range of opportunities for human activities, which in turn can put more pressure on the ecosystem and on livelihoods of local communities. In the Canadian Arctic, the retreating sea ice has increased the probability of lengthier seasonal opening of waterways and is resulting in improved navigability in the Northwest Passage (NWP) in the summer season (Chen et al., 2021). Marine shipping activities, which involve transportation of cargo, the movement of passengers, offshore construction, resource exploitation and exploration, fishing, and recreational activities (Arctic Council [AC], 2009), have increased dramatically in Arctic Canada (Dawson et al., 2018). These activities can be categorized according to their operators and purposes. Government-operated ships provide icebreaking [Canadian Coast Guard], search and rescue [Canadian Coast Guard], charting [Canadian Hydrographic Service] and other services to enhance safe marine operations and promote and support Arctic research within Canadian waters. Regarding the shipping industry, recent years have witnessed increasing domestic and international commercial shipping activities in Arctic waters, including community resupply, resource exploration and transport, fishing, cruise tourism and recreational boating. At the same time, Indigenous use of marine areas (including boating activities) are often related to indigenous subsistence hunting and fishing activities for food and materials.

Scientific studies have developed several models, approaches and frameworks to assess, prevent and mitigate Arctic shipping risks (Goerlandt & Pelot, 2020), including: 1) safety risks in navigational accidents and human life at sea (Browne et al., 2020; Fu et al., 2021); 2) environmental risks associated with ship-based pollution (Parsons, 2012), underwater noise (Halliday et al., 2021), collisions with marine mammals (Whinnie et al., 2018), and introduction of invasive species (Goldsmith et al., 2018); 3) sovereignty and security risks (Huebert, 2009; van Luijk et al., 2021); and 4) socio-cultural risks to Indigenous Peoples (Dawson et al., 2020).

Identifying, assessing, preventing, and mitigating shipping risks in Arctic Canada is challenging, hence requiring governance, policy and regulatory frameworks that can deal with the complexity of shipping, the interests of coastal communities and the growing number of interested sectors. Arctic shipping governance is complex as it involves international and domestic maritime legislation and policies as well as compliance with industry standards (VanderZwaag et al., 2008). It also requires the engagement of multiple stakeholders and rights holders (Dawson et al., 2020). The combination of increasing risks due to shipping, the growing vulnerability of the ecosystem due to climate change, and the political and legal obligations to include Indigenous Peoples in matters that affect their homelands, all contribute to the need for adopting a collaborative stewardship framework that can enhance decision making and governability. This collaborative framework would facilitate interdepartmental and inter-sectoral collaboration and enhance Indigenous involvement in assessing shipping risks that can affect marine safety, national security, and Indigenous socio-cultural practices.

In Canada, advancements have been made to manage marine shipping traffic and other human activities through national ocean governance policies that adopt holistic and precautionary approaches to protect the integrity of the marine ecosystem and support diverse marine uses

(Oceans Act, 1996; Department of Fisheries and Oceans Canada [DFO], 2002; DFO, 2005a). There are numerous scientific studies about managing marine shipping activities with spatial or area-based measures, such as designating navigation routes and vessel traffic separation schemes. However, governing marine traffic within comprehensive ocean planning frameworks, which are established to manage multiple marine uses and balance various interests in marine spaces in a holistic way is far from being a common practice, with limited discussion and less practical experience from which to draw lessons. Consequently, in Canada, marine shipping activities are still predominately governed by international and domestic maritime legislation and under national maritime authorities (i.e., Transport Canada).

Among numerous comprehensive ocean planning frameworks, Marine Spatial Planning (MSP) is an area- and ecosystem-based governance approach, a public and (potentially) inclusive process towards the sustainable use of marine resources and spaces (Ehler & Douvere, 2009; Santos et al., 2019). As a comprehensive approach, MSP can achieve ecological, economic and social objectives through allocation of human activities in space and time (Ehler & Douvere, 2009; Ehler, 2012). Furthermore, MSP is public and interactive in nature, which makes it conducive to reconcile diverse interests of ocean users with its ongoing engagement of multiple stakeholders and actors (Hassan et al., 2015; Olsen et al., 2014).

The concept of MSP emerged in the 1980s in the field of marine conservation and planning (Day, 2002). Since then, MSP has developed significantly to not only involve spatial zoning plans, but also include policies and regulations. In addition to planning for marine conservation, there has been a growing body of literature about applying MSP to coordinate offshore marine activities, including fishing, shipping, offshore windfarms, aquaculture and natural resource exploitation (Grip & Blomqvist, 2021). So far, MSP initiatives are under development in over 70

countries' territorial seas and exclusive economic zones (EEZs) (Pennino et al., 2021). From the Pacific North coast to the Atlantic coast, from the Beaufort Sea to the Estuary and Gulf of St. Lawrence, MSP has been adopted by the Government of Canada as an approach towards sustainable and integrated ocean governance (Beaufort Sea Partnership [BSP], 2009; DFO, 2007; PNCIMA, 2007). The Department of Fisheries and Oceans Canada (DFO) is proposing MSP as a collaborative and transparent approach to involve numerous stakeholders and rights holders in integrated ocean management, in which marine shipping is one of the major activities to be governed (DFO, 2018a).

This chapter explores whether MSP is an appropriate framework (with a set of associated tools) to facilitate Arctic marine shipping governance in Canada. It is hoped that the article will also stimulate a discussion about the rationale of applying MSP as a framework to achieve effective decision-making and Inuit involvement within the Northern Low-Impact Shipping Corridors initiative co-led by the Canadian Coast Guard, Transport Canada, and the Canadian Hydrographic Service under the Oceans Protection Plan.

Section 5.2 offers a policy review to describe and analyze various integrated ocean planning frameworks. This section will review the development and practical use of MSP, compare MSP with other zoning frameworks and discuss how MSP is an enhancement to Canada's ocean governance, which should include shipping governance. This section will set up a context for the subsequent analysis and discussion.

Section 5.3 first explores Canada's rich history of governing marine spaces and shipping through MSP, albeit using different terminology. By using a case study approach, this section analyzes

how area-based measures and MSP initiatives have contributed to integrated ocean governance, including the management of marine traffic, on Canada's Pacific and Atlantic coasts.

Section 5.4 explores past and existing ocean governance initiatives and projects in the Canadian Arctic, focusing on the recently proposed Northern Low-Impact Shipping Corridors initiative. Finally, section 5 makes several suggestions for the future development and implementation of the corridors and discuss, from theoretical and practical perspectives, how MSP can assist five aspects of effective ocean governance to achieve better decision-making and Inuit engagement in the Corridors initiative.

5.2 Marine Spatial Planning: An approach towards integrated ocean governance

5.2.1 Canada's Integrated Ocean Governance Frameworks

Traditionally, ocean uses can be categorized into different sectors (e.g., shipping, fishing, hydrocarbons, wildlife and environmental protection) that have most commonly been managed separately through sector-based laws and policies. As interactions and conflicts among ocean uses are becoming more diverse and complex under the impacts of climate change, there is a trend indicating that ocean governance will evolve towards a model of policy-making that favors more integrative and comprehensive approaches (Miles, 1992).

In 1982, the United Nations Convention on the Law of the Sea (UNCLOS), which is the fundamental legal framework for ocean governance, referenced the need for adopting an

integrated ecosystem approach for governing marine activities and uses of marine resources. The preamble of UNCLOS clearly states that the ocean space needs to be considered as a whole, since ocean issues are interrelated. Article 192 and Article 194(1) affirm coastal states' obligations to protect and preserve the marine environment by taking appropriate measures, such as establishing clearly defined areas with special mandatory measures (Article 211[6a]) (UNCLOS, 1982). The concept of "protected areas" is defined in Article 2 of the Convention on Biological Diversity (CBD, 1992), and coastal states are encouraged to conserve ecosystems through using both in-situ approaches (i.e., establishing conservation areas within important habitats [Article 8]) and ex-situ conservation (i.e., protection outside natural habitats [Article 9]) (CBD, 1992).

UNCLOS and CBD make references to the rationale of establishing Marine Protected Areas (MPAs) which, according to the guidelines established by the International Union for Conservation of Nature (IUCN), are clearly defined geographical spaces designated to conserve marine ecosystems through legal means (IUCN, 2008). MPAs, as a powerful area-based planning tool to allocate marine resource use and achieve environmental protection, have been widely adopted by coastal states to achieve the Sustainable Development Goal 14 (SDG 14), which aims to conserve at least ten percent of the world's coastal and marine areas by 2020 (Evans, 2018; The Global Goals, 2022). Along with MPA designations around the world, there has been an increasing level of awareness of the concepts and methods of ocean zoning and planning.

In the 1990s, coastal countries, including Canada, started to formulate national integrated ocean policies and to implement the concept of integrated management of ecosystems (Miles, 1992). The idea of integrated and area-based management became a more common practice. As

practices in managing coastal and marine spaces vary from area to area, due to different natural environments and socio-political contexts (Grip & Blomqvist, 2021), ocean planning practitioners who have different backgrounds, training and experiences have created different concepts and terminologies, such as ecosystem-based management (EBM), integrated management, sea use management, coastal zone management (CZM), integrated coastal management (ICM), integrated coastal zone management (ICZM), marine spatial planning (MSP), and other similar concepts (see Table 10).

Table 10: Important concepts for coastal and ocean zoning and planning

Names	Concepts
Integrated Management	Managing comprehensive issues in a holistic and cross-sectoral way through an integrated management system, integrated business model, and ecosystem-based management approaches.
Ocean Zoning	A practical way and measure for implementing integrating management and ecosystem-based management through creating zoning plans, maps, and conducting spatial analysis.
Ecosystem-based Management	Considers the ecosystem as a whole including human-environment relationship. Being applied in environmental policy for managing both terrestrial and marine environments.
Coastal Zone Management	Managing coastal areas through zoning with a focus on the interaction of land and sea.
Integrated Coastal Management / Integrated Coastal Zone Management	An analytical and continuous process that views the coastal zone as an integrated whole and encourages cooperation between sectors and stakeholders through interactive planning and zoning to achieve both conservation and sustainable use of coastal zones.
Marine Spatial Planning	An EBM-based tool and a public process to allocate human activities in space and time to achieve balanced objectives.

Sources: Clark, 2019; Cullinan, 2006; Ehler & Douvere, 2009

On January 31, 1997, the Government of Canada brought the *Oceans Act* (1996) into force, making Canada the first country in the world to have comprehensive oceans management legislation. Under the Oceans Act and its key deliverables, namely the Oceans Strategy (DFO, 2002) and the Oceans Action Plan (DFO, 2005a), Canada advanced integrated ocean management by creating MPA networks and Large Ocean Management Areas (LOMAs), which are later replaced by DFO with bioregions / bioregional planning areas, and specific measures within these areas (see Table 11). Thus far, across Canada, there are also National Marine Conservation Areas (NMCAs) (established by Parks Canada Agency) and Marine National Wildlife Areas (planned and managed by Environment and Climate Change Canada), setting out important regulatory standards and principles for managing shipping activities.

Table 11: Canada's spatial planning and area-based measures for ocean governance

Measures	**Descriptions**
Marine Protected Area	Designated under the *Oceans Act* for the purposes of protecting the marine environment and ecosystem, marine biota and endangered species.
Large Ocean Management Areas	Five LOMAs designated under the *Oceans Act* to undertake integrated ocean management activities.
National Marine Conservation Areas	Established under the *Canada National Marine Conservation Areas Act* (2002) for the purpose of protecting and conserving marine areas.
Marine National Wildlife Areas	Areas designed with the purpose of protecting and conserving wildlife and their habitats.
No-fish/no-take zones	Established in MPAs to give certain areas full protection from human disruption.
No-dumping zones	Established in MPAs or ports to prevent marine pollution.

Measures	Descriptions
Areas to be Avoided	Seasonal approach, areas designated to remind mariners to avoid certain areas and protect the marine ecosystem and marine mammals.
Traffic Separation Scheme	One type of routing measure to enhance navigation safety.
Shipping Safety Control Zones	Sixteen zones designated under the *Arctic Waters Pollution Prevention Act* (AWPPA, 1985) to guide vessel operations.
Arctic Ice Regime Shipping System	A system to enhance the safety and efficiency of shipping operations in Arctic waters as required by the *Arctic Shipping Safety and Pollution Prevention Regulations* (ASSPPR, 2017).
Northern Canada Vessel Traffic Services Zone (NORDREG)	A mandatory reporting system for vessels entering the NORDREG zone.

