“It Grows Alone”: Exploring the Implications of Marine Ecotourism Development on Water Insecurity in Bocas del Toro, Panama

By

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ABSTRACT

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As a dimension of a blue economy, marine ecotourism should not only increase economic viability and environmental sustainability but, most importantly, pursue social equity. In island regions, where substantial tourism appeal often coincides with water insecurity, questions have emerged regarding the ability of a blue economy, rooted in marine ecotourism, to balance development and well-being. Using semi-structured interviews, non-participant observations, and supplemental research, this investigation examines this paradox through a case study in Bocas del Toro, Panama, documenting experiences with water shortages and the perceived role of government and industry, examining whether water shortages have influenced regional policies and investment, and exploring management implications regarding Panama's blue economy and marine ecotourism across water insecure island regions. Through exploring Bocas del Toro's economic development, assessing the marine ecotourism and water governance landscape, garnering local experiences with water insecurity, and examining future plans and policies, results highlight the role that marine ecotourism and water insecurity play in shaping local realities and perceptions of development in Bocas del Toro, where there exists a critical disconnect between government aspirations for marine ecotourism and infrastructure development and the needs of those living in the region. A discussion of the theoretical underpinnings of accountability, trust, and development priorities, and an exploration of the role of colonialism and systemic racism, have shown that this case is not strictly a matter of water infrastructure and marine ecotourism, but rather the underlying issues that shape the nature of growth in island regions, as well as who proves to benefit from a blue economy.

Keywords: marine ecotourism; water security; blue economy; island regions; Bocas del Toro; sustainable development

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Chapter 1: Introduction

1.1 Marine Ecotourism

Island regions have long been popular travel destinations; drawing tourists looking to experience and enjoy the marine biodiversity and distinct cultures typical of such areas. Ecotourism, in general, can be described as a responsible form of tourism that is "nature based, environmentally educated, and sustainably managed" (Blamey, 2001, p.6). As such, *marine* ecotourism refers to ecotourism connected to marine and coastal environments (e.g., recreational fishing, snorkelling, whale and seabird watching, SCUBA diving, and visiting marine protected areas).

Marine ecotourism is considered to be a dimension of a 'blue economy'; an ocean-wide sustainable development strategy first proposed by Small Island Developing States (SIDS) as part of the 2012 United Nations Conference on Sustainable Development. As per the World Bank and United Nations Department of Economic and Social Affairs (UN DESA) (2017, p.1), the concept of a blue economy seeks to "promote economic growth, social inclusion, and preservation or improvement of livelihoods while at the same time ensuring environmental sustainability"; involving the decoupling of socioeconomic development across ocean industries from that of environmental and economic prosperity (United Nations Conference on Trade and Development [UNCTAD], 2014). As a dimension of a blue economy, marine ecotourism should, in theory, not only increase economic viability and environmental sustainability but, most importantly, pursue socially equitable outcomes.

While ecotourism differs from mass tourism in that it values environmental conservation and promotes local community interests, when these tenets are not upheld, due to a variety of reasons (e.g., poor management, lack of community involvement, limited enforcement regimes,

etc.), marine ecotourism can lead to unsustainable practices on all fronts—economic, social, and environmental (Hoyman & McCall, 2013; Rahman et al., 2022; Zeng et al., 2022). In small island regions, where marine environments are often the hallmark of local tourism industries and infrastructure development is typically limited, the availability and management of water resources are of particular importance. Thus, investigating the relationship between the two concepts furthers our understanding of how a blue economy in island regions could potentially perpetuate or combat water insecurity.

1.2 Water Security and Tourism

Water is essential to human life, and consequently, both a critical and scarce resource within the tourism industry (UN Water, 2015). Water *security* refers to:

> "the ability of a population to safeguard sustainable access to adequate quantities of water of acceptable quality for the support of livelihoods, human well-being and socio-economic development, to ensure protection against waterborne pollution and water-related disasters, and for the conservation of ecosystems in a climate of peace and political stability" (UN Water, 2013, p.1).

The literature suggests that the average tourist can consume between 84 and 2000 L of water per day (Gössling et al., 2012). While specific numbers regarding the water consumption of marine ecotourists are difficult to discern, general water uses within the industry can include hydration, personal hygiene, culinary needs, and landscaping (Cole, 2012; Cole & Browne, 2015; Gössling, 2001; Gössling et al., 2012; Kent et al., 2002). In island regions, where marine environments and attractions support lucrative ecotourism industries, large volumes of tourists can exacerbate existing water insecurity (Leposa, 2020). One could also argue that marine

ecotourists have additional water requirements, as gear typically used during snorkelling and fishing expeditions on the ocean, for example, must be rinsed with fresh water after use.

Given their relative geographic isolation, island regions are often dependent on groundwater stores and rainwater as sources of fresh water, making them highly vulnerable to climate change impacts (e.g., aquifer depletion, saltwater intrusion, drought, etc.) and seasonal and annual fluctuations in precipitation (United Nations [UN], 2023b). In the Caribbean, these impacts, coupled with the fact that peak tourism season often coincides with 'dry season', perpetuate regional instabilities in water security, where local populations compete for this essential yet scarce resource (Gheuens et al., 2019).

Pervasive in the larger discussion of water insecurity and marine ecotourism in island regions, especially SIDS, are the distinct implications of power disparities at both regional and international scales. Seen across all stages of water governance and distribution, such disparities often have colonial roots whereby, dating back to the 15th century, island states have faced colonial oppression from the United States (US), France, Spain, England, and the Netherlands (Keegan & Diamond, 1987; Leposa, 2020). Today, modern colonization and colonial legacies manifest as limited participation in global markets, foreign resource extraction, dissolving of traditional practices and culture, and national debt, for example (Belmar et al., 2016). More specifically, colonialism can impact water security through the perpetuation of intensive export-oriented agricultural resource extraction, the imposition of high public infrastructure and administration costs, and limitations in institutionalized incentivization of water conservation (Pigram, 2000).

Ultimately, there lies increasing global interest in blue economies and marine ecotourism development in new or existing destinations. Thus, questions have emerged regarding the social

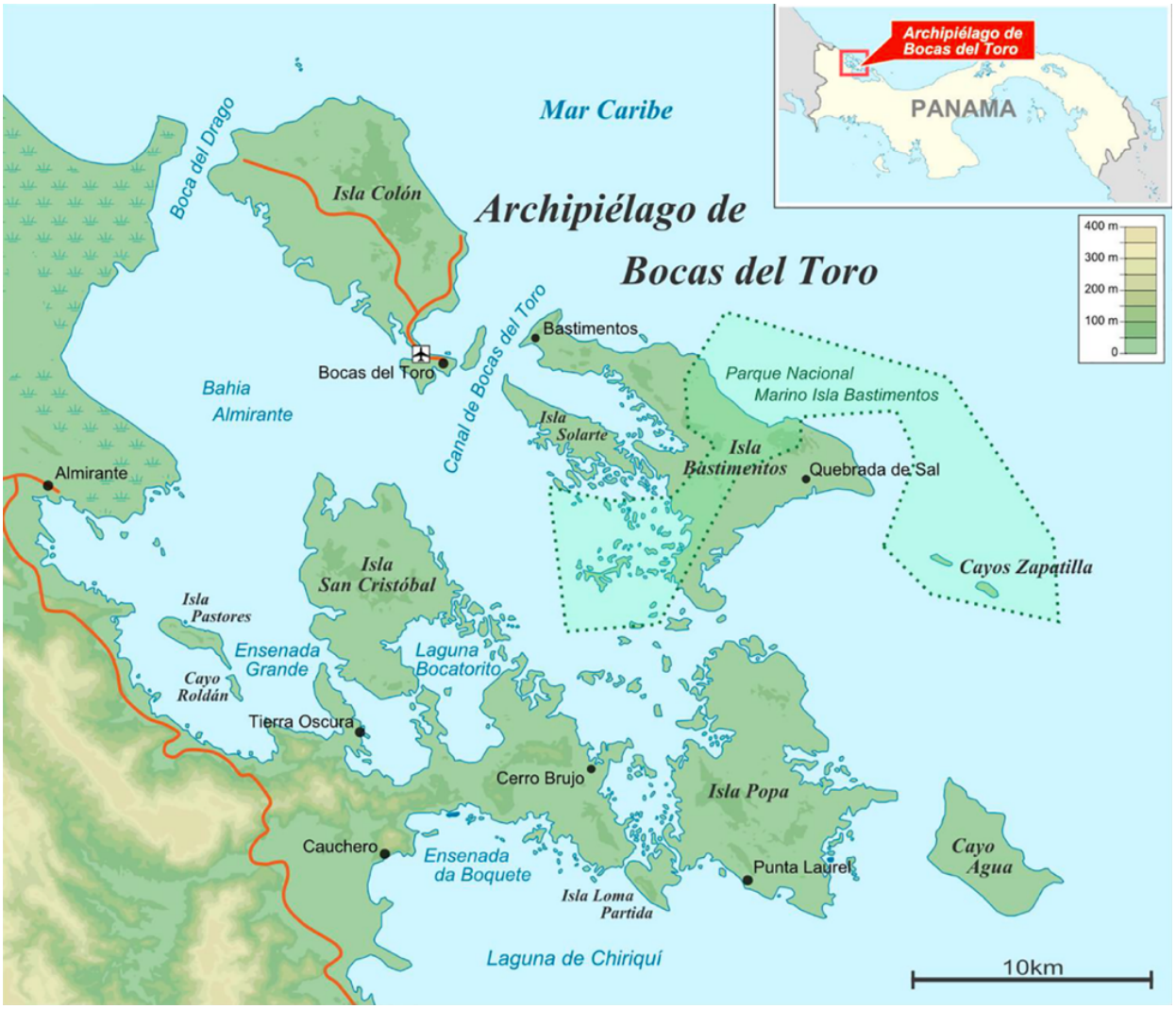
equity implications of balancing development and well-being in island regions, where there is indeed a need to consume resources sustainably.

1.3 Bocas del Toro, Panama

Located off the Caribbean coast of Panama (Figure 1), the Bocas del Toro Archipelago (henceforth referred to as 'Bocas del Toro' or 'the archipelago') is one of Panama's top ecotourism destinations. The archipelago consists of approximately nine islands and 200 islets and is home to a population of approximately 22,500 across the Bocas del Toro *District* (Instituto Nacional de Estadística y Censo [INEC], 2021), including Ngäbe-Buglé (those indigenous to present-day Panama and Costa Rica), Panamanians, Afro-Antilleans, and Chinese individuals (Suman & Spalding, 2018). Moreover, Bocas del Toro's most developed islands have become increasingly inhabited by lifestyle migrants from the US—relatively affluent individuals with the capacity to move to destinations, typically in the Global South, with warmer climates, a lower cost of living, and a seemingly higher quality of life (Benson, 2013; Spalding, 2013). Though the archipelago sees approximately 225,000 tourists per year, with 95% of the economy dependent on tourism, the Bocas del Toro province remains one of the poorest in the nation (Autoridad de Turismo de Panama [ATP], 2020; Centro de Competitividad de la Región Occidental de Panama [CECOMRO], 2018)

Figure 1

Map of the Bocas del Toro Archipelago



Note. Map reprinted from "Bocas del Toro Archipelago," Wikipedia, 2009.

Although not formally considered a SIDS, Bocas del Toro displays many of the hallmark characteristics of one (UN Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States [UN-OHRLLS], 2022); it is home to both a distinct societal makeup and unique marine ecosystems (Pleasant & Spalding, 2021; Seemann et al., 2014), and faces documented issues of infrastructural development and geographic isolation from larger global markets (Tilmans et al., 2014; Pleasant & Spalding, 2021). Critical to this study, Bocas del Toro is also home to a lucrative marine ecotourism industry and faces widespread water insecurity.

Bocas del Toro's economy is predominantly supported by the tourism industry (Suman & Spalding, 2018). It is estimated that, across the larger Bocas del Toro province, tourism makes up 95% of all economic activity, which greatly exceeds the national average (Klytchnikova & Dorosh, 2013). Today, much of Bocas del Toro's tourism development is concentrated in Bocas Town, Isla Colón, where an average of 150,000 tourists visit annually (Gray et al., 2015). In general, popular tourist attractions in the archipelago include Starfish Beach, Red Frog Beach, and Isla Bastimentos National Marine Park (Cámarca de Turismo de Bocas del Toro, 2022).

The most common form of tourism in Bocas del Toro is referred to by the Autoridad de Turismo de Panama (Tourism Authority of Panama; ATP) as 'island ecotourism' (ATP, 2020). Notably, while the ATP does not explicitly refer to 'marine ecotourism' in their reporting, for the purposes of this study, 'island ecotourism' and 'marine ecotourism' will be considered synonymous, as their accepted definitions align greatly.