Sources: Canadian Coast Guard (CCG, 2020); DFO, 2012; DFO, 2020; Government of Canada (GoC, 2008); Living Oceans, 2022

For specific purposes, Canada adopted several area-based measures to guide different types of human activities and protect marine ecosystems, such as no-fish/no-take zones, no-dumping zones, areas to be avoided (ATBAs) and traffic separation schemes (TSS). In Canadian Arctic waters, ship reporting systems are established for the purpose of navigation safety and pollution prevention, such as Shipping Safety Control Zones (Shipping Safety Control Zones Order, 2010), the Arctic Ice Regime Shipping System (AIRSS) (Transport Canada, 2018a) and the Northern Canada Vessel Traffic Services Zone Regulations (NORDREG, 2010).

According to Table 11, Canada's statutory and policy instruments serve to develop spatial planning and area-based measures that are broader than the Oceans Act. For instance, the *Marine*

Conservation Areas Act (2002) and the Northern Canada Vessel Traffic Services Zone Regulations (2010) have regulated human activities in bounded spaces for the purposes of enhancing environmental conservation, maritime safety, and security. But these regulations are sector-based in nature. The establishment of area-based management measures is still dependent on Canada's motivation and commitment to implement the *Oceans Act*, which mandates DFO with the responsibility to initiate MPAs, regional planning areas (formerly called LOMAs), and other MSP practices.

5.2.2 MSP: An enhancement for Canada's Integrated Ocean Governance

Canada's regional planning areas (see section 5.3 and section 5.4 in this chapter for details) are widely considered as MSP practices in the most-cited literature about MSP (e.g., in Ehler & Douvere, 2009), even though the term "marine spatial planning" may not have been explicitly used within Canadian ocean-related policy or legislation. Regional planning areas are considered as MSP practices because their outcomes include comprehensive and overarching approaches to regional development, and spatial plans to regulate and allocate human uses of marine spaces. Furthermore, collaborative planning processes, which involved federal and provincial governments, as well as multiple stakeholders and rights holders, can be found within these area-based initiatives. However, some of these initiatives, such as the Eastern Scotian Shelf Integrated Management (ESSIM) Plan (and the Placentia Bay/Grand Banks Integrated Management Plan (PB/GB), were terminated without action plans and intended implementation (Sander, 2018). Similarly, some broad guidelines were proposed in the Pacific North Coast Integrated Management Area (PNCIMA) but without establishing area-based spatial plans (PNCIMA,

2007). Although these early initiatives were not fully implemented as planned, they contributed to Canada's experiences in managing ocean spaces. Canada is now adopting MSP as a forward-looking and strategic planning approach for advanced and collaborative ocean management. DFO is currently in a process of laying the foundation for a national MSP Program, including developing spatial plans for the Pacific North coast, the Newfoundland and Labrador Shelves, the Scotian Shelf/Bay of Fundy, and the Estuary and Gulf of St. Lawrence (DFO, 2021). Thus, it is fair to say that MSP has become a critical strategy for Canada to achieve an integrated ocean governance regime.

In the Canadian Arctic, increased human activities have triggered complex interactions or conflicts with marine ecosystems and Indigenous practices. At the same time, the interconnected nature of Arctic socio-ecological systems makes sector-based management of human activities less effective. Currently, the federal government's determination to establish integrated coastal and ocean regimes across Canada is triggering the development of integrated management initiatives in the Canadian Arctic.

It is worth mentioning that MSP is not a term necessarily interchangeable with other alternatives in Table 10 (i.e., ICZM, ICM or CZM). Although there are some similarities between these concepts (in terms of comprehensiveness of the approaches and the complexities of the management situations), MSP has been well-defined by its openness (as a public process to involve multiple stakeholders) and practicality (creating spatial plans). MSP centers on marine spaces and aims to allocate activities through an open and practical planning process (Ehler & Douvere, 2009). While ICZM considers local diversity of coastal zones and emphasizes sector integration, MSP goes further to analyze marine space suitability by activity, cumulative impacts of activities and their interconnectedness within an ecosystem (Flannery & Cinnéide, 2012;

Mayer et al., 2014). MSP is also different from specific area-based measures (in Table 10), as it is more comprehensive and integrated. MSP is a framework that can embrace these different measures to achieve a collaborative goal.

Ehler and Douvere (2009) developed a step-by-step approach to MSP that includes planning, analyzing, assessing, implementing, enforcing, monitoring and evaluating processes (see Figure 4 from Ehler & Douvere, 2009). Instead of following a linear process, those processes form feedback loops with constant feedback from multiple stakeholders. These steps are also flexible and can be tailored to regional and local contexts.

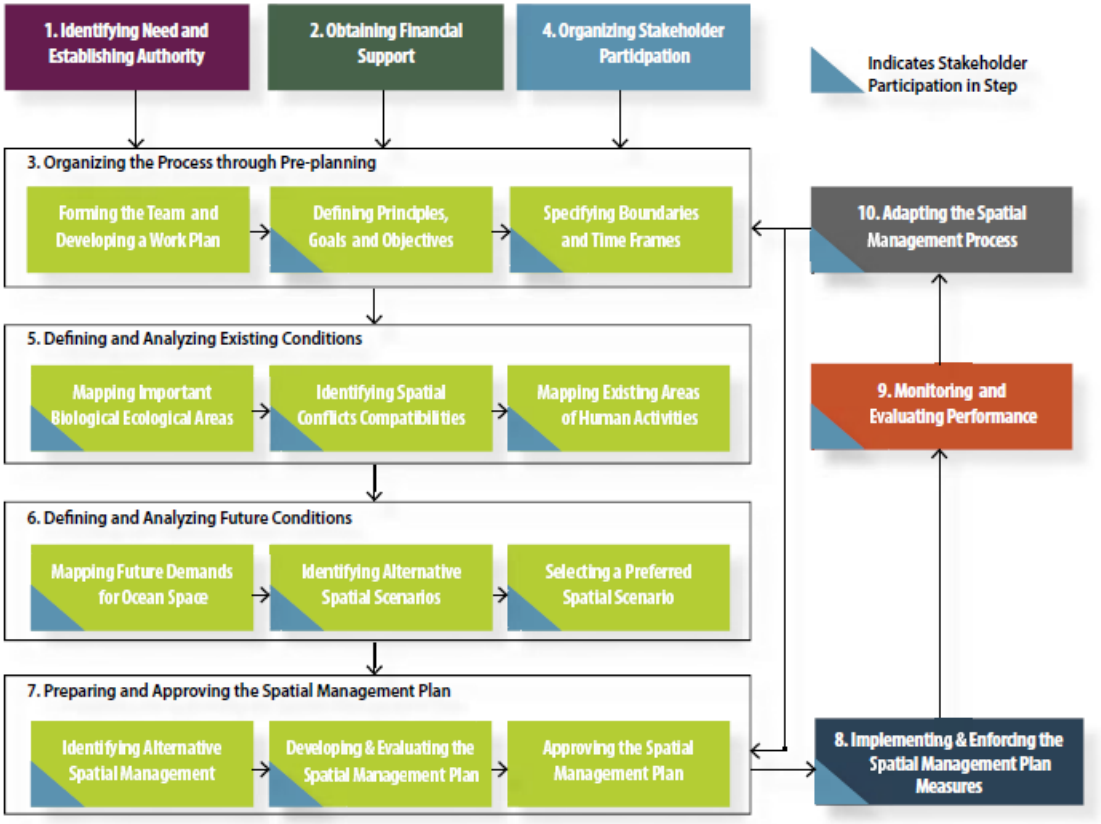

Figure 4: A step-by-step approach to MSP

Source: Ehler & Douvere, 2009

As described above, the need to find an integrated governance framework for Arctic shipping has become paramount. While almost every aspect of Arctic shipping is highly regulated by international conventions, Canada's maritime regulations and industry standards, this chapter proposes that the use of MSP to govern Arctic shipping can result in making better decisions that take into account the interconnections between different actors, processes and issues. For instance, a well-designed MSP initiative should be able to prevent or mitigate shipping risks (e.g., navigation safety and pollution prevention) and protect Indigenous Peoples' well-being through allocating shipping within specific times and spaces to facilitate navigation in Arctic waters, while also considering other marine uses. This article will analyze MSP as a framework to prevent and mitigate risks related to non-Indigenous Arctic maritime activities (e.g., fisheries, commercial shipping, resource exploitation, and government services) through a holistic approach that involves collaboration across different sectors and government departments, considers the intimate human-environment relationship and accounts for different types of knowledge or data, including Indigenous knowledge.

5.3 Integrated ocean governance on Canada's Atlantic and Pacific Coasts

Canada has a long history of applying area-based measures, zoning systems and integrated ocean governance policies for shipping. From the past to the present day, specific area-based measures and comprehensive marine planning initiatives have contributed to Canada's governance of marine traffic on the Atlantic and Pacific coasts in different ways.

In comparison to spatial planning, specific area-based and zoning measures have initially been adopted by the Canadian government. As summarized in the Table 11, from the 1970s to the

1980s, Canada established the NORDREG system, Shipping Safety Control Zones and Traffic Separation Scheme to manage marine traffic in different regions for the purposes of enhancing navigation safety, pollution prevention and marine mammal protection. Later in the 1990s, with the enactment of the *Oceans Act* (1996), Canada began to establish an integrated ocean governance framework, with the establishment of a national MPA framework and LOMAs. Planning through LOMAs has produced general guidelines for developing sustainable shipping, while routing systems involve detailed standards and measures to manage marine traffic in specific time and space windows. In recent years, the concepts and practices of MSP have become more common in Canada. This section will review these planning initiatives and measures, and analyze lessons learned for integrated ocean governance in the Canadian Arctic.

5.3.1 Atlantic Coast

Along with fisheries and the oil and gas industry, marine shipping has always been one of the most important industries in Canada's Atlantic coastal and offshore waters. Marine traffic has brought significant economic benefits to support local and community well-being (Ganter et al, 2021), while at the same time introducing risks and negative impacts, including vessel/whale strikes, vessel-related underwater noise, ship-source pollution, and other discharges to the marine environment (Aker, 2012).

Following the International Maritime Organization's (IMO) approval in 1982 (IMO, 1982), Canada implemented a Traffic Separation Scheme (TSS) in 1983 to organize commercial shipping in the Bay of Fundy (Canadian Whale Institute, n.d.). However, the originally designed TSS overlapped with endangered North Atlantic Right Whale (Eubalaena glacialis) critical

habitat, increasing whale injuries from vessel strikes (Vanderlaan et al., 2008). Through spatial analysis of vessel-traffic patterns and data of right whale sightings, several studies have demonstrated that slight changes of TSS routes with speed limitation could significantly reduce vessel-whale strikes (Vanderlaan et al., 2008). Therefore, in 2003, Canada proposed to amend the TSS and reroute marine shipping around the Grand Manan Basin at the entrance to the Bay of Fundy (IMO, 2002), leading to IMO's decision to modify shipping lanes for the purpose of protecting marine mammals (IMO, 2003). In 2008, with the support from IMO, DFO implemented the Roseway Basin Area to be Avoided off Southwest Nova Scotia as a seasonal approach to encourage vessels to reroute from June 1 to December 31 in order to reduce shipping-associated mortality of right whales (DFO, 2018b; IMO, 2007). The successful experiences of the Bay of Fundy TSS show that spatial planning is valuable to coordinate human activities and protect marine ecosystems. This TSS also paved the way for the future development of spatial planning initiatives on the Atlantic coast.

In 1998, the Eastern Scotian Shelf Integrated Management (ESSIM) Initiative (see Figure 5) was launched as Canada's first comprehensive ocean management initiative (McCuaig & Herbert, 2013). ESSIM was an integrated initiative, emphasizing collaborative planning among federal departments, the government of Nova Scotia, First Nations, industry partners, academia, and coastal communities (McCuaig & Herbert, 2013). Managing and coordinating all marine uses (including marine shipping) was the major objective of the ESSIM Initiative (DFO, 2005b). To create spatial measures for shipping, in 2005 DFO completed a comprehensive atlas to document marine traffic with contributions from Canadian Coast Guard (CCG), Sydney Ports Corporation, and the Atlantic Canada Cruise Association (DFO, 2005b). However, ESSIM failed to achieve integrated governance over marine shipping. DFO's cross-sectoral integration with Transport

Canada was not satisfied. Although Transport Canada made some information about shipping activities available through Transport Canada Ship Safety Bulletins (DFO, 2005b), its role and influence in ESSIM were not clear, resulting in low engagement of the shipping sector in the ESSIM process (Rutherford et al., 2005). Furthermore, although First Nations were represented in the ESSIM Stakeholder Advisory Committee (SAC), there was not enough information to describe their engagement with the shipping sector regarding shipping impacts on traditional practices and livelihoods.

Figure 5: Canada's former pre-2012 Large Ocean Management Areas
Source: Sander, 2018

The ESSIM initiative and SAC concluded in May 2012, and its outcomes were used to develop DFO's 2014 Regional Oceans Plan for the Scotian Shelf, Atlantic Coast, and Bay of Fundy (DFO, 2014). Under Canada's Oceans Protection Plan (OPP), Transport Canada has engaged with 12 First Nations' communities (e.g., Mi'kmaq communities) to enhance local marine safety, protect marine environment and manage local waterways (TC, 2020).

5.3.2 Pacific North Coast

The Pacific North coast hosts some of the best practices of MSP implementation in Canada. On the Pacific North coast, marine traffic volume is increasing in inshore and offshore waters (Chamber of Shipping [COS], 2016), resulting in conflicting marine uses and interactions between commercial shipping and First Nations' traditional marine use. In 2009, the Pacific North Coast Integrated Management Area (PNCIMA) (see Figure 6) was initiated as an umbrella initiative led by the federal government (mostly by DFO) with the intention of working with the government of British Columbia, First Nations, and other stakeholders, including commercial fishing operators, shipping industry partners, tourism operators, local governments, environmentalists and the oil and gas sector (Living Oceans, 2011; PNCIMA, 2007). PNCIMA is one of Canada's five LOMAs and is recognized by UNESCO as an MSP initiative.

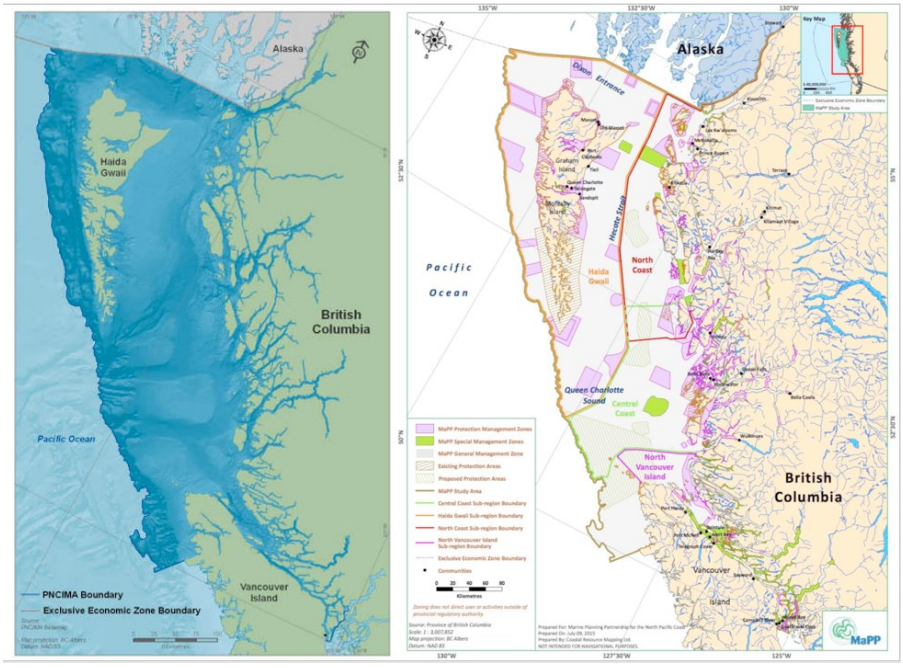

Figure 6: B.C.'s MSP initiatives: PNCIMA (left) and the MaPP (right)
Sources: PNCIMA, 2017 and Diggon et al., 2021

PNCIMA implemented a collaborative marine conservation and spatial planning framework to assess and mitigate marine navigation safety risks and security risks, as well as to reduce ship-based marine pollution, including ship-generated solid waste, sewage and grey water, ballast water, oil spills, and underwater noise (Vandermoor, 2017). Restricted marine zones have been established within the PNCIMA area to reduce some particular types of shipping risks. For example, “no-dumping” zones can be found in many marine spaces, including in MPAs, most marinas and harbors (Molnar & Koshure, 2009; World Wide Fund for Nature-Canada [WWF-Canada], 2020). “No-discharge” zones are designated within the Scott Islands MPA under federal maritime regulations (i.e., the Scott Islands Protected Marine Area Regulations [2018]) (Hewson & Watson, 2020).

Planning on such a large spatial scale with different measures requires significant funding for spatial analysis and stakeholder participation. However, in September 2011, the federal government withdrew from the public-private funding partnership, resulting in insufficient funding for integrated planning on different scales (West Coast Environment Law, 2012). The final outcome of the PNCIMA initiative was modified from a spatially based and integrated work plan to a non-spatial, strategic framework, with layers of planning happening separately in regional and sub-regional areas (Diggon et al., 2020; Wang et al., 2022). The PNCIMA initiative was endorsed in 2017 by DFO as general guidance for future marine planning on the Pacific coast, with a lack of a spatial plan or a network of MPAs (PNCIMA, 2007).

The province of British Columbia and First Nations continued to facilitate the spatially based marine planning processes and initiated the Marine Plan Partnership (MaPP) for the North Pacific Coast (see Figure 6) (MaPP). MaPP provides an MSP framework and a “nested planning process” to build a governance structure that is co-led by the provincial government and 17 First

Nations (Diggon et al., 2021). With help from the provincial government, First Nations created community-based plans within each of their traditional territories and local waterways by using spatial analysis and planning tools (e.g., Marxan) (Diggon et al., 2020). At a later stage, these community-based plans were further incorporated into a sub-regional plan through a harmonization process with support from the provincial government (Diggon et al., 2020).

Due to the lack of engagement of federal departments, MaPP is not able to comprehensively govern shipping or fishing activities, which are mostly under federal jurisdictions (Wang et al., 2022). However, MaPP has provided an opportunity for First Nations to get involved in shipping governance. The Haida Nation has become the pioneer among local First Nations to establish a Marine Awareness Office (MAO), enhance maritime awareness, and develop community-based shipping and marine response initiatives. To increase communities' ability and capacity to deal with ship-based risks and respond effectively to marine emergencies (Haida Marine Planning [HMP], n.d.), the Council of Haida Nation, in collaboration with Transport Canada and the shipping industry, developed a Geographic Response Plan and several associated area-specific strategies (MPA Network, 2022). For example, a 14-month trial Voluntary Protection Zone for Shipping (VPZ) in Haida Gwaii came into effect on September 1, 2020, as an outcome under the Oceans Protection Plans' Proactive Vessel Management (PVM) Initiative (TC, 2021b). The trial was concluded on October 31, 2021, but the VPZ remains in effect until further notice.

Currently, Transport Canada continues to collaborate with First Nation partners through the OPP (TC, 2021b). For example, TC and First Nation partners are assessing the feasibility of making changes to the existing TSS that overlaps with critical habitat of the Southern Resident killer whale (TC, 2021c). Adjustments will be based on feedback and knowledge from Indigenous

communities and other stakeholders. In this process, some critical elements, tools and processes of MSP (e.g., spatial analysis and Indigenous engagement) will be explored (Wang et al., 2022).

5.3.3 Lessons Learned for Integrated Governance in the Canadian Arctic

Canada's previous and existing ocean governance and management efforts on the Atlantic and Pacific coasts provide valuable experiences for Arctic integrated ocean governance, including the management of marine traffic. There are three key lessons learned from these experiences that should be emphasized and considered for future integrated ocean governance in the Canadian Arctic.

First, developing an integrated governance framework is an appropriate approach that fits a holistic understanding of Arctic marine socio-ecological systems in tune with the fragility of the environment and with Indigenous approaches. Notably, an integrated approach can deal with the complex relationship between shipping and other marine uses. Experiences from ESSIM, PNCIMA and MaPP show the need to regulate marine traffic in a holistic way that can both protect the marine environment and Indigenous practices. As shipping governance is legally led by federal maritime departments, to build an integrated framework there is a need for more collaboration from other departments, sectors, jurisdictions stakeholders and rights holders.

However, experiences in ESSIM showed that effective collaboration among federal departments cannot be achieved without an overarching policy to support departments working across their own jurisdictions. The ESSIM initiative did not achieve its goal and ended up with a sector-based planning approach led by DFO due to the "fragmented nature of governance in the marine

environment" (Flannery & Cinnéide, 2012). Furthermore, collaborative planning requires adequate resources and funding. Insufficient funding led to PNCIMA's failure to meet its original expectation of creating integrated spatial plans on different scales. Having overarching policies and sufficient funding to support interdepartmental collaboration are particularly critical in the Canadian Arctic where infrastructure and community capacity are relatively limited compared to the southern part of the country.

Second, Indigenous knowledge and perspectives are critical to ocean governance. ESSIM, PNCIMA and MaPP all recognized the significance of Indigenous participation and engagement. Indigenous Peoples can co-lead the planning process as done through the MaPP framework. However, First Nations' observations and Indigenous knowledge are mostly collected and reinterpreted for stakeholder consultation and community engagement purposes, rather than being directly applied in marine planning. Practically, Indigenous knowledge is critical for marine planning and governance, but it must be applied at an appropriate spatial-temporal scale (i.e., on a community scale) to respect diversities of Indigenous practices. The nature of Indigenous knowledge is context-based and experience-based, and it is therefore crucial to apply it in a way that can avoid decontextualization and respect Indigenous worldviews and cultural values. PNCIMA and MaPP are engaging Indigenous Peoples to apply their knowledge through the development of community-based plans, and to guide various marine uses within their traditional territories and waters, but the effort to actually frame the planning through Indigenous approaches is still ongoing.

The Canadian Arctic has been the homeland to Inuit and their ancestors for thousands of years. Considering the latest developments in policy towards recognition of Indigenous rights and reconciliation, it is important that Inuit knowledge and perspectives are included when

developing an integrated ocean governance framework for their marine areas, including sea ice. Inuit knowledge is also context-based, reflecting how Inuit occupy and use local marine and coastal spaces at distinctive spatial and temporal patterns. Therefore, marine planning should account for different scales (due to local and regional variations) to appropriately apply Inuit knowledge and avoid overgeneralization of Inuit communities' knowledge and experiences. MaPP sets up a model that could be adopted in the Canadian Arctic to support Inuit's role as the government's partners in developing community-based plans and assert their right to make management decisions within their traditional sea and sea ice.

Finally, routing systems could potentially become an approach not only to guide Arctic marine traffic, enhance navigation safety, and prevent pollution, but also to protect Inuit practices. The Bay of Fundy TSS has proved its effectiveness in regulating marine traffic to protect marine mammals from vessel strikes, but there is currently no TSS or routing systems in the Canadian Arctic (IMO, 2019). The World Wildlife Fund for Nature (WWF)-US and WWF-Canada have proposed using routing systems as a tool for developing the Northern Low-Impact Shipping Corridors in the Arctic (see details in section 5.4.3) to prevent ship-based pollution and enhance maritime safety and security. Especially with support from existing traffic reporting systems (i.e., NORDREG), traffic routing systems can not only better assist policies already in place (to regulate Arctic shipping and to avoid ecologically and socio-culturally sensitive areas), but also enhance Canada's surveillance over Arctic waterways.

5.4 Integrated area-based management in the Canadian Arctic

Climate change is an everyday reality for Canada's northern residents. Mean temperatures in the Canadian Arctic have increased at a rate of two to three times the global average (Crown-Indigenous Relations and Northern Affairs Canada [CIRNAC], 2019). Global interests in the Arctic for new trade routes, expedition cruise ship tourism, natural resources exploration and exploitation and research activities have been triggered because of feasible trans-Arctic shipping routes, increasing accesses to natural resources and longer navigational seasons (Buixadé Farré et al., 2014; Corbett et al., 2010; Dawson et al., 2014). Increased activities mean that there are more human interactions with Arctic socio-ecological systems in often complex and dynamic ways (Huntington et al., 2007). For instance, while human activities accelerate changes of the Arctic biophysical environment, the fast-changing Arctic environment, in turn, is affecting northern communities and Indigenous Peoples' traditional practices. The Arctic's unique socio-ecological system, which includes intricate human-environment relationships, makes it crucial to address Arctic issues in a comprehensive and holistic way.

To promote the health and prosperity of Arctic inhabitants and advance sustainable resource uses, the Arctic Council encouraged Arctic states to adopt ecosystem-based management and integrated management in their national policies (AC, 2004). Under the *Oceans Act*, Canada has been developing different types of integrated planning initiatives in the Arctic. It is worth mentioning that these initiatives engaged Indigenous Peoples and took their perspectives into account. Increasing recognition of the role of Arctic Indigenous Peoples in integrated ocean governance seems to have been influenced by the development of aboriginal laws and the emergence of comprehensive land claim agreements in the Canadian Arctic (Berkes et al., 2001).