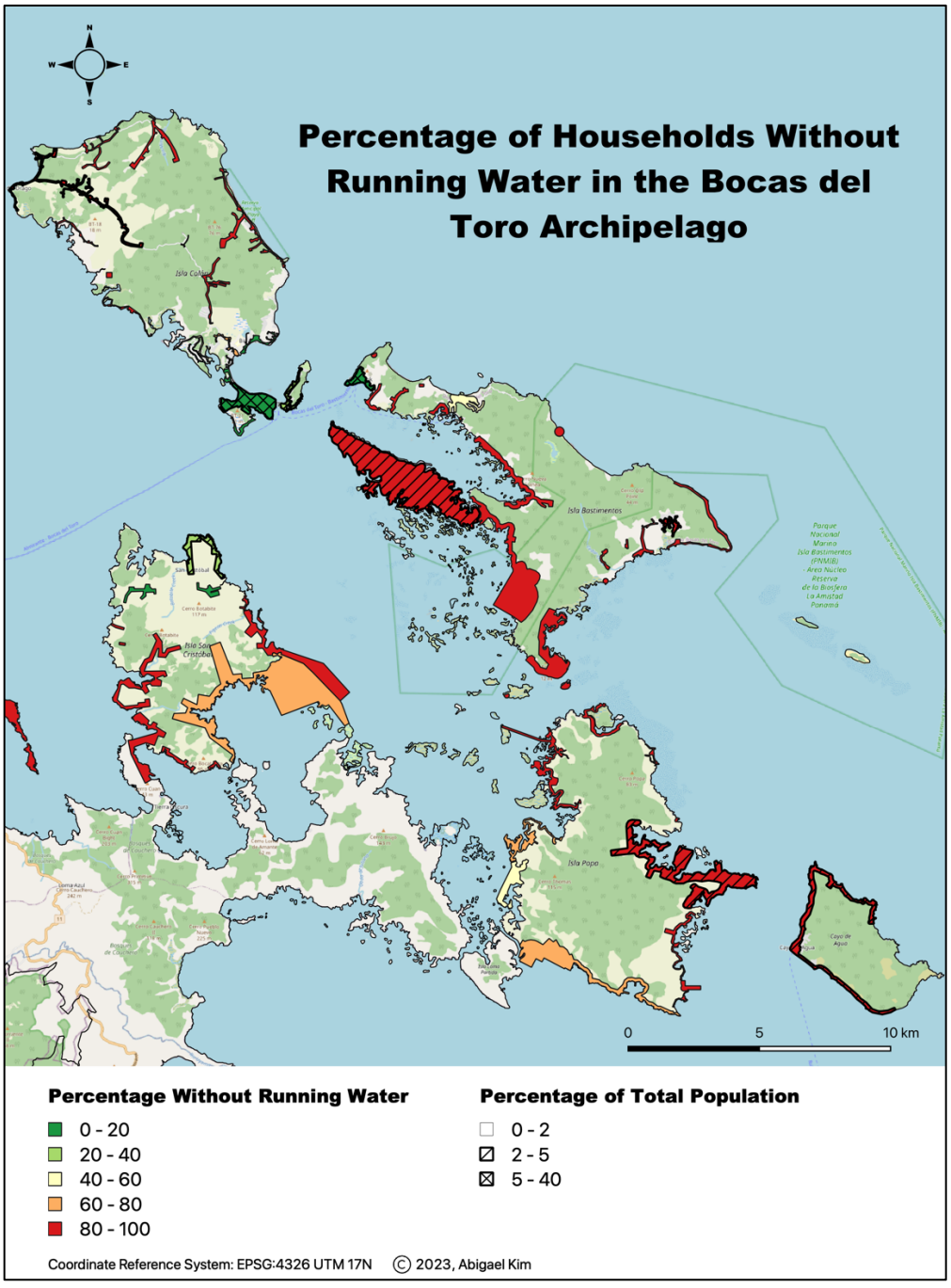
Overall, the archipelago's socioeconomic and environmental systems are inextricably linked to the marine ecotourism industry, attracting individuals looking to experience its vibrant culture, beautiful beaches, and ocean life (ATP, 2020; Bocas del Toro Tourism, 2023;

Klytchnikova & Dorosh, 2013; A. Lucas, 2019; Mach & Vahradian, 2021; Pleasant & Spalding, 2021; Spalding et al., 2015). That said, tourism *infrastructure* across Bocas del Toro has been deemed 'suboptimal' by the ATP, specifically as it pertains to the limitation of physical space and the overload of basic services, such as water provisioning (ATP, 2020).

According to Guerrel (2022), the daily demand for water on Isla Colón and Isla Carenero alone is approximately 1.1 million gallons. To access water, locals use a variety of methods, including tapping into the public distribution system, connecting to public or private wells, purchasing bottled water, and collecting rainwater. Unfortunately, the majority of households across Bocas del Toro do not have access to running water supplied by the Instituto de Acueductos y Alcantarillados Nacionales (Institute of National Aqueducts and Sewers; IDAAN) (Figure 2), making water insecurity among the most critical issues in Bocas del Toro.

Figure 2

Percentage of households in the Bocas del Toro Archipelago without running water.



Note. Uncoloured areas represent regions outside of the archipelago or not captured by the Panamanian Census. Map created using the 2010 Panamanian Census Data, accessed from the Smithsonian Tropical Research Institute GIS Data Portal (2019).

1.4 Research Purpose and Objectives

Using Bocas del Toro as a case study, this investigation aims to examine the implications of pursuing a blue economy rooted in marine ecotourism on water insecurity in an island region. To do so, the research objectives pursued include 1) documenting the experience of some community members in Bocas del Toro with water insecurity and shortages, including how they perceive the roles played by the central government and tourism sector, 2) examining whether water shortages have influenced policies and regional investment regarding water insecurity and the extent to which marine ecotourism development undermines or promotes such changes, and 3) exploring the management implications of my findings related to Panama's blue economy and marine ecotourism strategies in water insecure island regions more broadly.

Marine ecotourism cannot be considered part of a sustainable blue economy strategy if it does not prioritize social equity. As such, this study explores the implications and potential paradox of developing a blue economy in island regions—which typically have both substantial tourism appeal and issues of water insecurity.

1.5 Organization of Paper

In the following chapter, I explore the state of academic discussion regarding blue economies, marine ecotourism, and island development, as well as the findings of relevant studies on water insecurity in island regions. Chapter 3 will then describe the overall research methodology, including a description of the study sites and the processes of data collection and analysis. Subsequent chapters will explore the findings of these processes and expand upon key emergent concepts and themes through a discussion of their implications and relation to current literature. Lastly, Chapter 6 will provide an overview of the conclusions made, and comment on

their implications for Panama's future blue economic development and the relationship between marine ecotourism and water insecurity in island regions more broadly.

Chapter 2: Literature Review

This chapter presents a review of current scholarship surrounding the blue economy, marine ecotourism, and water security. In particular, it addresses nuances regarding sustainable development, social equity, and power that subsist in discussions surrounding island regions. To begin, I describe the emergence of the blue economy and its relationship to sustainable development, followed by a synthesis of the current discourse surrounding global power dynamics within island development. To end, I explore studies related to ecotourism and water insecurity and highlight areas in which my research can provide insight into the relationship between the two concepts in an island context.

2.1. Blue Economic Discourse and the Sustainable Development Lens

2.1.1 Conceptualizing the Blue Economy

The concept of a blue economy was first developed by coastal states in preparation for the 2012 United Nations Conference on Sustainable Development; held to establish a political framework for implementing the UN Sustainable Development Goals (SDGs). Seen as an ocean-based re-interpretation of the 'green economy', a "low carbon, resource-efficient, and socially inclusive" terrestrial-based framework (UN Environment Programme [UNEP], 2011, p.11), the *blue* economy was created to better suit the socioeconomic context and resource base of SIDS, in particular (Silver et al., 2015). With large coast-to-land mass ratios, SIDS have less to gain from a development plan based on terrestrial resources. However, they often harbour substantial

aquatic and coastal resources. Moreover, the green economy, as well as other neo-classical development strategies, do not capture the unique development goals of SIDS (e.g., tackling hunger, combating climate change threats, achieving gender equality, and ensuring the availability of water and sanitation for all) (Garland et al., 2019; World Bank & UN DESA, 2017).

As such, a blue economy challenges the 'status quo' of ocean economies based on resource extraction and industrialization, with the aim of improving human well-being and social equity, while significantly reducing environmental risks and ecological scarcities (UN, 2012). Although not an exhaustive list, industries that commonly make up a blue economy include fisheries, aquaculture, marine ecotourism, shipping, deep sea oil and mining, renewable energy, and bioprospecting.

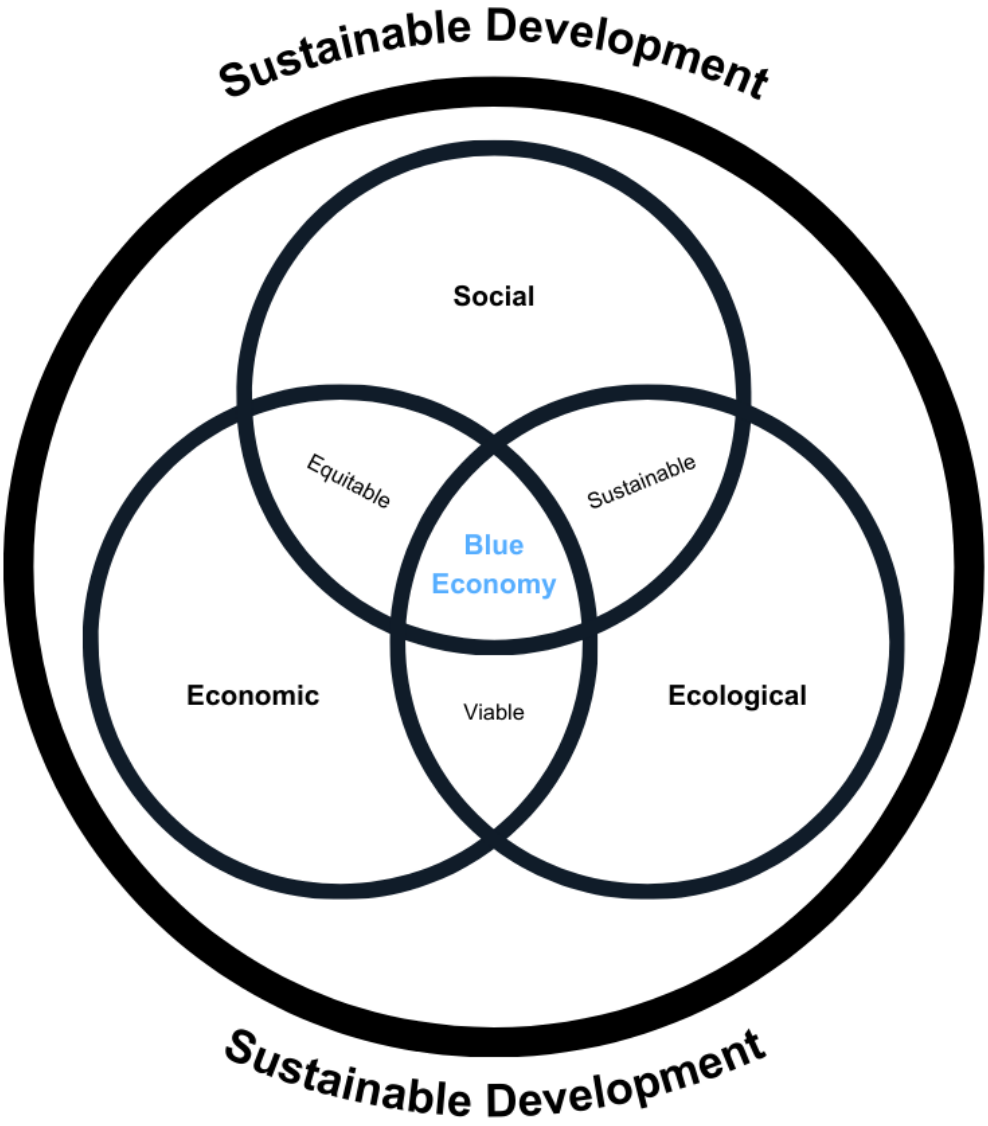
Today, the most commonly used definition is that of the World Bank and UN DESA (2017), which describes the blue economy as promoting "economic growth, social inclusion, and preservation or improvement of livelihoods while at the same time ensuring environmental sustainability" (p.1). However, while the blue economy is widely accepted as an ideal development strategy, there remains no one agreed-upon definition of what it is, with even fewer consistencies in its interpretation and application (Bear, 2017; Choi, 2017; Eikeset et al., 2018; Silver et al., 2015; Voyer et al., 2018). More specifically, Voyer et al. (2018) note that diverging definitions typically situate development priorities within one of the three pillars of the blue economy (economic, social, and environmental), rather than at their intersection (Figure 3). Garland et al. (2019) attribute these variations to the fact that federal ocean policies are developed by policymakers to fit current political goals, which often prioritize economic growth and development. Notably, while Garland et al. (2019) argue that a single agreed-upon definition

may instead be harmful, disregarding issues of scale and socioeconomic context, Ota et al. (2022) warn that a lack of consistency within the conceptual objectives of a blue economy can instead perpetuate 'blue washing', where policies are touted as being part of a sustainable blue economy strategy without actually meeting the hallmark objectives of one. Instead, such policies more often describe that of "blue growth" or an "ocean economy" (Bennett et al., 2021).

Nonetheless, although there indeed remains divergence in the exact definition of a blue economy theoretically, when implemented effectively, a blue economy must adhere to the dimensions of sustainable development (Figure 3). This includes a critical emphasis on human well-being and equity—something that makes it unique to the green economy.

Figure 3

Relationship between the pillars of the blue economy and dimensions of sustainable development.