Since the 1970s, there were political movements led by Inuit, who had been striving for self-government in their settlement areas. As a result, comprehensive land claims agreements between the crown and Inuit were established, such as the Nunavut Land Claims Agreement (NLCA, 1993) and the Inuvialuit Final Agreement (IFA, 1984). NLCA Article 15.1.1 explicitly recognizes Inuit rights based on their traditional and current use in certain marine areas, especially the land-fast ice zones (NLCA, 1993). Governance of the ocean must also fit with and operate within Canada's constitutional framework, which includes the fundamental rules and principles for protecting Indigenous rights. For example, Section 35 of the *Constitution Act* (1982) requires the federal government to conduct in-depth consultations with Indigenous groups regarding Indigenous issues. Since then, Arctic Indigenous groups, including Inuit have actively participated in resource management for both land and marine resources.

Section 5.3.3 of this chapter summarized lessons learned from Canada's MSP practices on the Atlantic and Pacific coasts. It is obvious that some accepted norms from these practices (e.g., integrated framework, knowledge co-production, and routeing system) are consistent with current practices in the Canadian Arctic. Thus far, Canada's integrated planning initiatives in the Arctic emphasize establishing MPA networks (DFO, 2020), LOMAs, and NMCAs. Section 5.4.1 will first introduce the Beaufort Sea Integrated Management Planning Initiative (BSIMPI) as an example of integrated area-based management in the western Arctic. Section 5.4.2 will then describe the Tallurutiup Imanga National Marine Conservation Area (TINMCA), which represents a large-scale planning initiative that is co-developed by Inuit organizations and the territorial and federal governments. Finally, section 5.4.3 will focus on the Northern Low Impact Shipping Corridors initiative (the "Corridors"), which represents a comprehensive governance

framework with policies and routing measures to guide future developing of shipping in Canadian Arctic waterways.

5.4.1 Beaufort Sea Integrated Management Planning Initiative

The Beaufort Sea, which is about 1.11 million km^2, includes several important habitats for fish, marine mammals, and birds. It also has great potential for developing industries such as fishing, tourism, shipping and oil and gas. As an area with cross-sectoral uses, the Beaufort Sea requires integrated management to balance interests and reduce potential conflicts.

Canada's marine areas within jurisdiction in the Beaufort Sea are included within the Inuvialuit Settlement Region (ISR), where Inuvialuit (Inuit who live in the western Canadian Arctic) have been living and conducing traditional activities, including fishing, hunting, harvesting and other subsistence practices, since time immemorial (BSP, 2009). Increasing commercial operations have affected Inuvialuit traditional hunting and fishing practices that are performed in proximity of oil and gas exploitation zones (Fast et al., 2005). It has, therefore, become critical that Inuvialuit organizations and communities wish to have a significant role in governing their waters, shaping policies that affect them, in order to continue to undertake subsistence activities and to influence the development of commercial activities in ways that are respectful of their environments and that take into account Inuvialuit own values, opinions and knowledge.

In 2005, the Beaufort Sea was listed as a priority area to receive funding under the Oceans Action Plan (DFO, 2005a), leading to the establishment of the Beaufort Sea Integrated Management Planning Initiative (BSIMPI) as one of the five LOMAs in Canada (see Figure 5).

The Integrated Ocean Management Plan (IOMP) for the Beaufort Sea was released in 2009, as the first large-scale, integrated area-based management plan in the Canadian Arctic (BSP, 2009). The plan was developed based on inputs from Inuvialuit co-management organizations (i.e., the Fisheries Joint Management Committee), territorial governments (the Yukon Government and the Government of the Northwest Territories) and federal departments (led by DFO), industry, academia, non-government organizations, and local communities. The plan envisioned the future of the Beaufort Sea as an area with healthy ecosystems that can support sustainable communities and economies for the benefit of current and future generations (BSP, 2009). Marine traffic was identified as a contributor to the sustainable economic development of this region, but it was also recognized to have the potential to impact the marine ecosystem as well as Inuvialuit traditional practices and livelihoods (BSP, 2009). Thus, BSIMPI included provisions to develop means to track and report regional marine traffic and provide communication platforms with cruise ship operators (BSP, 2009). Furthermore, BSIMPI aimed to enforce Arctic shipping pollution prevention regulations through coordinated surveillance monitoring (BSP, 2009).

However, BSIMPI's implementation and enforcement faced challenges. Regarding marine shipping management, it has been noted that the IOMP tried to tackle too many issues (such as enhancing surveillance, preventing ship-based pollution, and encouraging sustainable development of the shipping industry) with limited funding and capacity (Fidler & Noble, 2013). It has also been noted that there was an absence of legislative frameworks to promote DFO's collaboration among other government departments and agencies such as Transport Canada, the Canadian Coast Guard, Parks Canada and territorial governments (Fidler & Noble, 2013). Overall, BSIMPI has been important in developing integrated frameworks and guidelines for

governing the Beaufort Sea, but it has somehow fallen short to realize effective and holistic management of marine traffic.

5.4.2 Tallurutiup Imanga National Marine Conservation Area

Similar situations of increasing marine traffic have been experienced in the Eastern Arctic (Kochanowicz et al., 2021). Increasing traffic and the inception of other economic activities (e.g., extractive industries, tourism, and fishing) have led to discussions about establishing area-based measures (such as MPAs) to mitigate negative impacts of human activities, including risks associated with shipping in Arctic waters within and adjacent to Nunavut (Griffiths et al., 2011). Since the 1980s, Lancaster Sound, which is the eastern entrance to the NWP, has been considered as an area with great potential for (and need of) marine planning (Dirschl, 1982). The idea of building a national park in Lancaster Sound was initiated in 2009, with the potential to determine shipping lanes and speed requirements (Lajeunesse, 2012).

Lancaster Sound, known to Inuit as Tallurutiup Imanga in Inuktitut, is also of great historical and socio-cultural significance to Inuit. Inuit and their predecessors have been using this region for thousands of years. When sea ice forms, Inuit can travel to hunt polar bears and other marine mammals for several months per year (Aporta, 2009). They often use sea ice as a travel surface to reach harvesting areas, camps, and other communities. Tallurutiup Imanga is also adjacent to Pikialasorsuaq (North Water Polynya), an area of great significance for the ecosystem and for Inuit from the Canadian Arctic and western Greenland (Inuit Circumpolar Council [ICC], n.d.). The governance of Tallurutiup Imanga cannot be done without intensive participation of and communication with Inuit, who have sought protection for this region since the 1970s (Bell,

2017). Efforts finally paid off in 2017 when Parks Canada, the Nunavut government and the Qikiqtani Inuit Association (QIA) jointly created the Tallurutiup Imanga National Marine Conservation Area (TINMCA) (Parks Canada, 2023). The creation of TINMCA supports Inuit subsistence hunting and fishing activities while closely monitoring oil and gas development, mining, and waste disposal in this fragile marine environment (Wong, 2017). As of 2019, an Inuit Impact and Benefit Agreement (IIBA) has been signed and an interim management plan, including a preliminary zoning plan, is being co-developed by the federal government Nunavut government, and the QIA (Parks Canada, 2022).

In the Tallurutiup Imanga, Arctic shipping has increased dramatically in the past three decades (Kochanowicz et al., 2020). However, within the TINMCA, at the time of writing this article, specific measures and policies for Arctic shipping have yet to be developed. Currently, Transport Canada is partnering with Inuit in developing a Joint Arctic Maritime Management initiative, which aims to improve marine navigation in the TINMCA by addressing community concerns on vessel movements and involving Inuit to develop best management practices for cruise ship activity (Parks Canada, 2020).

Meanwhile, co-management boards[15] (NLCA, 1993) are contributing to the governance of marine resources and human activities, including Arctic shipping in different ways. For example, the Nunavut Impact Review Board (NIRB) and the Nunavut Planning Commission (NPC) can manage shipping associated with resource exploitation projects (e.g., mining). One typical example is that in 2015, NPC rejected the Baffinland Iron Mines proposal of extending shipping

[15] Four co-management boards are established as required by the NLCA, including the Nunavut Wildlife Management Board, the Nunavut Impact Review Board, the Nunavut Planning Commission, and the Nunavut Water Board.

operation of ore for ten months a year (Bell, 2015). In its 2021 draft Nunavut Land Use Plan (NPC, 2021), NPC requires marine shipping operations to respect seasonal restrictions and setbacks in ecologically and culturally sensitive marine areas. Furthermore, the Nunavut Marine Council (NMC), which is joint by the four co-management boards, is aiming to become a key voice in representing Inuit in dealing with issues regarding marine spaces, including management of marine shipping operations (NMC, 2018).

5.4.3 Northern Low-Impact Shipping Corridors Initiative

Canada's most recent interdepartmental governance initiative or framework for Arctic shipping is the Northern Low-Impact Shipping Corridors initiative, previously referred to as the Northern Marine Transportation Corridors (NMTC). Compared to other integrated area-based initiatives in the Canadian Arctic (as discussed above), the Corridors initiative is developed specifically to improve Arctic shipping governance through designated corridors based on the historical spatial-temporal patterns of Arctic shipping. Under the Oceans Protection Plan, the Corridors initiative aims to develop a governance framework that can enhance navigation safety, minimize Arctic shipping's influence on wildlife, minimize impacts on culturally and ecologically sensitive areas, and guide future investments and development in Canada's Arctic Archipelago (TC, 2017).

Co-led by Transport Canada, the Canadian Coast Guard, and the Canadian Hydrographic Service (CHS), a set of Corridors (see Figure 7 from Chénier et al., 2017), namely primary, secondary, tertiary, private interest and proposed levels, have been launched to strengthen the safety of Arctic marine navigation (Chénier et al., 2017). These corridors are designed mainly based on historic shipping data derived from Automatic Identification System (AIS) data, aiming to

support vessels' operations through charted and reliable waterways. Having well-charted waterways is very important as Arctic waters in most areas are very poorly charted. According to CHS, only 15.2 percent of Canadian Arctic waters have been surveyed (CHS, 2022). However, most of these charted waterways are "hot spots" that are being used frequently not only by commercial shipping, but also by marine mammals and by Inuit in their critical harvesting practices (Dawson et al., 2020). Thus, designing these corridors may imply redirecting shipping to other marine zones to avoid ecologically and socio-culturally sensitive areas. While these areas are intimately known by Inuit harvesters, they are not accurately charted at present and are less known to mariners, resulting in navigational risks for safety and security. As of now, approximately 42.6 percent of the draft primary and secondary corridors are charted (CHS, 2022). Charting all marine spaces within the Corridors initiative will improve navigational safety but, at the same time, require significant efforts and resources, requiring collaboration among departments and Inuit communities.

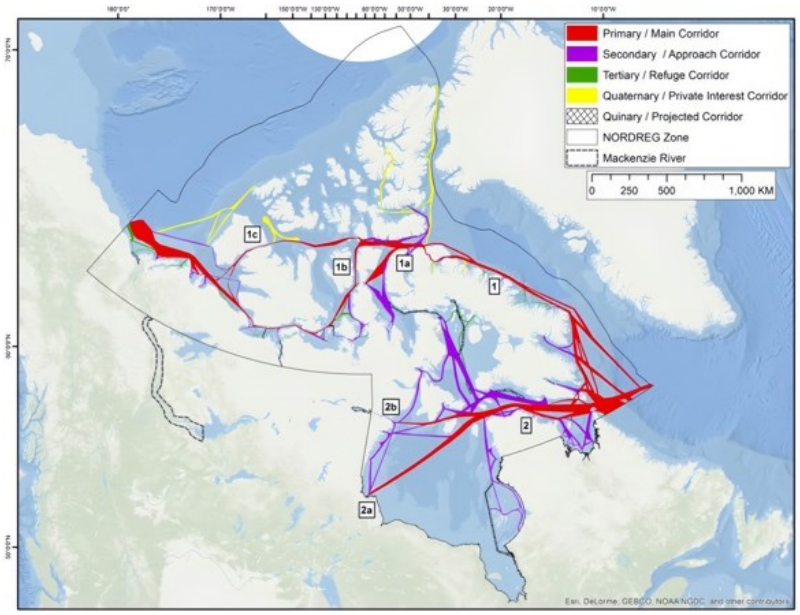

Figure 7: Proposed Arctic shipping corridors

Source: Chénier et al., 2017

Compared to simple route measures (e.g., TSSs), these corridors are designated not only as voluntary, incentive-based shipping routes to mitigate shipping risks, but also as a framework to guide future regulatory, infrastructure and investment decision-making for Arctic shipping (Dawson et al., 2019). These corridors aim not only to facilitate better performance of Arctic marine transportation, but also to enhance the government's role in providing necessary services and surveillance in Arctic waterways (Chénier et al., 2017). Canada's Corridors initiative is also a part of the Arctic Council's pan-Arctic Low-Impact Shipping Corridors project (Protection of the Arctic Marine Environment [PAME], 2021). Under this initiative, Arctic states are developing shipping routes collaboratively to minimize negative impacts of shipping on coastal communities and the marine ecosystem (PAME, 2021).