Note. Adapted from "Social equity and benefits as the nexus of a transformative Blue Economy: A sectoral review of implications," by A. Cisneros-Montemayor et al., 2019, Marine Policy, 109, p.2.

2.1.2 Sustainable Development and the Equity Imperative

Sustainable development refers to "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p.16). Modern scholarship divides sustainable development into three dimensions—social, economic, and ecological sustainability. Through a review of sustainable development literature, Mensah (2019) conceptualizes said dimensions as:

- Economic—satisfying present consumption and production levels without compromising future needs,
- Social—encompassing equity, empowerment, accessibility, participation, cultural identity and institutional stability, and
- Ecologic (also referred to as 'environmental')—safeguarding the integrity and carrying capacity of natural environments.

Key to the emergence of sustainable development as a globally recognized framework is the UN which, in 2015, published the UN 2030 Agenda for Sustainable Development, proposing 17 SDGs to address global challenges of poverty, inequality, climate change, and justice, among others. Most relevant to this study are SDGs 3 (good health and well-being), 6 (clean water and sanitation), and 10 (reduced inequalities) (UN General Assembly, 2015). Notably, the UN also emphasizes the need to pursue these goals with a human rights-based approach, under the guiding principle of "leave no one behind", and through a gender equality and women's rights lens (UN, 2023a).

Currently, there lies a movement in the scholarship to re-recognize and re-prioritize the social dimension of sustainable development in future blue economies—namely that of social

equity (Bennett, Cisneros-Montemayor, et al., 2019; Campbell et al., 2021; Cisneros-Montemayor et al., 2019, 2021; Leposa, 2020; Nugraheni et al., 2020; Osterblum et al., 2020). More specifically, Ota et al. (2022) warn that a blue economy strategy that does not align with all three dimensions of sustainable development will instead perpetuate a harmful 'business as usual' approach, failing to operationalize the original intent of the SIDS that created the concept.

In this context, social equity refers to the recognition and fair treatment of all groups impacted by existing or nascent ocean industries, as well as the inclusion of said groups in relevant plans and policies, and the achievement of a more just distribution of industry benefits and burdens (Pascual et al., 2014). Examples of this include economic equity, gender equality, controlling public and private corruption, ensuring access to public utilities and services, and the assurance of human rights (Guy & McCandless, 2012; Walster & Walster, 1975; Zimmerman, 1993). Notably, Crosman et al. (2022) further add to this definition by centring questions of who wins and loses in ocean governance as a whole.

Not only is equity an inherent facet of the blue economy, but research has shown that there is indeed a tangible risk involved in disregarding social aspects like equity, diversity, and inclusion (Barbesgaard, 2018). Through a qualitative investigation of how local fishers are experiencing blue economic development in Sweden, for example, Arias Schreiber et al. (2020) found that policy framings of a blue economy that do not adequately address social equity can be problematic, whereby economic growth outweighs social priorities of equity, participation, community development, etc. Furthermore, recent studies by Das (2023) and Issifu et al. (2023) have found that overlooking social equity can also result in 'ocean grabbing'—the dispossession or appropriation of marine resources or spaces—and coastal displacement, both of which were likely caused by a misalignment of national priorities and policy making. Studies have also

found that a lack of social consideration can exclude communities from larger resource governance processes, leading to benefits-sharing conflicts and perpetuating problematic power dynamics (Leposa, 2020; Okafor-Yarwood et al., 2020).

Notably, Kedia and Gautam (2020) argue that, in order to understand the implications of current and future blue economies, we must actively consider the socio-cultural elements of the locations in which they are implemented, including historical contexts, cultural identities, and social structures. Along this vein, Bennett et al. (2019) posit that addressing the power dynamics and social inequities at play should be a priority. In the island context, this is of extreme pertinence, as ocean governance is highly influenced by inter- and intra-national power dynamics and disparities. The following sub-section will introduce this concept, and further explore how colonial legacies and neo-colonialism may undermine sustainable development practices in island regions.

2.2. The Role of Power in Island Development

2.2.1 International Power Dynamics

Discussions of blue economic development in island regions cannot be separated from that of a broader exploration of the international relationships and structures that 'govern' ocean activities; namely that of power, or the lack thereof. According to Swilling & Annecke (2022), disregarding the nuances of global power dynamics can, in fact, limit transitions towards more just and equitable systems of development. In this context, power refers to the ability to structure the nature of international relations and global outcomes as well as the ability of a nation to determine its own fate (Barnett & Duvall, 2005). Barnett and Duval (2005) further conceptualize

power as an objective, a measure of influence and security, control over resources, and a sign of status.

While there remains no one definition of what constitutes a 'powerful' state (Buracas & Navickas, 2017), it is understood that such 'global superpowers', as they are often referred to (e.g., the US, China, Japan, the United Kingdom, etc.), satisfy all, if not most, of the characteristics cited by Barnett and Duval (2005)—directing international relations and determining one's fate. Furthermore, as per Stone (2009), non-state actors (e.g., World Bank, UN, International Monetary Fund) have increasingly played a larger role in shaping the 'norms' of global development.

Countries generally considered by the global community to have less power typically reside in the Global South, often have a low Human Development Index (a metric developed by the UN in 1990) (UN Development Programme [UNPD], 2022), and may also face infrastructural issues, higher levels of export-based resource extraction, and inconsistent access to public utilities, for example (Badu et al., 2013; Cetrulo et al., 2019; Schandl & Eisenmenger, 2006). Notably, while some organizations and scholars continue to refer to such countries as "developing nations"—a term coined in Walt Rostow's *The Stages of Economic Growth: A Non-Communist Manifesto* (1960)—the concept is highly criticized for its binary nature and implication of inferiority (Khan et al., 2022). Thus, such countries are increasingly being referred to as being "part of the Global South", "periphery states", or described through regional or economic aggregation (Khan et al., 2022).

Overall, through an exploration of India's Green Revolution and mining developments in Peru, Lodigiani (2020) posits that colonial legacies and the emergence of neo-colonial mechanisms perpetuate unequal power relations between the Global North and South. In the case

of island regions, where access to global markets is limited and vulnerabilities to climate change are high, for example, these characteristics can have precarious consequences (Lempert & Nguyen, 2011; Nunn & Kumar, 2017).

2.2.2 In the Context of Island Regions

Although often associated with 'paradise' (Baldacchino, 2012), island states in the Global South are considered, by the UN, to be some of the world's 'least developed' nations (UN, n.d.-b). Moreover, the literature often refers to island regions as being 'vulnerable', given their narrow resource bases, remoteness, and susceptibility to natural hazards and external economic shocks (Baldacchino, 2012; Belmar et al., 2016; H. Lucas et al., 2017; Nunn & Kumar, 2017; UNCTAD, 2014). Notably, this discussion is not offered to paint SIDS or island regions as 'helpless' per se, but rather shed light on the modern and historical barriers that may limit attempts to garner global power and development capacity. While Dodds and Graci (2012) note that referring to island states as "vulnerable" may be too technocratic, they maintain that recognizing this reality recenters the use of "island strengths and advantages" to "support vulnerability reduction" (p.xiv).

As per Chatterjee and Finger (2014), power in island regions can manifest as access to resources and resource governance strategies. For example, those with both political and economic power (most often foreign entities) have the ability to engage in and benefit from tourism development in the region (Coles, 2006); such organizations maintain the capacity to dictate the 'direction' of development, including its nature, timing, and location (d'Hauteserre, 2016). Overall, power and privilege play a definite role in the implementation of sustainable development, or lack thereof, as well as in determining who will benefit from such practices (Coles, 2006).

According to d'Hauteserre (2008), this dynamic is shaped by historical power imbalances rooted in colonization and globalization. While there remain proponents of such colonial legacies (Feyrer & Sacerdote, 2009), Kay (2010) maintains that colonial histories, in Latin America specifically, have led to harmful internal or endo-colonial relations that sit at the root of present-day developmental, power, and economic inequities. Moreover, in the Caribbean in particular, Sealy (2018) notes that colonization has not only impacted the ethnic makeup of the region, but that the perpetuation of globalization (as a neo-colonial structure) has created a larger dependence on investments from the Global North.

Overall, there exists a small body of literature that discusses the role of power dynamics in implementing blue economies specifically. However, scholarship surrounding the impacts of colonialism and neo-colonialism on island regions more broadly maintains that they indeed propagate harmful outcomes of perceived sustainable development projects (Durokifa & Ijeoma, 2018; Grydehøj et al., 2021; Heim, 2017).

The implications of a blue economy remain intertwined with global power dynamics that dictate the norms of ocean governance. In this study, this concept pertains specifically to the planning, enacting, and outcomes of marine ecotourism in Bocas del Toro, where high tourist landings coincide with inequities in resource access. The following subsection will contextualize what marine ecotourism looks like in island regions and explore its potential benefits and consequences.

2.3. Marine Ecotourism in Island Regions

2.3.1 Conceptualizing Marine Ecotourism

Although discussed in literature dating back to the late 1900s (Miller, 1993; Valentine, 1993; Weaver, 1993), as a dimension of a blue economy, marine ecotourism has garnered increased popularity within the last decade. As per Blamey (2001), marine ecotourism can be described as responsible ocean-based tourism that involves environmental education and conservation and pursues local benefits. Activities typically considered to be part of marine ecotourism include recreational fishing, snorkelling, whale and seabird watching, SCUBA diving, and visiting marine protected areas, among others.

Differing from mass tourism, which is largely considered to be an unsustainable practice, marine ecotourism is 'nature-based', including both direct and indirect interactions with marine flora and fauna. As such, there is an inherent need to sustainably manage physical stresses on the surrounding environment; both natural and anthropogenic (Fafurida et al., 2020). Moreover, as marine ecotourism has expanded to include experiencing coastal cultural practices and interacting with coastal communities, it is widely understood that it should serve to benefit the communities in which it is developed, including economic gains, job opportunities, and participation in the larger governance process (Masud et al., 2017). Lastly, marine ecotourism should also involve an educational component, oriented towards changing visitors' behaviours and aligning with local understandings of the surrounding environment (Aswita et al., 2020; Prasetyo et al., 2020).

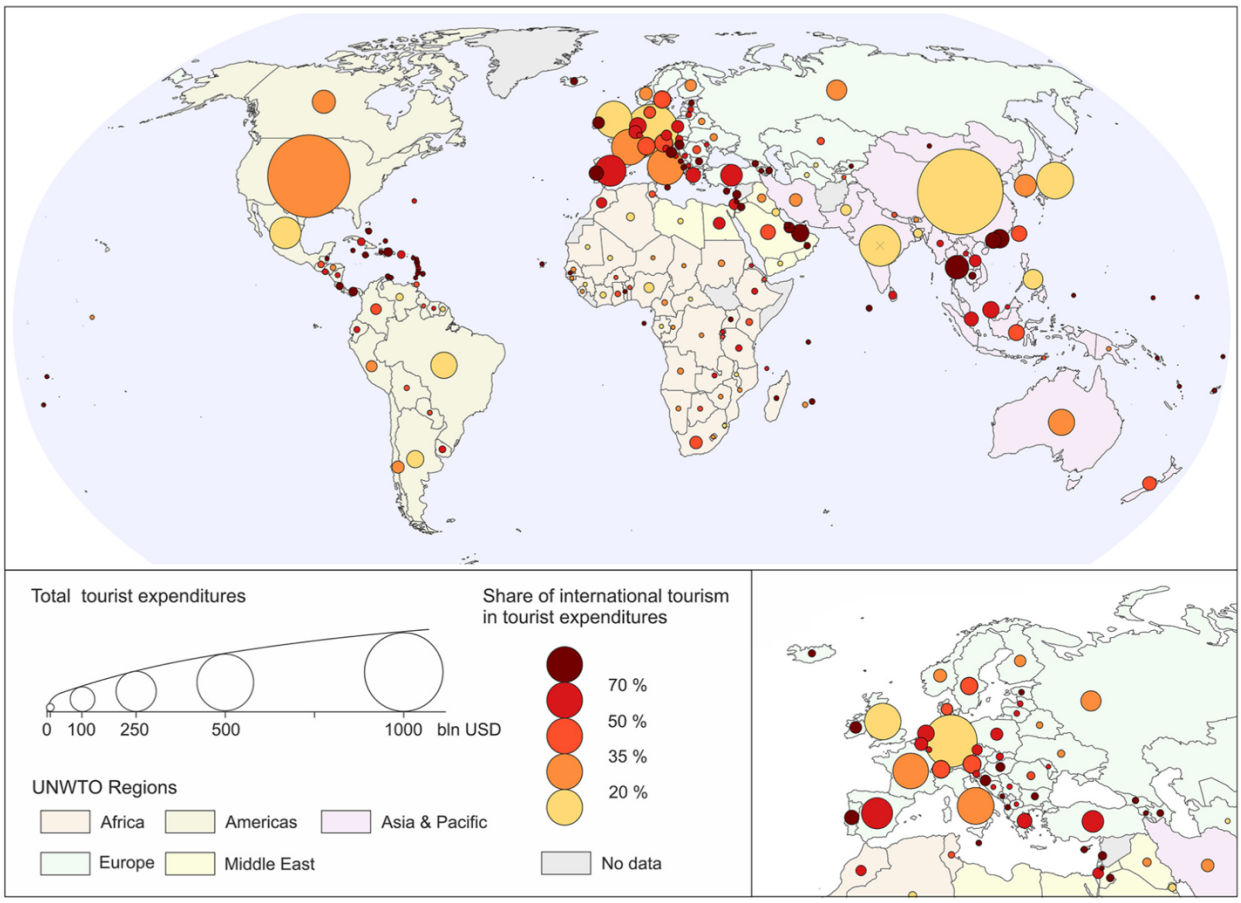
While it is difficult to tease out statistics regarding marine *eco*tourism specifically, estimates from the Organisation for Economic Cooperation and Development (2016) suggest that the marine tourism industry was worth approximately 390 billion US dollars (USD) in 2014.