However, these designed corridors inevitably overlap with areas that are significant to Inuit communities and their traditional practices (Aporta, 2018; Pew Charitable Trusts [PCT], 2016). Lack of Inuit participation when creating the corridors has been highlighted (Porta et al., 2017). To fill this gap, the Arctic Corridors and Northern Voices (ACNV) project was developed to incorporate Inuit observations and opinions into the corridors' design to reflect socio-cultural needs and practices of Inuit, who also are major users of Arctic waterways (Dawson et al., 2020). Seven years after being proposed, the Coast Guard and Transport Canada are leading stakeholder consultations, including engagement with Indigenous Peoples (DFO, 2022). Transport Canada and the Coast Guard are also developing a governance model for the corridors and determining priority areas for future actions (TC, 2020). However, as of December 2022, the governance model or framework has not yet been developed.

5.5 Applying MSP As a Governance Framework for The Corridors Initiative

5.5.1 Recommendations on Future Development of the Corridors

Based on the previous analysis of how the three coasts has managed shipping activities in various ways, this section begins with a discussion of how to further advance the development of the Corridors initiative. This section points out four general aspects to consider and identifies some recommendations for the Corridors initiative, namely 1) combining general governance framework with specific area-based measures, 2) facilitating interdepartmental collaboration, 3) enhancing indigenous engagement by building up community capacity, and 4) integrating other Arctic initiatives.

First, the proposed corridors cover a broad range of marine spaces with diverse contexts, issues, and risks, which may be local or regional in their scope. Thus, it is critical to develop a general and overarching framework with specific guidelines and standards for ships and vessels to travel safely through the corridors. For instance, some area-based measures for Arctic shipping can consider local diversities regarding time and spaces to protect the fragile Arctic environment and coastal communities from negative impacts from shipping (see Table 12). The Corridors initiative should consider adopting these measures to deal with specific shipping risks.

Table 12: Using area-based measures to mitigate specific shipping risks

Measures	**How to deal with shipping risks?**
Seasonal restrictions	Set up restricted-use zones to adopt seasonal restrictions in some areas to reflect and protect Inuit seasonal uses (harvesting and hunting) of certain marine spaces.

Measures	How to deal with shipping risks?
Areas to be Avoided	Set up no-go zones to avoid sensitive areas and mitigate shipping risks on marine mammals, Inuit fishing, hunting and harvesting practices.
Buffer zones	Keep minimum distance from land-fast ice zone or wildlife habitat to reduce shipping risks on marine ecosystems (e.g., DFO's mitigation buffer zone for Atlantic Walrus).

Sources: Dawson et al., 2018; DFO, 2019a

Second, as a comprehensive governance framework, the Corridors initiative should not only focus on navigation safety and security, but also in addressing the significance of protecting the Arctic marine environment and Indigenous Peoples' traditional practices. In this sense, the Corridors initiative can benefit from inter-departmental collaboration with other federal departments, such as DFO, Environment and Climate Change Canada, and Parks Canada. Ideally, DFO can provide important physical and ecological datasets and information to optimize the corridors, particularly regarding biophysical data to protect the marine ecosystem. Adopting area-based measures in the Corridors framework will also benefit from collaboration with DFO, which has extensive experience in area-based planning and integrated ocean management.

Third, the corridors should be designed and governed to better comply with the federal government's fiduciary obligation towards Inuit and responsibility to protect Inuit interests. Currently, Canada has committed to achieve reconciliation through partnership building with Indigenous Peoples. The ACNV project has provided a successful community-based research partnership model to prove how Inuit knowledge and perspectives of shipping risks can inform and optimize corridors on appropriate spatial and temporal scales. However, engaging Inuit merely through consultation or information sessions is not sufficient. According to ACNV

project reports, Inuit communities are requesting more meaningful engagement. Community members in Arviat, Nunavut expressed that they would like to be actively involved in the development and management of corridors on an ongoing basis (Carter et al., 2017). Inuit in Pond Inlet concretely asked what local organizations would engage in and have authority in enforcing rules set up within the corridors (Carter, Dawson, Joyce et al., 2018). These community comments from the reports can represent directions pointing out how the federal government can better build a trust relationship and act in the "best interest" of Inuit when developing and implementing corridors.

Achieving true co-governance arrangements in a cross-cultural setting is not a straightforward task. For instance, Indigenous communities (including Inuit) often lack technical and legal capacity to be involved in the planning and implementation of shipping/marine governance without support from provincial or federal government departments. Therefore, the proposed governance framework for the corridors should emphasize this limitation, build up the capacity of Inuit communities and facilitate meaningful engagement of Inuit.

Fourth and last, the Corridors initiative could be better implemented if clear links are established with other Transport Canada initiatives in the Arctic. Currently under the Oceans Protection Plan, Transport Canada is developing the Proactive Vessel Management (PVM) initiative, the Enhanced Maritime Situational Awareness (EMSA) initiative, Cumulative Effects of Marine Shipping, and their pilot projects in several Inuit communities (e.g., Cambridge Bay, Nunavut) to address community concerns over noise, icebreaking, and potential oil spills (Greenley, 2021). It would be beneficial if data collected for, and policies adopted within, these initiatives can also be shared and integrated in developing and optimizing the corridors. One suitable example is that the PVM has developed area-based measures for its pilot project on the North Pacific coast (TC,

2017). Those area-based measures could be potentially adopted by PVM Arctic pilots first, and then by the Corridors initiative to complement existing marine safety and environmental regulations for Arctic shipping (TC, 2018b).

5.5.2 MSP to Facilitate Decision-making and Inuit Involvement in the Corridors Initiative

Transport Canada and the Coast Guard are leading consultations with Indigenous Peoples and a process of developing a governance model for the Corridors initiative (DFO, 2022). As explained earlier, Canada's previous MSP practices (i.e., ESSIM, PNCIMA and MaPP) demonstrate that marine shipping can be managed within a large-scale MSP framework or through community-based plans. The issue this article will discuss now is whether MSP can be effectively applied as a governance model or framework for shipping corridors.

Thus far, unfortunately, there have not been many studies analyzing the potential application of MSP and the governance of Arctic shipping in the corridors. Limited information can be found referring to the procedures that Transport Canada is now following to develop the corridors. But there is no doubt that the concept of shipping corridors has attracted considerable interest in researching: 1) shipping trends in Nunavut waters (Dawson et al., 2018); 2) creating and placing marine traffic routes (Chénier et al., 2017); and 3) community perspectives on Arctic shipping corridors (Dawson et al., 2020). Perhaps these relevant studies about corridors can shed light on the possible ideas for governance and management models.

In 2016, the Pew Charitable Trusts proposed an Integrated Arctic Corridors Framework as complementary to the NMTC initiative, which is the precursor of the Corridors initiative. The most important outcome of this integrated framework is a roadmap or a five-step approach to build the NMTC through a new management structure, which has a focus on the role of Inuit in creating policies for governing shipping and other uses of Arctic waters (Dawson et al., 2019; PCT, 2016). These steps are designed based on a review of multiple policy frameworks for shipping and have some implications for the future governance of shipping corridors. Compared with the well-known UNESCO step-by-step approach for MSP (Ehler & Douvere, 2009), some similarities between these frameworks can be found (Table 13).

Table 13: Steps in developing MSP framework and Arctic corridors

Step-by-step approach for MSP	**Steps for building Arctic corridors**
1. Identifying need and establishing authority	1. Create Corridors Commission as a permanent management body responsible for planning.
2. Obtaining Financial Support	
3. Organizing the process through Pre-planning	
4. Organizing stakeholder participation[16]	2. Meaningfully engage Inuit.
5. Defining and analyzing existing conditions	3. Integrate science and Inuit knowledge into the development of corridors.
6. Defining and analyzing future conditions	
7. Preparing and Approving the spatial management plan	4. Designate corridors.
8. Implementing and enforcing plans and measures	5. Classify corridors to identify priority in implementation.
9. Monitoring and evaluating performance	
10. Adapting the spatial management process	

Source: Ehler & Douvere, 2009; PCT, 2016

[16] In fact, stakeholder participation is indicated in step 3-10 in MSP, see Ehler and Douvere (2009).

Although Ehler and Douvere proposed ten steps in developing an MSP initiative (Ehler & Douvere, 2009), these steps can be roughly grouped into five themes: 1) pre-planning steps (step 1 to step 3) to establish authority, obtain resources and organize MSP processes; 2) stakeholder participation throughout almost the entire planning processes (step 3 to step 10); 3) spatial analysis based on different types of knowledge (step 5 and step 6); 4) creating spatial plans (step 7); and 5) plan implementation, monitoring and adaptation (step 8 to step 10). These steps share some of the critical aspects of effective decision-making in integrated ocean governance regimes that have been explored in the literature, including 1) distribution of power among institutional actors; 2) Indigenous participation, 3) knowledge co-production, 4) strategic, area-based planning and tools used to support decision-making, and 5) plan implementation, monitoring, evaluation, and adaptation (Chircop & Hildebrand, 2006). These five characteristics will be discussed in an effort to support this chapter's contention that MSP can improve decision-making and Inuit involvement in Arctic shipping governance within corridors.

Aspect 1: MSP to Facilitate Interdepartmental and Cross-jurisdictional Collaboration

Marine activities have been traditionally governed by sector-based laws and regulations, but shipping is a constitutional mandate shared by Transport Canada and DFO under the section 91 of the *Constitution Act* (1982), the *Oceans Act* (1996) and the *Canada Shipping Act* (2001). Transport Canada and the Coast Guard also share a mandate in traffic management services, which involves adopting and implementing area-based measures. Thus, shipping governance in Canada is gradually shifting from being managed solely by national maritime authorities (e.g., Transport Canada) to being collaboratively governed through integrated approaches involving different departments and sectors (Chircop, forthcoming). By using the Corridors initiative as an

example, multiple levels of government and authorities share some mandates and can play different roles in Arctic shipping governance (see Table 14).

Table 14: Multiple levels of government and their roles in the Corridors initiative

Levels	Governments/authorities	Role description
Federal	Transport Canada	Develop and enforce maritime laws, regulations and policies, and oversee the governance of Artic shipping.
	Fisheries and Oceans Canada	Oversee fisheries activities and create policies and measures that can influence Arctic shipping for the purposes of marine environmental conservation.
	Canadian Coast Guard	Provide key services to ensure sovereignty, safety, security in and sustainable development of Arctic waterways.
	Canadian Hydrographic Service	Provide hydrographic surveys to chart Arctic waterways and support safe navigation.
	Parks Canada	Create policies for Arctic cruise ship tourism and guide shipping within the TINMCA.
Territorial	Territorial governments	The Government of Nunavut and co-management boards can develop policies to influence shipping associated with project development and products transportation (e.g., mining).
Local	Inuit representative organizations (i.e., QIA)	Provide Inuit knowledge and observations to guide Arctic traffic to avoid ecological and socio-culturally sensitive areas to protect the marine environment and Inuit interests.

Sources: CCG, 2019; CHS, 2022; DFO, 2019b; TC, 2014

In reality, these departments have their own mandates, presenting challenges to achieve inclusive collaboration. In this context, it seems that having a comprehensive plan for shipping is a reasonable goal, but governance structures often remain fragmented in general. In the Canadian Arctic, maritime shipping is under federal jurisdiction, regulated by federal maritime laws and regulations. The Government of Nunavut does not have jurisdiction over ships traveling through Nunavut waters (Bishop et al., 2022), not to mention Inuit rights in marine spaces and in

governing marine traffic. These are real challenges for the development and implementation of the Corridors initiative.