Moreover, the World Bank (2020) found that, before the COVID-19 pandemic, 80% of all tourism occurred in coastal areas, while Brumbaugh (2017) notes that it is projected to become the largest segment of the global blue economy by 2030.

Given their extensive coastlines and (perceived) pristine ocean ecosystems, island regions are some of the most visited tourist destinations (Figure 4), with marine ecotourism being no exception. In fact, estimates by the United Nations World Tourism Organization (UNWTO; 2023) show that the GDP of island nations is often comprised of a significant percentage of tourism earnings. Thus, as this trend continues to grow, understanding the implications of further developing marine ecotourism in such regions is of great importance.

Figure 4

Map of international and domestic tourism expenditures by country.



Note. Map reprinted from "Combining Conventional Statistics and Big Data to Map Global Tourism Destinations Before COVID-19," by C Adamiak & B. Szyda, 2022, *Journal of Travel Research, 61*(8), p. 1858.

2.3.2 Marine Ecotourism in Island Regions

Marine ecotourism is most often associated with "remote" places, in fact, some of the most profitable marine ecotourism destinations are located in extremely remote areas (e.g., whale watching in the Antarctic). In the case of island regions, which tend to be particularly 'tourism intensive' (Adamiak & Szyda, 2022), a discussion of marine ecotourism must account for the nuances of developing it in destinations considered to be on the 'global periphery' (Dodds & Graci, 2012).

Typically cited characteristics of ecotourism include learning, interpretation, low-impact activity, minimizing negative environmental and socio-cultural impacts, community engagement, etc. (Seek & Sellier, 2019). However, as noted by Gough et al., (2010) the actual implementation of sustainable practices is a rather difficult and complex task in remote island regions. As such, there remains debate in the literature as to the realistic socioeconomic benefits and consequences of marine ecotourism.

Ecotourism, at large, is viewed as a mechanism to drive regional economic development, of which Yacob et al. (2007) organize these benefits into three categories:

- Direct—associated directly with tourist spending (e.g., job opportunities from tourists looking to book boat tours),
- Indirect—expenditures of ecotourism operators from other businesses (e.g., vendor earnings from restaurant provisioning), and
- Induced—results from the re-spending of wages and drawings earned directly or indirectly from ecotourism within the local economy (e.g., purchases made by locals with increased disposable income).

Ultimately, Yacob et al. (2007) found that the development of ecotourism can create direct local employment benefits in the tour operation and the accommodation industries. Moreover, d'Hauteserre, (2016) found that ecotourism can provide avenues for locals to develop small family businesses like hostels or restaurants. Furthermore, Garrod and Wilson (2004) argue that ecotourism can tackle issues of seasonality that are often seen in traditional island tourism (i.e., predominant narratives of 'sun, sand, and sea' (Alipour et al., 2020)). Overall, along with mentions of increased market diversification and investment value, local job provisioning is the most cited socioeconomic benefit of ecotourism in island regions.

Notably, many of these benefits depend on whether the industry is developed and implemented in line with the pillars of sustainable development. In instances where this is not the case, due to a variety of reasons (e.g., poor management, lack of community involvement, limited enforcement regimes, etc.), marine ecotourism can lead to a host of consequences, whereby the industry is labelled as ecotourism but fails to meet such standards (Hoyman & McCall, 2013; Rahman et al., 2022; Zeng et al., 2022).

For example, while ecotourism may produce local job opportunities, Das and Chatterjee (2015) posit that community members are more often placed in low-skill and/or low-pay roles. Moreover, seeing as foreign investment is often related to ecotourism in island regions, Harrison and Prasad (2011) found that in Fiji, for example, there exist high levels of benefit leakages to such entities through the repatriation of profits to foreign investment groups. Furthermore, Roxas et al. (2020) note that tourism developed through foreign capital can lead to 'elite capture' and the commodification of destinations. Additional consequences cited in the literature include the marginalization of local communities and appropriation of cultures, as well as the creation of

potentially harmful regional dependency on the industry (Grydehøj et al., 2021; Hampton & Christensen, 2007; Harrison & Prasad, 2011; Rahman et al., 2022; Yacob et al., 2007).

Before exploring the case of Bocas del Toro, it is important to also understand what the literature says about the relationship between tourism and water security, to highlight areas where this research may further add to a more nuanced conversation in the realm of marine ecotourism specifically. The following sub-section serves to frame water insecurity in relation to this research and describe the water uses of the larger tourism industry.

2.4. Water Insecurity and Tourism

2.4.1 Framing Water (In)Security

Framings of water security tend to vary by context and discipline. However, in this study, I adopt the UN Water (2013) definition of water security, which describes it as

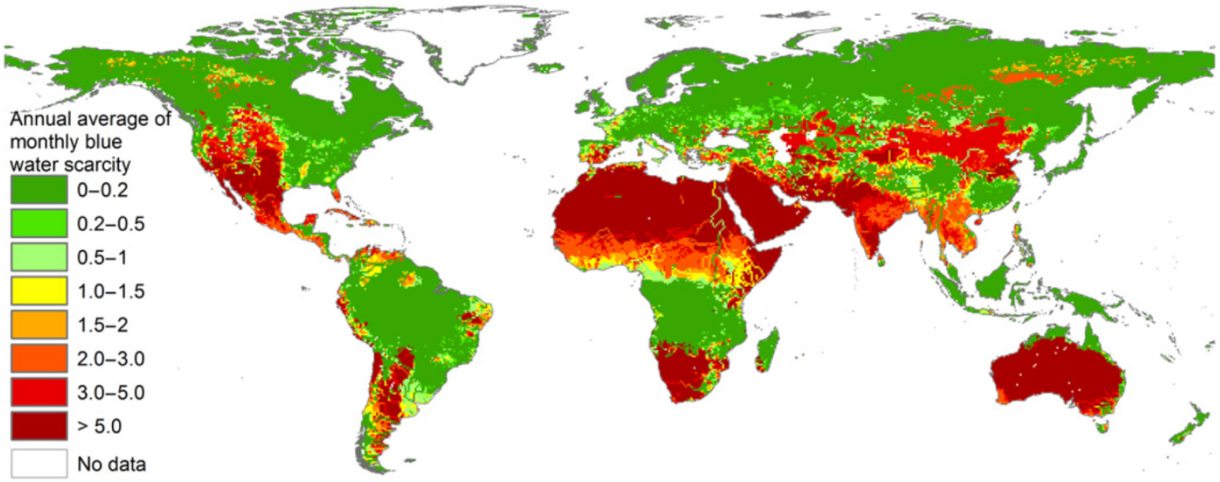
> "the ability of a population to safeguard sustainable access to adequate quantities of water of acceptable quality for the support of livelihoods, human well-being and socio-economic development, to ensure protection against waterborne pollution and water-related disasters, and for the conservation of ecosystems in a climate of peace and political stability" (p.1).

In this sense, water *in*security is the condition in which at least one of the above variables (i.e., quantity, quality, accessibility) is not met, so as to threaten or jeopardize well-being. Under this framework, water insecurity can be situated in four ways, focusing on the availability of a freshwater source (i.e., water scarcity), water-related hazards and vulnerability to contaminants, in relation to food security and human development, or within the larger concept of sustainability (Cook & Bakker, 2012).

A significant proportion of the global population faces water scarcity (Figure 5), often a precursor for water insecurity (Falkenmark, 2013). Additionally, the UN Water (2015) estimates that global water demand will increase by 55% by 2050 due to increasing living standards and manufacturing needs, leaving 40% of the population living in regions of severe water stress. Notably, not only can water security be conceptualized globally, but there exist regional disparities. For example, in 2010, 75% of the population in Bocas del Toro province had access to drinking water whereas in Herrera, another Panamanian province, estimates were closer to 96% (Consejo Nacional del Agua, 2016).

Figure 5.

Map of global average annual blue water scarcity.



Note. Map utilizes data collected from 1996-2005. Reprinted from "Four billion people facing severe water scarcity," by M. Mekonnen and A. Hoekstra, 2016.

Water insecurity has been traditionally, attributed to desert regions. However, in island regions, although surrounded by water, water insecurity remains a critical issue, where the attraction of large volumes of tourists can exacerbate existing scarcities (Leposa, 2020). While most SIDS, for example, have some degree of established water infrastructure, depending on their geographic characteristics and economic capacity, the onslaught of 'dry season' can cause critical deficits in water supply, where present infrastructure alone is not enough to make a thorough evaluation of accessibility to drinking water (Gheuens et al., 2019).

The availability and management of water are particularly important to small island regions where marine environments are often a hallmark of local tourism and water infrastructure is inherently limited. In understanding potential stresses and demands on current water utility systems, the role that the tourism industry plays should be considered.

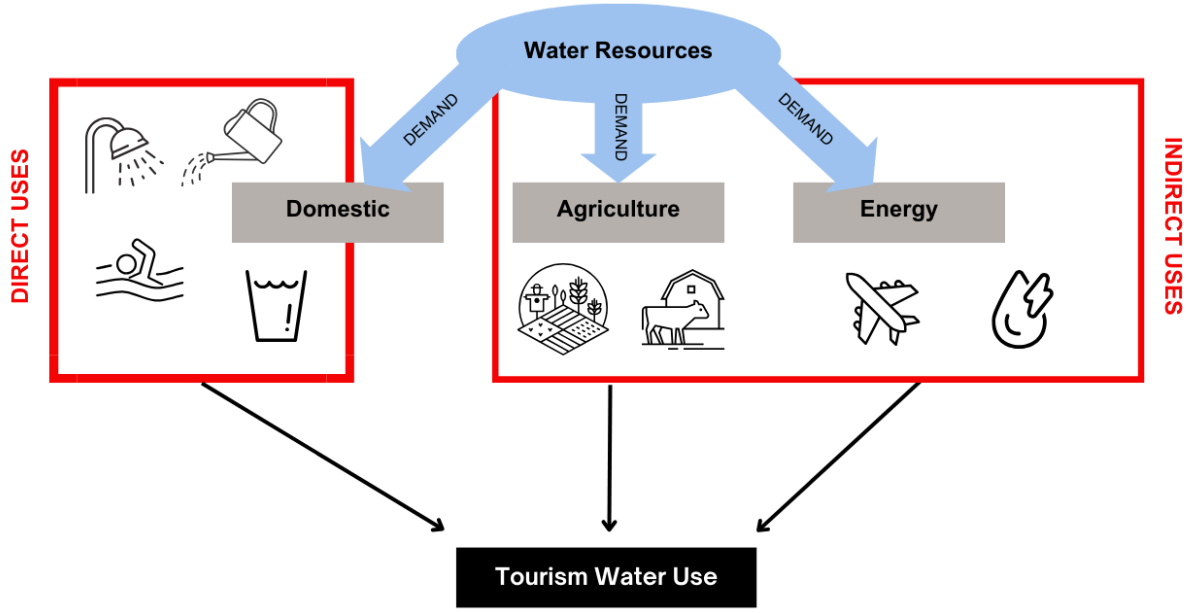
2.4.2 The Water Demands of Marine Ecotourism

Water is an integral part of marine ecotourism, serving as both the landscape and an essential resource for the provisioning of said services. As seen in Figure 6, water demands in the tourism industry (also referred to as a 'water footprint') can be organized into direct (i.e., domestic uses) and indirect uses (e.g., agricultural or energy uses). Direct water use is comprised of water used on-site at a hotel or accommodation (e.g., in-room use, hygiene uses, landscaping, food preparation), while indirect uses refer to water demands in the form of food production, imports, construction, or infrastructural needs to support the operation of the industry as a whole (Cole, 2012; Cole & Browne, 2015; Gössling, 2001; Gössling et al., 2012; Hadjikakou, 2014; Hadjikakou et al., 2013; Kent et al., 2002). Notably, this study focuses specifically on the direct use of water in the marine ecotourism industry, as well as how some community members perceive this relationship.

The literature suggests that the average tourist can consume between 84 and 2000 L of water per day (Gössling et al., 2012), with estimates regarding direct uses limiting this to approximately 350 L per day. And although those local to areas of tourism development may have reliable access to water, Gossling et al (2014) state that tourism development and operations definitively increase overall per capita water consumption.

Figure 6.

Direct and indirect water uses of the ecotourism industry.



Note. Image adapted from "Measuring the Impact of Tourism on Water Resources: Alternative Frameworks," by M. Hadjikakou, 2014, *University of Surrey*, p.17.