MSP is a framework that can support interdepartmental integration and facilitate complementarity among different sectors and jurisdictions in Arctic shipping governance. It is understood that DFO is the lead department as mandated under the Oceans Act to initiate area-based measures, such as MSP. However, this does not mean that Transport Canada and other departments would not play a role in MSP. For instance, through a potential joint partnership of Transport Canada, Fisheries and Oceans Canada including the Coast Guard and the Canadian Hydrographic Service, Transport Canada can be assigned clear responsibilities and an active role for data collection, assessing shipping risks for marine traffic and informing decision-making. Transport Canada can also assist the Hydrographic Service's responsibility regarding charting corridors and provide guidelines for mariners. In this sense, MSP does not replace sector-based management (Ehler & Douvere, 2009). Instead, it provides a better platform for implementation of the whole-of-government approach, which encourages different governments, departments, and authorities to work across their own jurisdictions in pursuing a shared goal in managing Arctic marine traffic.

Aspect 2: MSP to Enhance Inuit Involvement

As supported by the Oceans Protection Plan, Inuit have played some important roles in support of Arctic shipping, such as rangers, first search and rescue (SAR) responders, and pollution responders. Inuit would like to be more involved in developing and governing the use of shipping corridors, as part of exercising their decision-making right. For instance, through the

ACNV project, Inuit community members applied Inuit Qauijimajatuqangit (Inuit knowledge) to identify areas that need more charting, buffer zones for MPAs, no-go zones, essential travel zones, and restricted-use zones to optimize the corridors (Carter, Dawson, Parker, Cary et al., 2018). In fact, Inuit are not satisfied with only being the government's partner in refining the position of corridors near their communities. The community would also like to be better informed about the development and future uses of the corridors. The Cambridge Bay community and local organizations would like to communicate with government and industry partners about ships' schedules, locations, and routes (Carter, Dawson, Knopp et al., 2018). Overall, Inuit are looking forward to becoming the governments' co-partner in making decisions for governing the corridors. As indicated in the Pew framework, to support meaningful Inuit engagement in governing the corridors, the first step is to establish a Corridors Commission as a permanent planning and management body, co-created and co-chaired by Inuit (or Inuit land claims organizations), federal government departments and territorial governments (PCT, 2016). Unfortunately, the Pew framework did not further elaborate who and how this Inuit co-chair will be appointed and by who. There is yet to be an engagement framework for Inuit to get involved in governing the corridors.

But on the other hand, MSP has the strength to enhance Inuit engagement in the Corridors initiative. Compared to the traditional "top-down" and command-and-control decision-making framework, MSP supports a networked governance strategy that can bring in all interests, combine all types of information and allow all rights holders and stakeholders to become key actors in making decisions for organizing, planning, implementation and evaluation (Flannery et al., 2018). Indigenous Peoples are considered as critical actors in MSP as they will be affected, positively or negatively. MSP can support ongoing stakeholder and rights holder participation

throughout the different stages of planning and implementation processes (Ehler & Douvere, 2009). A variety of participation approaches and mechanisms can be applied in MSP (see box 19 in Ehler & Douvere, 2009), providing opportunities to involve Indigenous Peoples in an appropriate way. If MSP can be applied as a framework for the Corridors initiative, MSP's ongoing stakeholder participation and consultation process, as well as data analysis tools, can facilitate meaningful Inuit engagement in developing and governing the corridors.

In Canada's Arctic, MSP has the potential to facilitate Canada's commitment to the implementation of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP, 2007; GoC, 2021). It can also help Canada comply with the legal implications of the Truth and Reconciliation Commission's 94 Call for Action (Truth and Reconciliation Commission of Canada [TRC], 2015), in terms of enhancing meaningful Inuit involvement in the Corridors initiative. The comprehensive and holistic nature of MSP can be an enhancement for Inuit to deal with the consequences (positive and negative) of shipping in a way that is not fragmented from other government initiatives. This makes sense because, for Inuit, Arctic shipping is not an isolated activity, but it is connected to other activities and other aspects of life.

While it is impossible to have Inuit engaged in all aspects of shipping, especially when it comes to logistics and market-oriented traffic, Arctic shipping operations in the corridors can be better governed if Inuit values and perspectives are taken into account, potentially resulting in better decisions to improve shipping navigation and operations. For instance, Inuit observations and knowledge can identify critical seasonal changes, sea ice processes, and environmental connections that can help decrease or avoid shipping-related risk in sensitive areas. Through timely and ongoing interaction with Inuit observations, the corridors could also include area-based measures to mitigate shipping risks on the marine environment and reduce disruptions in

Inuit subsistence practices. In essence, through a well-designed MSP framework, time- and place-sensitive Inuit knowledge and observations could be incorporated into shipping governance throughout the pre-planning, planning and implementation processes.

In the pre-planning step of the corridors, Inuit and Inuit organizations could participate as part of the planning authorities, providing insights, information, and guidelines to ensure that planning objectives would be consistent with Inuit ontologies and cultural values. A similar process is already in place in the ongoing consultation stage of the corridors. For instance, with help from government partners, Inuit should be able to develop a detailed, refined, and community-based plan on how and when to use corridors to reduce interruptions with local subsistence practices. Multiple spatial analytical tools can be used to incorporate scientific information, real-time data, Inuit knowledge and local perspectives on issues that are connected (Ehler & Douvere, 2009). A comprehensive MSP framework would allow for connections between shipping and other aspects of marine governance, which would facilitate Inuit engagement and align with their more holistic understandings of the relationships between the environment and people.

More concretely, Inuit participation can also contribute to decision-making for ship operations at the community level. The Corridors framework can be better implemented and monitored when aligned with the NORDREG reporting system. Communities have expressed their need to receive information and warnings as to better prepare for and respond to SAR and pollution scenarios. While the CCG make operational decisions for ships within the NORDREG zone, communities would also like that shipping operators (especially for cruise ships and ice-breaking ships) could be required to contact local authorities to obtain permits before coming close to their community waters (Carter, Dawson, Parker, Joyce et al., 2018). However, as expressed in multiple ACNV community reports, Inuit communities are aware of their limited decision-

making capacity for, and experiences in, managing non-Inuit marine traffic. MSP could create the conditions for better integration among federal departments, industry partners and Inuit communities to accommodate Inuit needs and priorities in governing ships within the corridors.

As part of the post-planning stage of MSP implementation, public hearings and community meetings are required, which in this case would allow Inuit to provide feedback, comments, and meaningful and actionable information for further development of the corridors. Different levels of consultation and engagement of Inuit will be necessary, from community and regional levels to territorial and even federal levels. In this sense, a comprehensive MSP framework will be capable to help Inuit identify their priorities and provide recommendations about how they want ships to move through their waters. This meaningful involvement of Inuit is very critical to the development of corridors and the governance of marine uses within the corridors, in terms of filling knowledge gaps, incorporating Inuit knowledge, building consensus, and promoting trade-offs in decision-making.

Aspect 3: MSP to Encourage Knowledge Co-production

The designated corridors have some inevitable overlaps with Inuit traditional hunting and fishing grounds (such as the Hudson Strait and the Tallurutiup Imanga), leading to concerns about Inuit food security and travel safety (particularly on sea ice). The cause of this problem is that the Corridors initiative is predominantly based on historic AIS data of commercial shipping operations (Chénier et al., 2017), with insufficient consideration being given to areas that are socio-culturally significant to Inuit communities (PCT, 2016). The Pew's framework suggested collating all data (especially Indigenous socio-cultural data) into a single maritime atlas to

identify planning gaps (PCT, 2016). This is one way to achieve better decision-making within the corridors through knowledge and data co-production of all available information from scientific research and Inuit knowledge (Kourantidou, Hoover & Bailey, 2020). However, achieving true knowledge co-production is challenging as Inuit knowledge is context-based and needs to be applied appropriately to avoid decontextualization in developing the corridors.

Inuit knowledge is place-, experience- and context-based, varying from different Inuit hunters and communities. In practice, different Inuit communities may have different perspectives regarding shipping regulations, policies and measures in different regions and time (seasons). Thus, the truth that Inuit cannot be easily represented by one uniform voice is presenting challenges to shipping governance.

MSP can enable a more robust co-production of knowledge system among multiple interests and stakeholders to support data collection, analysis and consider spatial and temporal varieties (Páez et al., 2020). First, collecting comprehensive datasets is a foundation of MSP. Developing an MSP initiative requires spatial and temporal information about the marine ecosystem, oceanographic environments, and human activities in marine spaces (Ehler & Douvere, 2009). In the case of the corridors, collecting and analyzing these data should not only rely on scientific research, but also include real contributions from Inuit knowledge holders. Knowledge co-production of science and Inuit knowledge is expected when refining the corridors and when developing spatial and temporal measures for Arctic shipping. MSP's ongoing participation mechanism can provide a platform through which multiple stakeholders and rights holders can interact with each other, apply both science and Indigenous knowledge, and achieve knowledge co-production (Páez et al., 2020).

As described above, the ACNV project is in the process of co-producing knowledge to inform the placement and management of the corridors. Through the ACNV project, Inuit community members were able to identify areas that are significant to wildlife and Inuit traditional activities and to provide their observations and predictions about impacts brought by Arctic marine shipping activities (Carter et al., 2019). Many challenges remain for applying Inuit context-based knowledge for shipping governance, but MSP can offer the space, processes and tools to deal with those challenges.

Conceptually, MSP aligns with Inuit holistic ontologies because of its comprehensive focus that accounts for the interconnectedness between processes and actors in the natural environment, including humans, animals, ecosystems, geographic features, and seasonal changes, etc. (Ntona & Morgera, 2018). Through a holistic MSP framework, Inuit knowledge can be applied in a holistic way that could account for local contexts of Inuit knowledge. Practically, MSP can support the application of an interactive approach to encourage mutual learning between Inuit knowledge and science in mitigating shipping risks within the corridors. In the spirit of reconciliation, when developing the corridors, science should not be the only source of information for marine planning and decision-making, as Inuit knowledge should also play a significant part in co-defining shipping risks and their socio-cultural impacts.

Within an MSP framework, Inuit knowledge can be combined with shipping data, oceanographic and biophysical data, to set up further regulations and restrictions for safe marine shipping operations and to identify areas that need more charting and investigation within the corridors. MSP's spatial data analysis tools and systems (see more information in Aspect 4) can consider Inuit ontologies as well as the seasonal nature of Inuit interactions with their environments and, ultimately, incorporate them in spatial planning (Aporta et al., 2020). Applying MSP to support

Inuit knowledge and science co-production in shipping can further contribute to Canada's action to implement Article 31 of UNDRIP (2007) regarding the state's obligations to recognize, protect and develop Indigenous knowledge.

Aspect 4: MSP to Support Data Collection and Spatial Analysis

The Corridors initiative is renowned for its strengths to accommodate different interests in a holistic way (PCT, 2016). However, the designated five-level corridors have not excluded environmentally and socially sensitive areas (Chénier et al., 2017). Consequently, the preliminary corridors comprise key passages that not only have relatively higher concentrations of marine traffic, but that are also significant to Inuit (socially, culturally, ecologically, and historically). Furthermore, data on Arctic fishing, which is the fastest-growing type of human activity in the Canadian Arctic, has yet to be incorporated in designing the corridors. These issues reflect the need of collecting and applying sufficient and good data in spatial analysis to optimize the corridors.

MSP can facilitate the designation of corridors in terms of data collection and analysis by providing a platform to incorporate different types of knowledge and data through decision-support tools (Aporta et al., 2020). A good MSP process requires good data (i.e., high quality and regularly updated data) to facilitate analyses of risk assessment, zoning, risk prevention and to inform decision-making. If developed through an MSP framework, the corridors' design can incorporate all possible data, including biophysical data, oceanographic data about the Arctic navigation environment, shipping data (spatial and temporal patterns in Arctic waterways), etc., as well as Inuit input, observations, and seasonal variables in harvesting and travel activities.

MSP's step-by-step approach highlights the application of geodatabases and software (e.g., ArcGIS) to interpret and visualize data and create multi-purpose marine datasets (Ehler & Douvere, 2009). In other words, MSP can also be considered as hosting a toolkit that contains interactive tools for mapping, zoning, data management, decision-support, risk assessment and mitigation (Ehler & Douvere, 2009). These tools are effective in supporting data analyses at different spatial and temporal scales to incorporate area-based and seasonal dynamics of Inuit knowledge and land/marine use patterns into the processes of developing the corridors (Aporta et al., 2020).