Given their relative geographic isolation, island regions are often dependent on groundwater stores and rainwater as sources of fresh water, making them highly vulnerable to climate change impacts (e.g., pollution, aquifer depletion, saltwater intrusion, drought, etc.) and natural fluctuations in precipitation (i.e., El Niño and La Niña) (UN, 2023b). In the Caribbean, these impacts, coupled with the fact that peak marine ecotourism season coincides with 'dry season', perpetuate regional instabilities in water security, where local populations often compete for such an essential, yet scarce, resource (Gheuens et al., 2019); inextricably linking equity to this discussion as well. For example, Iacovides (2011) found that, in Cyprus, while the average tourist consumed 465 L per day, local residents averaged approximately 222 L. Moreover, in Lanzarote, Spain, Meerganz von Medeazza (2004) found that the average tourist consumed four times more water than the average local.

Overall, ecotourism should, in theory, perpetuate water uses lower than that of the traditional tourism models. However, it is difficult to discern if this is indeed true, as studies on the water consumption of ecotourism activities are extremely limited. While my research does not aim to quantify tourism water uses, it does intend to understand the perceived relationship between water insecurity and marine ecotourism development through the experiences of those who are most closely affected by both topics. The final subsection of this chapter serves to summarize the key knowledge gaps found through this literature review that serve as the rationale behind this study.

2.5 Filling Existing Knowledge Gaps

Marine ecotourism is often viewed as a relatively low-impact/high-value form of tourism (Agardy et al., 2018; Phelan, Ruhanen, & Mair, 2020). However, in island regions, where high

tourist attraction coincides with limited infrastructure capacities, there remains little to no studies that sit at the intersection of marine ecotourism and water insecurity specifically; less so studies that center community perceptions in conceptualizing the balance of development and wellbeing.

Through an exploration of key concepts and the state of the literature surrounding them, this chapter demonstrated that, while there exists increasing interest in developing global blue economies, there also exists a need to begin to fill the knowledge gap surrounding blue economic development and access to essential public utilities such as water; where questions of sustainable development, social equity, and power dynamics are considered. This research aims to do so by exploring the case of Bocas del Toro, pursuing lessons learned that may be applied in the context of other island regions. The following chapter describes the methodologies used to reach these objectives.

Chapter 3: Methodology

The following chapter will describe the study sites visited during the field portion of this research as well as the methods used to obtain and analyze data collected both in the field and via background research. Notably, while the data collection portion of my research spans from April 2023 to September 2023, my time in the field took place over 5 weeks (May 25th, 2023, to June 7th, 2023), in which I lived on Isla Colón, Bocas del Toro. A full description of my in-field data collection schedule can be found in Appendix A.

3.1. Study Sites

A majority of Bocas del Toro's population resides throughout nine islands across the archipelago. Throughout my stay, semi-structured interviews and non-participant observations

took place across three of these islands, Isla Colón, Isla Carenero, and Isla San Cristóbal; selected through connections made during the snowball sampling process (Table 1).

Table 1.

Description of islands visited during the fieldwork phase of the study.

Island	Population	Description
Isla Colón	~9000	Home to a mix of locals and lifestyle migrants, Isla Colón is the most developed and inhabited island in the archipelago, with most of this growth occurring in the southern tip. The northern region of the island is primarily rainforest, agriculture, and dispersed pockets of residences.
Isla Carenero	~800	Located approximately 100 metres from Isla Colón, Isla Carenero is a long and forested island, home to a few notable tourist accommodations and a mix of locals and lifestyle migrants.
Isla San Cristóbal	~1300	A forested island in the west of the archipelago, Isla San Cristóbal is located near the center of Almirante Bay and is home to a large number of Ngäbe communities.

3.2. Data Collection Methods

This study employed a multi-method approach; the combining of two or more methods to expand one's research base when investigating a research question or phenomenon (Roller & Lavrakas, 2015). This entailed the use of semi-structured interviews, non-participant observation, and document collection.

3.2.1 Semi-Structure Interviews

This project is not intended to be a comprehensive assessment of marine ecotourism and water security in Bocas del Toro, but rather an attempt to illuminate the potential implications of such developments as perceived by local residents and understood via supplementary research. As such, semi-structured interviews—asking participants open-ended questions to elicit information regarding one's research topic (Adeoye-Olatunde & Olenik, 2021)—were used as the primary method of data collection. For simplicity, given that structured interviews were not

used in this study, any mention of 'interviews' in subsequent sections will exclusively refer to *semi-structured* interviews.

Beginning with connections made through my research supervisor, and community member Dr. Cinda Scott, participants in this process were recruited via snowball sampling. Eligible participants included individuals over 18 years of age and local to the region (i.e., have lived in Bocas del Toro for over 5 years). Conducted on an as-available basis, the average interview ranged from 15 to 60 minutes and involved asking the participant a series of questions based on a pre-determined interview guide; developed through preliminary research and with guidance from researchers from the region. Such questions were categorized into four main themes: water shortages, infrastructure, economic and tourism development, and overall welfare (Table 2). Notably, while the guide was used to facilitate the conversation, it adapted as more information was provided and new events occurred (i.e., the onset of a drought and subsequent environmental emergency during my stay). 16 individuals were interviewed for this study, including shop owners, a member of the Chamber of Tourism, property owners, business owners, street vendors, tour operators, construction workers, and concerned community members (Table 3). When possible, interviews conducted in English. However, when participants indicated that they would feel more comfortable conversing in Spanish, translators were provided by the School for Field Studies, Panama. To avoid any conflict of interest or confidentiality issues, both translators, although familiar with the local context, were non-local to Bocas del Toro.

Table 2.

Preliminary interview guide for semi-structured interviews.

Topic	Main Question(s)	Follow-Up Question(s)
Drinking Water Shortages	Have you been affected by water access issues? Could you tell me about your experience?	How do you normally access water?
		During the shortage how did you access water?
		Did you receive any support from the government during shortages?
Infrastructure	What are your thoughts on the state of the water infrastructure Bocas? Is it easy to access water? Other basic needs?	What do you feel is limiting the development of this infrastructure?
		Do you feel as though this is a government priority right now?
Economic Development and Tourism	What are your opinions on the increased amount of development in Bocas recently? Has it impacted your life?	Is it benefitting you personally? Negatively affecting you personally?
		Has your community been consulted on potential developments?
	Would you say that tourism in a large industry here?	How do you feel about tourism in Bocas?
		Do these developments impact you personally?
Welfare	How is your community navigating the economic development in Bocas?	Does is affect your livelihoods? Wellbeing? Has this changed over time?
		Do you feel as though your needs are supported by the government or municipality?

Table 3.

List of interviewee descriptors

Interview Descriptor	**Total Individuals Interviewed**
Member of the Chamber of Tourism	1
Business Owner	4
Street Vendor	1
Property Owner	1
Restaurant Owner	1
Tour Operator	2
Community Member	3
Construction Worker	3
Interviewee Gender	**Total Individuals Interviewed**
Female	4
Male	12
Non-Disclosed	0

3.2.2. Non-Participant Observation

Non-participant observation, observing and documenting an event without actively participating in activities (Becker & Geer, 1957), was used to explore how ecotourist attractions function across the archipelago and further understand how communities in Bocas del Toro respond to water shortages. Given that another water shortage occurred during my time in the field, these observations were important in understanding not only examples of how marine ecotourism functions in the region but how communities navigate and experience these shortages. For simplicity, given that participant observation was not used in this study, any mention of 'observations' in subsequent sections will exclusively refer to *non*-participant observations.

During my time in Bocas del Toro, formal observations were made on five occasions; at the line for the local well, visiting an ecotourist attraction, during an organized road blockade regarding water access, at a public meeting with IDAAN, and during the dispersion of water via government water trucks (further explanations of these events can be found in Appendix B). These events were found through community contacts established during my stay and local WhatsApp groups. The average observation process involved taking notes regarding what did and did not occur, what people were and were not doing, the overall tone of the individuals present, and other details deemed critical to understanding the event.

3.2.3 Document Collection

Given the highly contextual nature of case studies and the pace at which this particular case was developing, supplementary data in the form of document collection was needed to garner additional context and understand the public and government response to marine ecotourism development and water shortages on a larger scale. Overall, reviewed documents,

including government reports and local news articles, were sought out by searching for qualitative phrases related to drought, water, and tourism in Google and through the Bocas Breeze (Bocas del Toro's primary news outlet) database respectively.

3.2.4. Data Analysis

The culmination and analysis of the data was done through an inductive approach—clarifying the nature of a phenomenon to understand potential underlying theories based on the data collected (Hodkinson, 2008). The analysis was involved a constant comparative method whereby, through a constant back-and-forth engagement with the data, information is organized into common themes to formulate an understanding of a phenomenon (Glaser, 1965). In practice, this involved interacting with the data by preparing the transcripts by eliminating irrelevant data and removing key identifiers, identifying common themes found in both the transcripts and observation notes, and supplementing these findings with information from reviewed documents.

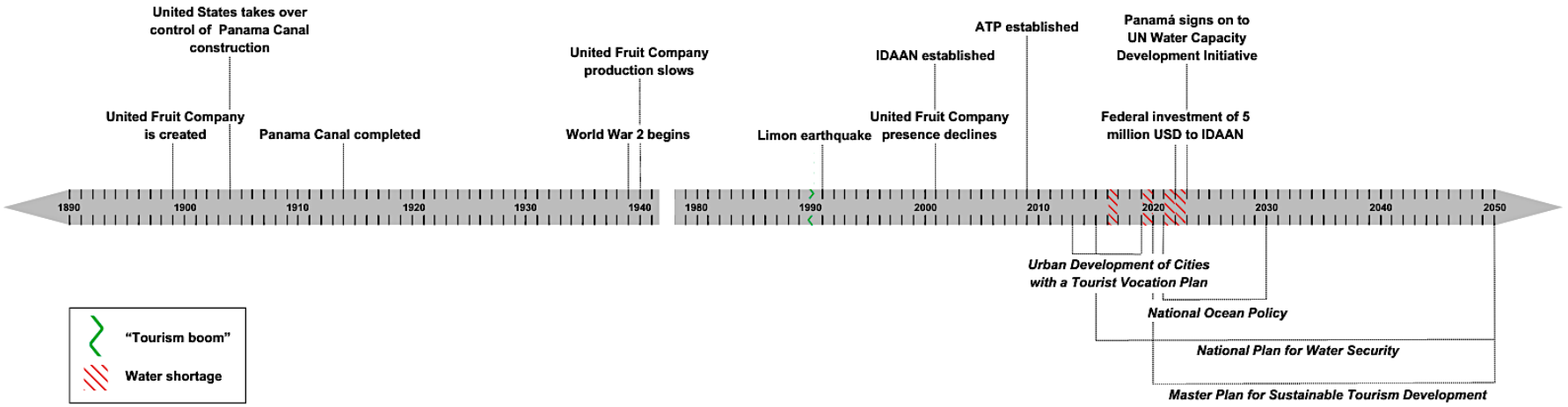
Overall, Chapter 3 has presented the methodology for data collection in this study. Notably, these methods are not intended to reconstruct Bocas del Toro's history with tourism and water insecurity. Instead, in line with that of interpretive sociology or critical political ecology, they intend to contextualize and highlight local experiences with these concepts through personal anecdotes, lived experiences, and relevant historical and modern documents. The following chapter will describe the results of this process, while later chapters will explore their implications in relation to broader literature, drawing key conclusions and lessons learned for Panama's blue economy and marine ecotourism development across island regions.

Chapter 4: Results

The following sections will offer my research findings through an exploration of the evolution of ecotourism and water security in Bocas del Toro, community perceptions of water shortages in the region, and the extent to which some locals feel a blue economic agenda may or may not undermine the development of water security in Bocas del Toro. Figure 7 depicts the timeline of events and policy developments discussed in this chapter.

Figure 7.

Timeline of events and developments regarding marine ecotourism and water security in Bocas del Toro, Panama.



Note. Timeline presented is not exhaustive of all related moments in history, but rather those relevant to this particular study.

ATP refers to the Autoridad de Turismo de Panama; IDAAN refers to the Instituto de Acueductos y Alcantarillados Nacionales.

4.1 Beaches are the New Bananas–Shifting to a Tourism-Based Economy

In order to appreciate the nuances of Bocas del Toro's current socioeconomic landscape, one must first understand its history of economic development; of which is tied to harmful colonial resource extraction. In the early 20th century, the construction of the Panama Canal and the establishment of the U.S. Canal Zone cemented the US as a major player in the Panamanian economy. In Bocas del Toro, specifically, US presence was predominantly felt through the establishment of the United Fruit Company (UFC) (Pleasant & Spalding, 2021).

Established in 1899, the UFC is an American-owned corporation, trading in Latin American-grown fruit—most often bananas exported to the US and Europe (United Fruit Historical Society, n.d.). To support its operations, the UFC sought out cheap labour in the form of Black (Afro-Caribbean) and Indigenous Panamanian (Ngäbe) peoples, as well as labour migrants (primarily Chinese and Italian individuals) (Spalding, 2011). This, as per Amin (1978), created a demographic and power shift in the region, as Black and Indigenous individuals, in particular, were exploited and marginalized through the imposition of a global capitalistic system.

Moreover, throughout its tenure, the UFC became integrated into the social and infrastructural fabric of Bocas del Toro, including the creation of the Tropical Telegraph & Telephone Company, an expansive railway system, power plants, a network of medical facilities, and large-scale housing developments for labourers (United Fruit Historical Society, n.d.). That being said, when asked about Bocas del Toro's history with the UFC, those I interviewed mentioned that such a dependency on a singular industry has resulted in harmful losses of traditional livelihoods such as fishing and agriculture, and an overall dependency on foreign

entities: “We used to be farmers who could feed ourselves,” one property owner told me, “now we’ve lost this completely” (Property Owner).