The MaPP framework has demonstrated how MSP's spatial analytical and planning tools and software can improve data collection and spatial analysis in shipping governance. For example, MaPP has integrated First Nations' knowledge and scientific outputs from the highly specialized and quantitative Marxan into a web-based planning tool, SeaSketch, in order to document and illustrate First Nations' cultural sites, spatial and temporal patterns of marine use and inform better planning (Aporta et al., 2020; SeaSketch, 2022). Based on these successful experiences, an MSP framework can also benefit the Corridors initiative from two aspects: 1) reviewing existing data, collecting new data and applying different types of knowledge to deliver spatial plans and route systems that will reduce conflicts among shipping and Inuit practices, and 2) providing a user-friendly platform with tools that support stakeholders and rights holders to conduct interactive mapping, spatial analysis and data retrieval.

Aspect 5: MSP to Facilitate Corridor Implementation on Different Scales

The designated shipping corridors cover a broad geospatial scope, increasing the overall complexity for implementation. Previous analysis of Canada's LOMAs (i.e., ESSIM and BSIMPI) has revealed that it is challenging to address all issues within comprehensive planning initiatives, such as corridors. Similarly, it is critical to have adequate capacity, including infrastructure, equipment, resources, to implement the Corridors initiative (PAME, 2021). Effective implementation of the Corridors initiative should be able to identify priorities and assign appropriate resources to areas with high risks and socio-cultural significance (PCT, 2016). Meanwhile, the Corridors initiative could be better implemented in collaboration with other ongoing initiatives in Nunavut, such as the TINMCA and TC's PVM pilot projects, and existing area-based measures (i.e., MPAs) and reporting systems. Last, but not least, as Canada's Arctic is experiencing more intensified changes under the impacts of climate change, it is also necessary to monitor, evaluate and adjust the corridors after implementation (PCT, 2016).

Theoretically, MSP is a framework that can take spatial and temporal patterns into consideration and develop corresponding measures to deal with shipping risks. The iterative and adaptive approach of MSP, if well-designed, can develop different plans according to various spatial and temporal scales, or local variations (Douvere, 2008). MSP can not only provide a general and overarching framework, but also develop clear rules and standards that could be tailored for specific local or regional realities. This is particularly important to implement the Corridors initiative. The outcome of an MSP initiative for shipping could be a general planning framework, providing overarching guidelines and minimum standards for shipping operations. At the same time, MSP can involve some specific area-based measures and routing systems for shipping operations to account for local variations and communities' needs. For example, within a large-

scale MSP framework for the corridors, some ATBAs and speed restrictions can be established to protect marine mammals. According to Inuit seasonal movement and harvesting cycles, seasonal restrictions and minimum distances (buffer zones) to Inuit communities can be set up to protect the integrity of sea ice attached to the land and enhance safety of Inuit hunting and traveling on sea ice (NPC, 2021). It should be noted that the characteristics, extents and dynamics of sea ice vary widely from region to region (Aporta & Watt, 2020). These dynamics should and could be considered in developing and using corridors through an MSP framework.

MSP can potentially become a platform to address interconnectedness between and encourage possible collaborations among ocean planning and shipping governance initiatives (e.g., TINMCA and PVM pilot project) within the same spatial scope of the Arctic corridors. Future research could explore what resources are needed to support this kind of integration. This article proposes that these initiatives could possibly benefit from each other, especially in matters regarding the collection of Inuit traditional marine uses, the interpretation and incorporation of Inuit knowledge. Above all, these initiatives can improve processes and frameworks that materialize and improve reconciliation and partnership-building.

MSP recognizes that planning is not a linear process. The proposed ten steps for developing MSP include many feedback loops to evaluate MSP performance and outcomes, contributing to further adaptation and redesign (Ehler & Douvere, 2009). There are several sub-tasks, criteria and objectives in evaluating, monitoring and adapting an MSP framework. Reflections and research will eventually lead to the next round of improved future MSP initiatives (Ehler & Douvere, 2009). Currently, the Corridors initiative remains in conceptual stages of development and consultation with relatively limited implementation. It is still too early to discuss post-implementation monitoring and adaptation. However, with the fast-changing Arctic environment,

no corridors or spatial plans can fit all needs. Applying an MSP framework for the corridors means that timely evaluation and monitoring are part of the planning processes, making the corridors better adapt to future natural and socio-political Arctic environments.

5.6 Conclusion

This chapter focused on analysis and recommendations for shipping governance within the proposed Arctic corridors. This comprehensive federal initiative aims to guide the fast-growing Arctic shipping industry and balance diverse interests in using Arctic waterways. Thus far, this is the first time that Canada has developed such a large-scale and comprehensive planning initiative for Arctic shipping. Under the Oceans Protection Plan, Transport Canada and the Coast Guard are leading consultations with Indigenous Peoples to find a model to better govern the corridors. This governance model or framework should be able to provide additional value to Canada's Arctic shipping governance, in terms of supporting interdepartmental and cross-jurisdictional collaboration, meaningfully involving Inuit and applying Inuit knowledge in a culturally appropriate way.

The findings of this study demonstrate that Canada has adopted both comprehensive planning initiatives (e.g., LOMAs) and specific area-based measures (e.g., TSS) to manage marine traffic to different extents. However, insufficient resources and lack of involvement of Transport Canada in ESSIM and PNCIMA made these initiatives significantly decrease their effectiveness on the governance of marine traffic in an integrated way. The MaPP project, on the other hand, provides a community-based and First Nations co-leadership MSP model, which includes measures for shipping in waters near community waters.

This chapter concluded that MSP could provide support to an integrated ocean governance regime including shipping in context with other activities and environments that need to be governed in Canada's Arctic. MSP is neither a framework only for marine environmental conservation, nor a collection of area-based measures. In practice, MSP can somewhat compensate for limitations of existing comprehensive ocean plans in the Canadian Arctic (i.e., the BSIMPI and TINMCA), and it could connect existing area-based ship route systems in a meaningful and efficient way.

MSP can facilitate better decision-making for supporting cross-sectoral and cross-cultural collaboration, refining the placement of shipping corridors, enhancing Inuit engagement, and connecting shipping to other areas of marine governance. This chapter focused on five aspects of effective ocean governance and explained that the Corridors initiative provides an opportunity to apply MSP as a holistic and appropriate framework for Arctic shipping governance in Canada. Eventually, MSP can contribute to Canada's integrated governance of the Arctic Ocean and become a platform for enhancing co-management and co-governance with Inuit.

In the near future, it is expected that the socio-political background for governing marine traffic in Canada's Arctic will change with the continued implementation of the mandates of the Oceans Protection Plan, the Blue Economy Strategy (BES) (DFO, 2023), and the UNDRIP Act. These changes are highlighting the need to achieve sustainable development of ocean industries, including shipping, fisheries and natural resource development through a process of reconciliation. Additional research is also necessary to rethink Arctic shipping governance beyond area-based planning or the placement of corridors. Potential research interests include rethinking Arctic shipping from a decolonization lens, considering Inuit's perspectives in identifying shipping risks, and their role as rights holders in making operational decisions for

Arctic shipping at least within their traditionally occupied sea and sea ice. Eventually, Canada's changing socio-political context will provide opportunities for applying MSP as a framework or a tool to support interdepartmental integration, encourage data sharing, meaningfully involve Inuit, and enhance cross-cultural governance in governing Arctic marine traffic.

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Chapter 6 Conclusion

This dissertation explored shipping development in the Canadian Arctic and analyzed how Marine Spatial Planning (MSP), as an area-based management tool, can be employed to manage Arctic shipping in light of indigenous rights and Inuit perspectives, thereby strengthening the collaborative governance of Arctic shipping activities. This thesis presented an overview of the history of marine shipping in the Canadian Arctic and provided an extensive analysis of maritime laws, policies and measures involved in the governance of Arctic marine traffic. It examined the impacts of Arctic shipping on Inuit communities and highlighted the need for a paradigm shift in shipping governance to involve Inuit in a meaningful way. Among the various approaches and frameworks to govern shipping activities, this thesis focused on the application of area-based management tools and spatial planning frameworks and analyzed how MSP can be applied as an appropriate framework to mitigate shipping risks, facilitate better decision-making, and respect and support the exercise of Inuit rights in Canada's Arctic shipping governance.

6.1 Summary of key findings

This section summarizes the key findings from the previous chapters and illustrates how each chapter responded to the sub-research questions.

Sub-research question 1 (Chapter 2): How have multiple actors and different types of activities influenced governance objectives of shipping in the Canadian Arctic?

The rationale for answering this question was to present an in-depth exploration of past and contemporary Arctic shipping governance issues by examining the historical context of Arctic

shipping development. Therefore, Chapter 2 presented a historical overview of the key actors and events that promoted or prompted the development of Arctic shipping activities. Since different actors were associated with different interests and motivations, it was shown that the Canadian government developed different maritime regulations/policies to respond to the given realities (at any given time) of multiple marine users and activities and to achieve objectives that were aligned with those particular actors and activities.

Two general conclusions can be drawn from these findings. First, the Inuit were always key players throughout the long history of Arctic shipping, even when their critical role as stakeholder had been frequently ignored. For instance, Inuit provided navigational advice to European explorers and whalers and participated in activities that made possible the development of Arctic shipping (e.g., whaling and fur trade). In the present context, Inuit are demanding greater recognition and proper involvement in shipping governance as "rights holders."

Second, Chapter 2 pointed out that the Arctic shipping governance regime has become more dynamic and complex over the years, to the point that a more collaborative and dynamic governance framework is needed. This chapter indicated that this framework should consider: 1) improving interdepartmental collaboration; 2) facilitating meaningful involvement of Indigenous Peoples; 3) adopting area-based tools and planning frameworks for shipping governance; and 4) combining unilateral and multilateral policies and laws for Arctic shipping. This chapter provided a historical contextual analysis to answer the main research question. The analysis in this chapter showed that Canada's management of Arctic shipping has evolved with the changing historical context. Arctic shipping governance is in the process of adapting to the current political, economic and socio-cultural environments, where Indigenous rights are being recognized more explicitly in Canada as part of a reconciliation process.

Sub-question 2 (Chapter 3): How did specific political and historical contexts influence the enactment of certain maritime regulations in Canada and what are the identifiable trends in the development of legal and political instruments for shipping governance?

These research questions were answered through a legal review and a policy analysis of Canada's maritime laws for and political instruments affecting the governance of Arctic shipping activities. The results demonstrated that different historical backgrounds had led the Canadian government to enact certain regulations and policies to enhance the governance of Arctic shipping. Chapter 3 showed that there is a general trend in the development of regulations and policies for governing the sovereignty, safety and security issues for the Canadian Arctic generally and for Arctic shipping particularly. This trend can be summarized as a paradigm shift from a government control model to a collaborative, stewardship model, which should include international cooperation, interdepartmental collaboration, and indigenous engagement. This chapter also argued that area-based management and spatial planning frameworks are approaches that can generate a collaborative and comprehensive framework for implementing this stewardship-oriented governance.

Sub-question 3 (Chapter 4): How will Inuit rights, as articulated in the UNDRIP, affect and guide the governance of the Northern Low-Impact Shipping Corridors initiative?

Chapter 2 and Chapter 3 underlined the need to improve the governance of Arctic shipping activities by incorporating Inuit perspectives. Both chapters explained the question of why Inuit should be engaged in Arctic shipping governance. Taking this argument further, Chapter 4 summarized previous studies about the effects of shipping on Inuit communities and analyzed

the potential implications of including Inuit rights (as delineated by UNDRIP) in Arctic shipping governance.

This research question was answered in Chapter 4 through two steps. First, a review of Indigenous rights as described by the *United Nations Declaration on the Rights of Indigenous Peoples* [UNDRIP]) was done to identify the articles of the declaration that are relevant to Arctic shipping governance. This review showed that Arctic shipping governance, today, is partially guided by the Canadian government's obligation to involve indigenous groups as rights holders. Second, Chapter 4 used the Northern Low Impact Shipping Corridors initiative (the Corridors initiative) as a case study to analyze this process of recognition of, and alignment with, Indigenous rights in the context of the most relevant governance development in Arctic shipping in Canada (i.e., the Corridors). These rights include recognition of Inuit stewardship over marine areas, rights to protect marine environment, to give Free, Prior and Informed Consent, and to engage in decision-making. The chapter further proposed that integrating Inuit knowledge of their lands, oceans and sea ice could effectively optimize and inform better decision-making for shipping governance. Chapter 4 also pointed out that there is a need for capacity building of Inuit communities so that they can be equal partners in a co-governance arrangement and be empowered in the decision-making process.

Sub-question 4 (Chapter 5): How can Canada's experiences in integrated spatial planning and area-based management inform shipping governance in the Canadian Arctic through a marine spatial planning framework?

The previous chapters set the conceptual foundation for Chapter 5, enabling it to analyze and discuss the practical challenges and opportunities for strengthening Arctic shipping governance

through the application of area-based management approaches and spatial planning frameworks. Chapter 5 was organized to answer the research question through a critical review of Canada's area-based management tools and spatial planning frameworks for shipping activities from Canada's three coasts. Chapter 5 concluded that these area-based measures and approaches have many advantages for enabling the governing of marine traffic in an integrated way, which can facilitate a more comprehensive government response (through coordination between different departments) and enhance engagement with other stakeholders, and in particular with Indigenous Peoples. By using the Corridors initiative as a study case, Chapter 5 suggested that Marine Spatial Planning (MSP), if properly designed and established, could be adopted as an appropriate governance framework and contribute to the governance of the Corridors initiative in alignment with the recognition of Indigenous rights.

6.2 Contribution and Limitations

Contribution

The main contribution of this thesis is to have established clear links between historical contexts and events and the developments of Arctic shipping governance trends in Canada. In particular, this thesis identifies the recognition of Indigenous rights, and the obligation Canada is assuming in the process of reconciliation with Indigenous Peoples, as significant contemporary drivers for governance trends today. Furthermore, this thesis has proposed that such context is an opportunity for creating forward-thinking governance models that are not only effective for the management of shipping but that also improve conditions and rights for Indigenous Peoples. To

that effect, this thesis suggests that UNDRIP articles should inform the design of a marine spatial planning approach as the most promising way forward.

This thesis provides a systematic overview and timely reflection of the evolution of Canadian legal and policy instruments for Arctic and marine shipping activities. Currently, the context for Arctic shipping governance is evolving rapidly as the effects of climate change are intensifying. Canada's legal system and institutional arrangements for shipping governance need to adapt to these changes. Therefore, a timely review of policies and laws can provide a better understanding of these historical changes and offer a more solid base to envision and inform *future* maritime policy and regulation development, as well as to facilitate better decision-making. This research provided some ideas regarding the design of a collaborative stewardship model for Arctic shipping governance, and directions for developing future policies and strategies for shipping in the Canadian Arctic.

With Canada's commitment to implementing the UNDRIP, respect for indigenous rights is a new condition for developing Arctic shipping governance policies and initiatives, which include the Corridors initiative. This research re-emphasizes the need for respecting the several inherent indigenous rights that Inuit have, as well as their views, and elaborates on the meaning and potential implications of several UNDRIP articles in Arctic shipping governance, and more concretely in the development of governance models for the Corridors. This research also identifies potential frameworks and approaches to meaningfully engage Inuit communities in the Corridors initiative and suggests policy directions and recommendations for the development of a governance framework for the Corridors initiative.

Finally, this study made a clear case for the application and development of area-based management tools in Arctic shipping governance. Although several studies have analyzed the advantages and disadvantages of these tools and initiatives in ocean governance, there are relatively few studies that compare and contrast their use and effectiveness on shipping governance, and particularly in the context of Arctic shipping. This study established that area-based approaches implemented on the west and east coasts of Canada can inform Arctic shipping. In particular, the west coast experience can be used as an example of models that have worked in terms of knowledge co-production, indigenous engagement, and comprehensive spatial data analysis.

Limitations

The main limitation of this thesis is the lack of primary data and materials, mostly due to limited time and resources. In the author's opinion, this study could have benefited from three types of primary data. First, it would have been worthwhile to conduct experience-related and in-depth interviews with government employees and gather primary information and materials to understand how the Canadian government will implement the OPP and its initiatives, and what are the plans to enhance cooperation with Inuit in the regime of Arctic shipping governance. Second, it would be beneficial to learn from the perspectives of and expertise from Arctic shipping industry partners on shipping risk mitigation and shipping governance. It is critical to understand industry partners' actions to comply with existing shipping policies and initiatives, their approaches to engage Inuit community members, and what challenges they will encounter in this process. Finally, this research could have benefited from direct communication with Inuit community members to understand their perspectives on and recommendations to Arctic shipping and shipping policies, as well as their views on how Indigenous rights should impact

shipping governance. It is clear that engagement with Inuit through the research process would have resulted in a richer outcome, and particularly regarding the suggestions about Inuit-informed governance approaches and conceptualizations.

The lack of practical interaction with stakeholders and rights holders and the absence of an important piece of qualitative data in this thesis, however, prompted the author to have a deeper engagement with secondary materials that are critically important in the discussion of Arctic shipping governance today. In particular, the desktop reviews of legal, historical and policy documents and literature allowed for the establishment of connections and uncovering past and future trends.

Finally, although this thesis makes some recommendations for policy development, it is unclear, especially when the policies and initiatives for Arctic shipping governance are still in their earlier stages, whether or not these recommendations would be sufficiently in line with the Arctic context. It is the hope of the author, however, that some of the suggestions could be useful in terms of identifying critical trends, and in particular regarding the application of UNDRIP articles to an area-based model.

6.3 Potential for further research

This thesis argues that the Corridors initiative, which is in the stage of consultation, is currently the most likely opportunity to practice the three recommendations proposed in this thesis, namely enhancing inter-governmental collaboration, facilitating indigenous engagement and applying area-based models, to advance Arctic shipping governance. Transport Canada announced its plans for the Corridors initiative during the second phase of the Oceans Protection Plan. TC will

focus on two areas, including delivering a government framework and identifying priority areas for vessels to avoid (TC, 2022). Based on key findings from previous chapters, this section will propose that three aspects should be considered for future research about the development and governance of the Corridors initiative.

Identify priority areas for implementation

At the time of writing, the Corridors initiative was still in its planning and consultation stages. It will take time for the Corridors initiative to get recognition from other Arctic states, intergovernmental organizations, and industry partners. It would be crucial to implement the Corridors initiative in *priority areas* through the development of pilot projects that can be tested and readjusted. Future research on the Corridors initiative could start with analyzing where priority areas for implementation are and how to identify these areas. This thesis suggests that future research can examine areas of socio-cultural significance and interests to Inuit and areas where there are already initiatives in place. For example, Inuit have identified some culturally significant areas through the Arctic Corridors and Northern Voices (ACNV) project. These areas should become priority areas for implementing the Corridors initiative and related policies for mitigating shipping risks. Some Inuit communities have been designated as beneficiaries of federal or community-based shipping governance initiatives. For example, Cambridge Bay (in Nunavut) is hosting one pilot project of the Proactive Vessel Management (PVM) initiative. The Corridors initiative can benefit from the PVM initiative, or other community-based initiatives, as they also use policies and area-based tools to govern marine traffic and share common goals and objectives in mitigating shipping risks, supporting environmental protection, enhancing safety and security, and protecting Inuit well-being. Because of these existing initiatives, some Inuit

communities have more capacity than others to better support the future implementation and governance of the Corridors initiative.

Inuit knowledge and involvement in the Corridors initiative

The Corridors initiative could become an opportunity for implementing the UNDRIP Act, respecting Inuit interests and protecting Inuit rights, especially decision-making rights, in Arctic waters. Despite the theoretical justifications presented in this paper, a policy framework to support Inuit in exercising their own decision-making right in the shipping governance regime is not yet in place. There is, therefore, a need to examine how a governance framework for the Corridors initiative can delegate certain decision-making authority to the Inuit communities or representative groups in future research.

The 2018 amendments to the Canada Shipping Act (CSA) encourage Inuit engagement in shipping governance. Section 10 article (c) provides a reference for the Minister to authorize any local authority or "other entity authorized to act on behalf of an Indigenous group." This means that the Minister can enter into an agreement with an indigenous authority to perform duties and functions. The governance framework of the Corridors initiative should be able to reflect the Article (c) and enable TC to delegate certain authorities to Inuit communities with respect to their interests, such as pollution prevention, environmental protection and maintaining the safety and security of life within the corridors. In this way, Inuit can continue to use their knowledge and local experience and play a major role in emergency response to oil spills, coastal cleanup, and search and rescue at the local/community level.

While Inuit communities would not be able to make operational decisions for mariners due to their relatively limited capacity, Inuit knowledge can be incorporated into shipping governance

through a co-governance arrangement. Knowledge co-production through the use of both scientific and Inuit knowledge has been used as a practical way to inform Arctic shipping governance and optimize the location of shipping corridors. However, Inuit knowledge's role in evidence-based and science-based decision-making processes remains marginalized in Arctic shipping governance. Successful experiences from the Voluntary Protection Zone (VPZ) for shipping in the Haida Gwaii and the Marine Plan Partnership for the North Pacific Coast (MaPP) prove that there are opportunities to incorporate Indigenous knowledge into interactive spatial planning tools. Therefore, it is necessary to further explore Decision Support Systems and spatial data analysis systems that can take into account both Inuit knowledge and scientific knowledge. Future research could focus on examining what approaches and tools can apply Inuit knowledge in an appropriate context when developing and governing shipping corridors.

Appropriate mechanisms or governance frameworks will enable co-governance of Arctic shipping, facilitate meaningful Inuit involvement, and improve Inuit position in decision-making. A model to consider can be the tripartite governance arrangement among First Nations, the Canadian government and industry partners on the North Pacific Coast (as analyzed in the Chapter 5). This successful arrangement for the Haida Gwaii VPZ relies on a long-term tradition of co-governance and years of effective communication and collaboration between the three parties. Developing a tripartite governance arrangement for the Corridors initiative can coordinate the resources and capacity of federal, provincial/territorial governments, industry partners and indigenous authorities, thus achieving collaborative planning in Arctic waters and integrated governance of marine shipping activities.

There are two points about this tripartite framework that deserve further research and study. First, this framework may have the potential to generate the conditions for achieving equality

and mutual accountability at the institutional level between government, industry partners and Inuit. In a context where Inuit communities may still lack the resources and capacity to initiate a co-governance framework, it is therefore worth exploring whether the Corridors initiative can provide an opportunity to develop a reconciliation framework or a reconciliation agreement between government and Inuit. If so, more research can also examine how authority can be delegated at different levels and how to identify the role of Inuit representative organizations and authorities in governing Arctic shipping activities within the corridors. Considering that this tripartite framework on the North Pacific coast has been recognized as an effective framework to involve First Nations in marine spatial planning and shipping governance, if this framework can be applied for Arctic shipping governance, ultimately, the Corridors initiative can be governed in a way that considers indigenous rights and can engage Indigenous Peoples in a respectful way.

6.4 Concluding Remarks

In conclusion, Canada needs to develop maritime laws and policies that can support the sustainable development of the Arctic shipping industry and meaningfully engage Indigenous Peoples. During this process, it is important to understand the context in which maritime shipping activities are governed. This thesis emphasizes the changing context for, and shifting perspectives of, Arctic shipping governance. It also addresses the need to develop an integrated and collaborative stewardship model for Arctic shipping governance, which now involves multiple objectives, such as safety and security, environmental protection, and is challenged by the need to respect indigenous rights. Thus, policy makers, industry partners, and indigenous communities have transformative impacts on how Arctic shipping is governed in a holistic way.

Notably, Canada is embracing its responsibility to govern Arctic shipping, pursue more dynamic strategies, build capacity, and engage Indigenous Peoples under the concept of reconciliation.

The efforts that Canada is dedicating to Arctic marine shipping governance are so critical that they can influence the development of the marine shipping industry in the near future. With retreating sea ice, Canada's Arctic shipping may shift from focusing on small-scale and destinational operations to developing potentially large-scale transoceanic operations. The more work the Canadian government does now, the better it will be able to support this transition and ensure an environmentally friendly, efficient and sustainable future for Canadian Arctic shipping.

Practically, Canada should also adopt a more holistic area-based management and spatial planning framework to deal with shipping risks in this fast-changing marine navigation environment in the Arctic. While challenges remain, Canada already has considerable experience in comprehensive spatial planning and community engagement. Looking to the near future, the Corridors initiative can become an opportunity for Canada to enhance shipping governance within Arctic waterways through knowledge co-production, Inuit engagement and a planning framework including area-based measures and policies to cope with the dynamics and reflect local realities of the Canadian Arctic. Through the implementation of the Corridors initiative, there is likely to be a role for Canada in demonstrating Canadian experiences in Arctic shipping governance at an international level, contributing to the development of international guidelines and policies for Arctic shipping, and sharing best practices for indigenous engagement with other circumpolar states.

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Appendix

Chapter 5 of this thesis will be published in May 2023 by Brill.

Wang, W. (forthcoming). Marine Spatial Planning in Canadian Arctic Shipping Governance: Exploring its Application in the Northern Low-Impact Shipping Corridors Initiative. In A. Chircop, S. Coffen-Smout and M. McConnell (Eds.), *Ocean Yearbook 37* (pp. 361-407). Brill.

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