Ultimately, while smaller-scale UFC operations remain within Bocas del Toro Province to this day, the company’s presence in the region declined greatly by 1990 due to war, crop disease, and a decrease in labour (as a result of poor working conditions and pay) (Guerrón-Montero, 2006a). As such, many large-scale housing developments were left vacant, which, coupled with increased global interest in the region (following the 1991 earthquake), led to an influx of “neoliberal capital interest” and the purchasing of land for tourism purposes (Pleasant & Spalding, 2021, p.3). Additionally, financial and legislative support was provided by the Panamanian Tourism Institute to increase the region's global presence (A. Lucas, 2019). Thus, with both public attention and an abundance of inexpensive land, tourism development in Bocas del Toro effectively ‘exploded’ by the year 2000, signifying a shift from an export-based economy created by the UFC, to a tourism-centric economy based on the region’s beaches and biodiversity (Suman & Spalding, 2018).

Today, an average of 150,000 tourists visit Isla Colon alone each year (ATP, 2020). The residents I interviewed spoke of the tourism industry in a positive light, acknowledging the employment opportunities it brings to Bocas del Toro. “We sell products, but the money is in tourism, the experiences”, one tour operator told me. However, regarding ecotourism, there remains skepticism as to the efficacy of its development:

> “I used to fully believe that tourism was the key to successful cities with no opportunities. But then we have fragile societies like we have in Latin America, and there’s not a strong government that actually tries to implement human development. It is not taking us to the right place” (Member of the Chamber of Tourism)

Ultimately, an exploration of this statement requires additional institutional context regarding ecotourism governance in Bocas del Toro and how those who live in Bocas del Toro feel about the efficacy of ecotourism governance.

4.2 Navigating a 'Tourism Boom'— Ecotourism Governance Actors

Since 2008, at the highest level, tourism across Panama has been governed by the ATP. In general, the ATP is responsible for "the development, promotion and regulation of tourism as an activity"; maintaining tourist resources, protecting the ecological balance of the land, and respecting the customs of its inhabitants (Decreto Ley No.4, 2008). In collabouration with regional bodies, the management of tourist operations is most often coordinated and executed by the ATP's *Consejo Nacional de Turismo* (National Tourism Council).

Notably, during interviews, virtually all participants expressed concern regarding the ATP's governance of tourism in Bocas del Toro, as well as the overall trustworthiness of the larger Panamanian government: "Unfortunately, we are governed by people who don't have morals, they are just selfish. If it doesn't make them money, they don't do it" (Property Owner). Moreover, multiple interviewees noted that they feel as though the government "cannot be relied on to make things happen", as put by a member of the Chamber of Tourism. As one community member put it, "you don't need a magic wand. You don't need the government. The government is not going to do it. Because the government has no brain to think."

At the *community* level, tourism in Bocas del Toro, predominantly Bocas Town, is monitored by the *Camara Turismo Bocas del Toro* (Bocas del Toro Chamber of Tourism). The Chamber of Tourism is a non-profit organization made up of community-elected representatives (ATP, 2020). Those involved (e.g., bed & breakfasts, bars, community organizations, hostels,

hotels, restaurants, resorts, tour operators, etc.) work to organize Bocas del Toro's tourism sector, improve the destination as a tourist attraction, and protect its longevity (Bocas del Toro Chamber of Tourism [CTB], 2023b).

Notably, the Chamber of Tourism does not have a government budget for such activities and does not play a large role in high-level decision-making regarding Bocas del Toro's marine ecotourism industry (ATP, 2020). According to a member of the Chamber of Tourism, this creates issues surrounding community input, whereby the community is neither adequately consulted nor are their ideas accurately integrated into development plans:

> "We are a private sector, but we have no say or worth in the final decision. They say: 'We met with the Chamber of Tourism and the chamber is approving [the development]'. But later, when we come and tell you all the things wrong with the plan, they say 'Oh no, you came up with this idea; the Chamber approved it.' It's [expletive]! We don't want that; we don't need that. We need real things".

The ATP (2020) has indeed acknowledged a need to enhance the Chamber of Tourism's institutional capacity and its cooperation with the organization (e.g., the development of a Land Management Plan and subsequent monitoring mechanisms). However, despite this, members of the Chamber still spoke of potential collabouration with the ATP with a sense of skepticism:

> "I have many years in the Chamber, and I am tired. I know what we can do. But the thing is, I need a government [that] wants to do it…Like, if I go to the government tomorrow, and I ask them: 'I need this and this,' they'll start a fight with me, and nothing will happen".

Overall, marine ecotourism development in Bocas del Toro has been heavily influenced by the development priorities of government entities. In recent years, this includes a focus on the

sustainable development of marine sectors, including ecotourism. The following section will explore what this commitment entails, as well as the extent to which locals have felt this commitment and the impacts of subsequent policies in their communities.

4.2 Government Investment and Policy—Ushering in the Sustainable Development Era?

As the global community continues to adopt sustainable development practices (e.g., UN SDGs), the Government of Panama has demonstrated an increasing interest in incorporating such objectives in the governance of lucrative marine industries and public utilities. The following section will describe the policies and plans most relevant to this study, as well as how those I spoke with feel about their overall effectiveness.

4.2.1 National Ocean Policy of Panama

At the highest level, development within Panama's marine sector is based on the *Política Nacional de Océanos de Panama (*National Ocean Policy of Panama; NOP). Officially ratified in 2022, the vision of the NOP is to pursue a 'Blue Panama', where "marine and coastal resources are protected, conserved, valued and used sustainably, positively impacting the quality of life of citizens in an inclusive and participatory manner" (Ministerio de Ambiente de Panamá [MiAMBIENTE], 2022, p.13). In doing so, the goals of the NOP can be organized into five strategic axes: 1) biodiversity and marine resources, 2) maritime governance and security, 3) blue economy and logistics development, 4) science, technology, and innovation, and 5) a gender and inclusion approach—the most relevant being Axis 4.

The NOP defines a blue economy approach as the "sustainable use of marine and coastal resources…, approaching marine-coastal activities under the prism of balance between the three social, economic and environmental dimensions" (MiAMBIENTE, 2022, p.21). Its Axis 4

Action Plan, specifically, includes 11 'Strategic Lines'; the most relevant being the "promotion of sustainable tourism development linked to the oceans, with differentiating strategies to respond to the new challenges of this sector, and that value their own identity" (MiAMBIENTE, 2022, p.21). While those I spoke with did not explicitly mention the NOP or Panama's blue economy, the policies they provide the foundation for were of great discussion and will be further elaborated on in the following section.

4.2.2 Master Plan for Sustainable Tourism Development 2020-2050

The ATP's vision for the future of the Panamanian tourism industry revolves around being "recognized as a world-class sustainable tourist destination" (ATP, 2020, p. 11). To achieve this, its *Plan Maestro de Desarrollo Turístico Sostenible 2020-2050* (Master Plan for Sustainable Tourism Development 2020-2050; MPSTD) was developed in 2020 to align with the UN SDGs.

The goals of the MPSTD are organized into four themes—creating a better-known Panama as a tourist destination, a more competitive Panamanian tourism sector, a more decentralized tourism sector, and state tourism policies (Figure 8). The most relevant action under these goals is Action 2.4.4: Improvement of basic urban infrastructures, which includes plans to improve the drinking water supply system in Isla Colón (ATP, 2020).

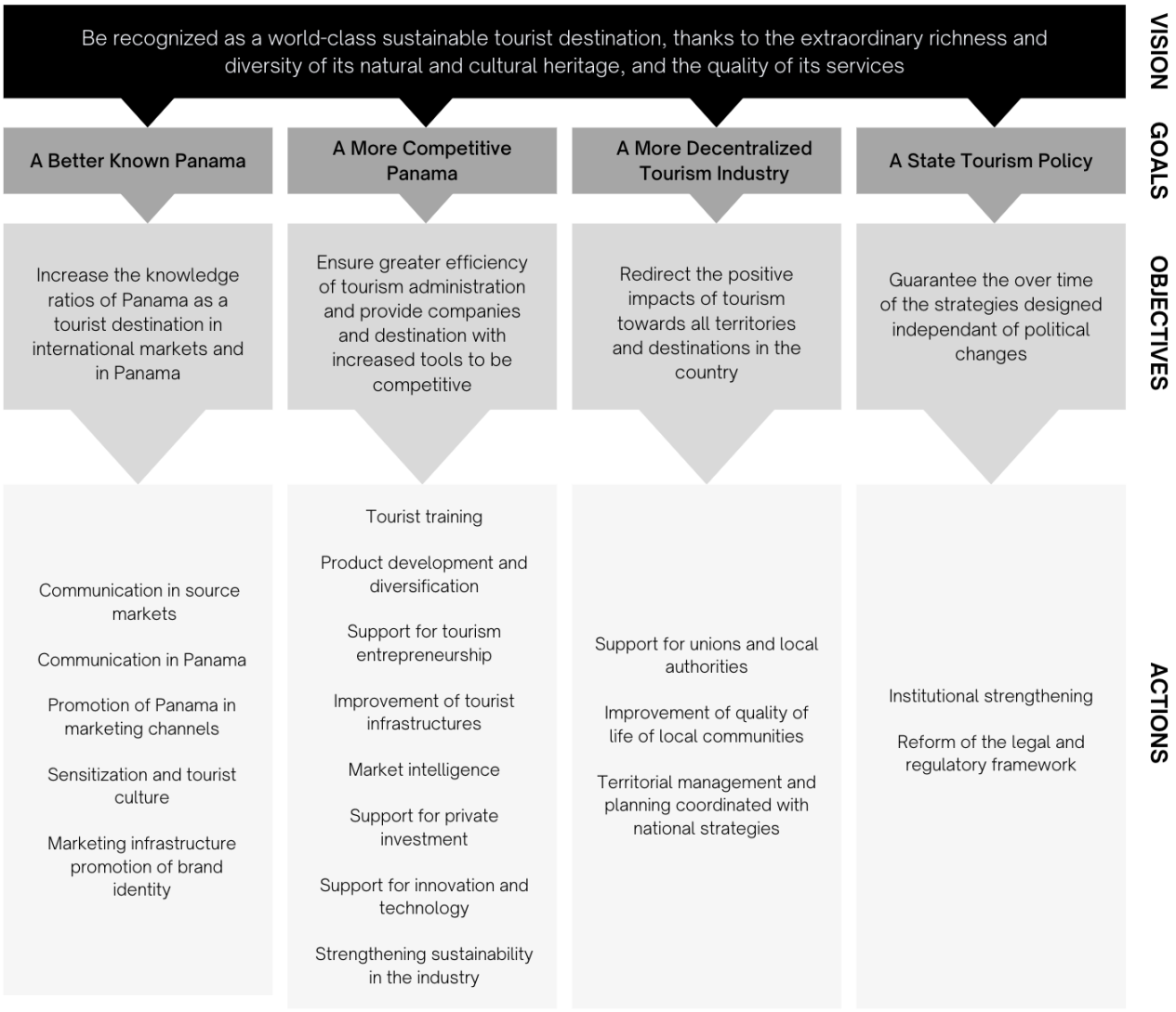
While the ATP's goals for Bocas del Toro lay out numerous plans for improving the sustainability of the sector and increased infrastructural capacity, those I spoke to were wary as to whether or not these plans would ever "hit the ground", as put by one business owner. A common theme in responses regarding the MPSTD was a lack of follow-through in past and present plans from the ATP: "The [MPSTD] is a plan. But if you do nothing to implement it, it's not going to change. I haven't seen any real action" said a member of the Chamber of Tourism.

Moreover, according to one tour operator, enforcement of current sustainability rules and regulations is almost non-existent: “We have all these rules,” he said, “but nobody is gonna follow because there is nobody going to punish you for doing something wrong. They’re never going to punish you enough to be accountable for what you did”. While Isla Colón is indeed patrolled by the Tourism Police, meant to enforce rules relating to both tourists and tourist operations, a couple of interviewees felt as though their actions are obsolete: “What do the tourism police really do? [Laughs] They do stupid stuff”, explained one restaurant owner.

As seen above, the MPSTD’s goals for Bocas del Toro as a tourist destination closely tie tourism development with water infrastructure. As such, it is important to understand Panama’s current policy directing the country’s decision-making pertaining to water security.

Figure 8.

Goals, objectives, and actions under the Tourism Authority of Panama's Master Plan for Sustainable Tourism Development 2020-2050.



Note. Adapted from "Plan Maestro de Desarrollo Turístico Sostenible de Panamá," by Autoridad de Turismo de Panamá, 2020, p.222.

4.2.4 National Plan for Water Security 2015-2050

The Government of Panama's *Plan Nacional de Seguridad Hídrica 2015-2050* (National Plan for Water Security 2015-2050; NPWS) was developed in 2015 by the High-Level Committee on Water Security—among others, members include MiAMBIENTE, the Ministry of Public Works, and IDAAN (Consejo Nacional del Agua, 2016). With a 35-year horizon, the NPWS serves as a roadmap to "improve quality of life, support inclusive socioeconomic growth, and ensure the integrity of the environment" (Consejo Nacional del Agua, 2016, p.1). The plan is organized into five goals—1) universal access to quality water and sanitation services, 2) water for inclusive socioeconomic growth, 3) preventive management of risks related to water, 4) healthy hydrographic basins, and 5) water sustainability—most relevant to this study being Goal 1 (Consejo Nacional del Agua, 2016).

Under this plan, Goal 1 aims to "ensure that every person in [Panama] has sustained access to quality water and basic sanitation," with a focus on "eliminating inequalities of access in an inclusive and equitable manner" (Consejo Nacional del Agua, 2016, p.65). With a total investment of over $7 billion, relevant programs under Goal 1 include the improvement of drinking water and sanitation services and increasing coverage of drinking water services (Consejo Nacional del Agua, 2016). In Bocas del Toro specifically, the NPSW includes a 3.3 billion USD investment in the Big Creek water system; to be organized by IDAAN.

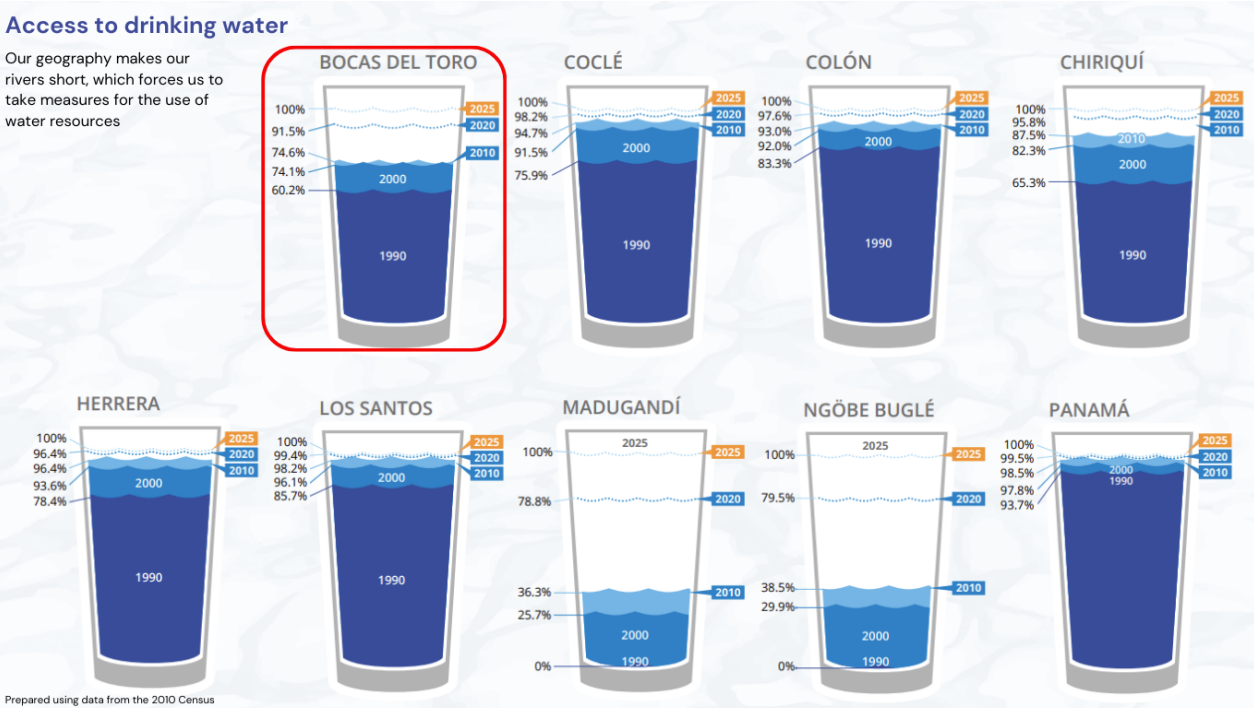
Ultimately, while the NPSW, as of 2016, projects that all individuals living in the Bocas del Toro Province will have access to drinking water by 2025 (Figure 9), as will be discussed in the following section, this is not nearly the case as of 2023. Much like with the MPSTD, interviewees were skeptical of whether or when they would ever see the impacts of these

investments in their communities. As one business owner put it, “it’s only plans plan plans. But when you go to practice? No, nothing happens.”

As will be described in subsequent sections, despite efforts to increase investment and planning in Bocas del Toro, residents continue to face water insecurity on a daily basis. To provide context for findings regarding water shortages and future infrastructural developments, it is important to first understand how water is accessed in Bocas del Toro.

Figure 9.

Infographic of Panama's High-Level Committee on Water Security's projections for drinking water access into 2025.



Note. Projections for Bocas del Toro are highlighted in red. Reprinted and translated from Spanish to English from "Plan Nacional de Seguridad Hídrica 2015-2050", by Consejo Nacional del Agua, 2016, p72, Fig.38.

4.3 A Myriad of Methods–Accessing Water in Bocas del Toro

While very little formal documentation on water infrastructure and distribution processes in Bocas del Toro exists—as one individual put it, "nobody really knows exactly how the water works here"—a clearer picture of water security within the visited study sites was established through interviews and a review of local news articles and limited IDAAN reports. Images of water infrastructure across study sites can be found in Appendix C through E.

4.3.1 Isla Colón

On Isla Colón, residents most often access water by two methods, the public distribution system and wells. The former is managed by the IDAAN, who charges a fee for the service. IDAAN's system is supplied by the Big Creek Reservoir (Big Creek), servicing approximately 9175 individuals across the southern region of Isla Colón (including Bocas Town, Saigon, La Feria, Loma Espino, and 'the Y') through an underground pipe system powered by gravity and a few pumps. While it is widely understood that water from Big Creek is filtered at a nearby plant, the efficacy of this effort is highly debated (Albaez, 2023; Corea, 2016; Godoy, 2023; Ortiz, 2023; Telemetro, 2022). For example, when asked whether she would drink water from her tap, one shop owner responded, "I'm not gonna do that", while her partner added that the water is often "yellow or brown" in colour.

Given Bocas del Toro's extensive 'dry season' (October to April), those using IDAAN's system are often subject to outages or limitations—"I don't have faith that we will ever have water 24/7," mentioned one business owner. Upon my arrival in Isla Colón, this was indeed the case; residents using IDAAN's services were restricted to filling their household tanks from 7:00 a.m. to 9:00 a.m. and 7:00 p.m. to 9:00 p.m.

Regions of the island not serviced by IDAAN, including Big Creek, Paunch, and Bluff, rely on rainwater collection or filling their tanks using public or private wells. As of today, there are eight IDAAN wells dug on Isla Colón (located along Calle Drago), with only four currently in operation. Private wells on the island are typically located in regions populated by lifestyle migrants and affluent families. Notably, virtually all wells across the archipelago require electricity to power their pumps and filtration systems. However, as described by a community member I spoke with, electricity in Bocas del Toro is "highly unpredictable".

4.3.2 Isla Carenero

Those residing on the perimeter of Isla Carenero typically rely on neighbouring Isla Colón (located 100km from the closest point) to collect, treat, and distribute water via IDAAN. More specifically, water from Big Creek is sent to Isla Carenero underwater via 6-inch pipes. That said, locals I interviewed noted that this process is often unreliable, as drops in water pressure throughout the pipe system (typically due to low reservoir levels) mean that very little water reaches the shores of Isla Carenero. According to a restaurant owner in Isla Carenero, "Carenero has huge water problems. When there is no water there, [they] struggle the most".

Participants from Isla Carenero also noted that it is common to utilize rain collection systems (similar to those used on Isla Colón) or to travel to Isla Colón to purchase jugs of water. Furthermore, many restaurants and tourist operations on the island utilize private wells to service their patrons, while lifestyle migrants are also known to have access to private wells.

4.3.3 Isla San Cristóbal

Notably, Isla Colón and Isla Carenero are only the islands (out of 9 that are inhabited) to have access to IDAAN's services. Other islands, like Isla San Cristóbal, rely on community-led initiatives or the purchasing of water jugs from Isla Colón.

As described by a local tour guide, approximately 600 individuals on Isla San Cristóbal access water via a natural catchment system and man-made storage and distribution point. Developed through a fundraising project by local and international organizations, the storage unit collects water from the island's northern mountain region, filters it for solids, and distributes it to the community via gravity and underground pipes. The tour guide I spoke with noted that this process is quite reliable; during times of drought, residents of other islands have looked to him for water.

With a basic foundation of how water works within the study sites (as understood through the data collected), the following section will describe Bocas del Toro's recent history with water shortages and how those I spoke with experienced such events.

4.4 Frustrations Run High—A History of Water Shortages

While one restaurant owner noted that "water has always been an issue [in Bocas del Toro]", the frequency, duration, and intensity of shortages have increased in the last 10 years or so—"I've been here my whole life," she told me, "but the problem has never been this bad". Bocas del Toro has faced four separate water shortages (2019, 2017, 2022, and 2023) that have been documented in local news archives. However, given the limited documentation surrounding the 2017 and 2019 shortages and a lack of engagement with the topic during interviews, this section will primarily focus on the 2022 and 2023 shortages.

With pressure from local communities and MiAMBIENTE, a State of Environmental Emergency was declared by the Cabinet of Panama in both 2022 (November 8th) and 2023 (May 30th); both coming after prolonged periods of drought and restrictions on IDAAN's water services. In the case of 2022, a Facebook post by the Bocas Breeze Newspaper (2022), estimated that almost 19,000 individuals across the archipelago were without reliable access to fresh water before the Cabinet's decision.

Declaring a State of Environmental Emergency authorizes IDAAN to enact the region's 'Contingency Plan'. This involves assigning water trucks to distribute potable water to affected businesses and residences on both Isla Colón and Isla Carenero, increasing water conduction line diameters, activating additional wells to supplement flow, and increasing overall technical support to the region (IDAAN, n.d.-a).

During this time, those without private well access typically purchase water jugs from local shops, fill their household tanks at public wells, or fill up smaller jugs from IDAAN trucks. On Isla Carenero specifically, construction workers I spoke with mentioned that they would "buy jugs from [Isla] Colón or wait for [their] neighbours to bring water over. That being said, they also mentioned that such alternative methods are not sufficient, leaving many without water for days on end. On Isla Colón, for example, one street vendor I spoke with, told me that she had not been able to shower in "over 8 days". Moreover, with lines for local wells growing longer by the day, and IDAAN trucks in town for a limited amount of time, the business owners I spoke with told me that it was extremely difficult to access water—"I have to choose between running my shop and getting water. That is wrong". Notably, a tour guide on Isla San Cristóbal mentioned that his community did not experience water shortages to the extent that other islands

do. “We have our own system here,” he said, “my friends in [Isla] Colón asked *me* for water last week”.

Overall, there is no one clear answer as to what directly causes these shortages. However, those I spoke with speculate that they have something to do with the coinciding of ‘dry season’ and tourist season in the fall; not only are reservoir levels low and rain barrels empty, but the archipelago is flooded with a considerable number of tourists. As put by Nicholas Corea of the Bocas Breeze Newspaper:

> “In recent years, sometimes it doesn’t rain for a while or excited tourists flood the island in record numbers and when you turn the faucet, you are met with the depressing sound of a ‘drip, drip, (silence)…’ Maybe you left your toilet running and your tank has gone empty, or perhaps the town reservoir has gone dry” (2016).

Undoubtedly at the center of frustrations surrounding these shortages is IDAAN; or more specifically, the uneven distribution of water and lack of government accountability.

According to IDAAN, during a State of Environmental Emergency between 10 and 15 water trucks are to be deployed to Isla Colón and Isla Carenero; both posted in city centers (e.g., Bocas Town) and delivering water to residential areas. However, almost all of those I spoke to mentioned that this system is not well executed. “Unfortunately, there is a bad distribution of the water and trucks,” one business owner said, “they don’t have a good plan for giving out the water, so they pass me by”. Those I interviewed during the 2023 shortage, also spoke of a disparity in where water was being delivered—"a government truck should be for the community,” said one property owner, “but it doesn't happen in Panama”. More specifically, many participants mentioned that hotels are often prioritized, and speculated that drivers were

being paid a premium by these establishments to visit them first—"hotels get more water. I don't have 30 dollars to offer them to visit me" said one street vendor.

Those I spoke with also described a general lack of accountability from IDAAN during these shortages—"I don't look to the government for water," said one shop owner, "I pray to God". During the 2023 shortage, in particular, many folks in Isla Colón and Isla Carenero were left with unanswered questions as put by one local, "IDAAN remained silent". Notably, IDAAN does indeed have a regional office located in Bocas Town. However, it is widely understood by the community that they have little information to share regarding water distribution, and shortages more broadly. In fact, during the 2023 shortage, the regional IDAAN phone line for Bocas del Toro was disconnected, and public meetings with IDAAN Regional Director Ing. Victor Serrano were cancelled on the day of, leaving concerned community members without answers or a platform to share their thoughts. "The IDAAN guy is hiding," said one business owner, "probably because the whole town will come down on him".

As was seen on multiple occasions during the 2023 shortage, feelings like these often led to public displays of frustration in the form of road blockades and protests—"we don't just wait for water, we have to block the streets for water" said one property owner. Blockades occurred over multiple nights in June of 2023, as members of communities along Calle 6, 7, 8, and 9 (who often received water last from IDAAN trucks) set up chairs and laid scrap metal and wood across roadways. While these blockades did indeed garner the attention of the local community (The Bocas Breeze Newspaper, 2023a, 2023b), one property owner was conflicted as to whether they were truly effective in creating change at higher levels:

> "In the past, we have had a few good protests Yes, it might be helpful. But there have been a lot of costs… The average person is not working at the government, so when we

protest, we are just hurting ourselves because the government doesn't have workers here. It's not like on the mainland if you block the road a lot of government employees can't get to work. Really truly the government does not look too much when the island protests".

Fortunately, after just over one month, communities connected to the public water system regained limited access to running water, IDAAN announced that 2 additional wells along Calle Drago would be connected to the public system on June 15th; supplementing the reservoir source while precipitation levels remained low. In an interview with local news outlet Pulso Informativo (2023), Ing. Victor Serrano noted that this move came ahead of IDAAN's water infrastructure plans for Bocas del Toro (discussed further in the following section).

Despite these developments, residents of both Isla Colón and Isla Carenero still face water insecurity at large; water in general remains a contentious issue across the archipelago as a whole. As the Panamanian government continues to pursue marine ecotourism development in the region, many locals question where their needs fit into this equation.

4.5 A Potential Paradox? – Future Plans for Water Infrastructure and Ecotourism

Looking towards 2050, Bocas del Toro is the topic of multiple development projects, both in marine ecotourism and water infrastructure. As will be discussed in this section, the locals I spoke with have strong feelings about the priorities of the Panamanian government as they pertain to these plans, and were skeptical of their potential outcomes.

In 2022, under the NPSW, IDAAN announced a $10 million investment in the "study, design, construction, operation and maintenance of improvements to the components of the aqueduct in Isla Colón, Province of Bocas del Toro" (Ortiz, 2023, p.1). According to Ing. Victor

Serrano, 6 million USD of this has been invested into a 3-phase plan to develop a more reliable 24-hour public water supply system with 100% potable water (Figure 11) (Albaez, 2023). Once completed Bocas del Toro's public water system should have a capacity of approximately 2 million gallons of potable water; fed by a mixture of water from wells, Big Creek, and an eventual desalinization plant (IDAAN, n.d.-b). Moreover, IDAAN promises to bring in over 30 jobs to locals, including in hauling materials, personnel mobilization, and equipment transfer. As of May 2023, IDAAN reports that 60% of this project has been completed (Ortiz, 2023).

Despite this, none of the individuals I spoke to, who utilized IDAAN's services, have seen improvements in their water supply or quality—"I see that the government has huge plan[s] to change everything about the water system" one business owner expressed, "I don't see it happen[ing] now, but I hope it work[s] in the future. It's been promises for a very long time". Moreover, one individual expressed concern over IDAAN's planning altogether:

> "We keep saying it, [desalinization] makes no sense. The only sense it makes is that somebody in the government is making money out of those plans. It takes so much energy to produce water and so much waste to produce that water; you have to do something with all that salt…So, I don't know why they are signing with saltwater treatment, but it is what it is".

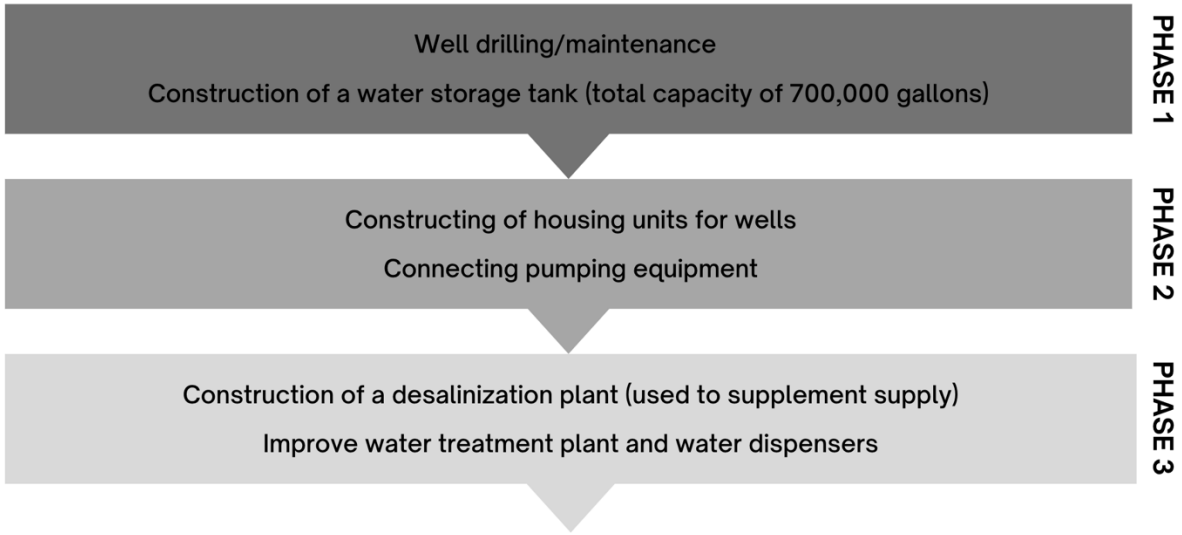
Additionally, one property owner, like others I spoke with, made specific reference to a 5 million USD investment, made during the 2022 shortage, to rapidly increase water production (The Bocas Breeze Newspaper, 2022a)—of which they had yet to see the benefits of:

> "They would come around and promise us that they would solve the problem, and it never happened…The president came here, and they released 5 million dollars. Where does it go? It's like ice in the sun, nobody knows where it goes. And just after that,

everything got worse…A week after they got the money the water came like lemonade, and we got it once a day. So, we are questioning and asking what's happened with the 5 million? Because they could have done a lot".

Figure 10.

IDAAN's 3-phase plan for public water supply improvement in Bocas del Toro



Note. Image created based on public water supply improvement in Bocas del Toro as described in "From Crises to Solutions: Tackling the Water Challenges of an Island Paradise," by N. Ortiz, 2023, The Bocas Breeze.

Interviewees were altogether critical of the Government of Panama's investment priorities and plans. As put by a member of the Chamber of Tourism, "it's very crappy politics, and they use the money from everybody to do politics instead of to fix problems or make the quality of people's lives better". Included in these concerns are questions of where the development of water infrastructure sits on the list of government priorities, as compared to tourism. As put by a property owner I spoke with,

> "Tourism is good…. It generates work and brings in money when it's organized and well-planned. But it's not—most of the time it's not… They are not building up structure and tourism, along with the community".

This sentiment was echoed by many of the individuals I spoke to, who expressed frustrations with the government's prioritization of "things that people see," over "human things".

For example, tourism infrastructure in Bocas del Toro (including improvements to the water supply) is, in part, funded by the Inter-American Development Bank's Comprehensive Urban Development of Cities with a Tourist Vocation plan. Signed in 2019, the plan includes a 6-year 100 million USD loan for the development of infrastructure, management, and governance of tourism within Panamanian cities, including Bocas Town (Inter-American Development Bank, n.d.). However, while locals continue to see an increase in restaurant, attraction, and hotel development across the archipelago, as mentioned, very few participants have seen the development of water infrastructure. Of the individuals I spoke with, this more often rang true for many of those living on Isla Carenero, where the water supply is extremely limited.

While not explicitly discussed with participants, an important development in this case came in July of 2023, when Panama signed on to the UN's Water Capacity Development

Initiative (CDI) for SDG 6 (clean water and sanitation for all); the first country in the world to do so. The CDI serves as a vehicle for inter-agency cooperation on capacity development related to freshwater, sanitation, and hygiene (UN Water, 2021, p.1). Its goal is to enable the UN system, and its partners, to coordinate support for participating countries based on their unique needs. Relevant conceptual goals for 2030 include:

- Improving water quality by reducing pollutants in water sources and significantly increasing safe water recycling and reuse practices
- Significantly increasing the efficiency of water use across all sectors and significantly reducing the number of people who lack water access
- Implementing integrated water resources management at all levels

While it is too early to predict the efficacy of this initiative, it does indeed promote "national-level ownership" and capacity building, rather than a "simple transfer of mechanisms"; the UN defines capacity building as "the process through which [stakeholders] increase and are acknowledged for their abilities to: (i) perform core functions, identify and solve problems, define and achieve objectives; and (ii) understand and deal with their development needs in a broad context and in a sustainable manner" (UN Water, 2021, p.1).

Ultimately, the concerns of those I spoke to regarding the past, present, and future of development in Bocas del Toro can be summed up by a quote from a business owner I spoke with. When asked what she believes to be the largest development project in the community she responded:

> "Tourists. But it grew alone. It grows alone…It's incredible, Bocas [del Toro] has been developed in many ways, but not in basic things. It keeps growing, growing, growing, and I don't see that part [public utilities] growing with it".

As Panama continues to pursue a blue economy rooted in marine ecotourism as well as improved water security, questions remain as to whether there is a balance to be struck between the two; one that aligns both government aspirations for development with the realities and needs of those living in Bocas del Toro.

In combining interviews, observations, and supplemental research, Chapter 4 has provided a brief exploration of the developmental history of Bocas del Toro, tracked the shift in the economy; from agriculture to tourism, and described the current governance of marine ecotourism and water in the archipelagos. Furthermore, these results describe the experiences of some locals with water insecurity and shortages, as well as their opinions on current and future development in the region. The following chapter will propose a rationale for such findings by analyzing key emergent themes and a discussion of such topics in relation to modern scholarship.

Chapter 5: Discussion

Through a case study of Bocas del Toro, Panama, this research examines the implications of pursuing a blue economy rooted in marine ecotourism on water insecurity in island regions. While Chapter 4 presents the larger results of my methodology, Chapter 5 explores a contextual lens and emergent themes significant in understanding the outcome of this case, and proposes potential grounds for their emergence, drawing parallels between these results and the findings of similar studies.

Overall, while discerning the extent to which marine ecotourism may undermine the pursuit of water security in Bocas del Toro was indeed a research objective, the results of this study are not indicative of a direct causal relationship. Through considering and assessing participant responses, observational notes, and relevant documents, conclusions can instead be

drawn regarding the role that marine ecotourism development and water insecurity have played in shaping the current reality of those living in the archipelago and their perceptions of development in Bocas del Toro.

5.1 "It Grows Alone"

Ultimately, it was found that there exists a critical disconnect between the Government of Panama's aspirations for marine ecotourism and infrastructure development in Bocas del Toro and the needs of those living in the region. More specifically, the results show that while government policies, like the MPSTD and NOP, document plans for increased tourism growth (e.g., increased promotion of ecotourism, further developing brand identities, and investing in entrepreneurial opportunities), those I spoke with *in* Bocas del Toro are far more concerned with the development of essential public utilities and services (e.g., running potable water, reliable electricity, improvement of road systems, etc.).

What makes this case unique is the perception that the government has chosen to develop tourism over infrastructure in Bocas del Toro—a common sentiment among those I interviewed is that, as one business owner put it, tourism "grows alone". As the government continues to pursue a 'Blue Panama', such misalignments of priorities lead to questions regarding whether Panama's current approach to marine ecotourism development can indeed strike the balance needed to meet the social requirements of a blue economy; a lack of addressing water insecurity may further increase the distance between these two facets.

5.1.1 The Role of Race and Colonialism

As discussed in Chapter 2, issues of development must also be considered within the socio-historical context of a region, in this case, namely that of colonization. Notably, the

concept of systemic racism must also be considered when analyzing these results, as colonialism is inherently racially formed and, in turn, perpetuates harmful racial hierarchies (Grosfoguel, 2011). Both contemporaneously shape the modern relationship between the Government of Panama and those local to Bocas del Toro, as well as the outcomes of this relationship (i.e., policies, plans, and developments) (Guerrón-Montero, 2006).

Bocas del Toro is home to a large number of Afro-Caribbean and Ngäbe individuals, who have been historically subjected to racism, discrimination, and disempowerment. Such instances include the prevalence of slavery in the 19th century (Klein & Vinson III, 2007), the dispossession of Afro-Caribbean farming communities by the UFC (Chapman, 2014), the mistreatment of Black Panamanians during the construction of the Panama Canal (Sigler, 2016), infringements upon Ngäbe land rights (e.g., the case of Changuinola Dam) (Finley-Brook & Thomas, 2010), and the attempted assimilation of Afro-Caribbean identity into *mestizo* society (Corinealdi, 2022). Today, while the Panamanian government has enacted laws surrounding racial discrimination and Ngäbe rights, in practice, Afro-Panamanians and Ngäbe individuals still make up some of the poorest groups in the nation and often reside in some of the least invested-in regions, with limited access to social services (e.g., education, health care, etc.) (INEC, 2021).

Figure 2 demonstrates that water insecurity, while existing across the archipelago in general, is concentrated in Isla Bastimentos, Isla San Cristóbal, Isla Popa, and Cayo de Agua. Notably, both Isla San Cristóbal and Isla Bastimentos are home to a large number of Ngäbe communities and are not serviced by IDAAN, among other ministries.

While drawing a direct causal relationship between these two variables, in this case, is not within the scope of this research, it is important to note that the literature does suggest that

there exists a distinct correlation between water insecurity and race (Deitz & Meehan, 2019; Dickin & Gabrielsson, 2023; Harrington et al., 2023; Méndez-Barrientos et al., 2023; Workman & Shah, 2023); often framed within the concept of 'environmental injustice'—both the "distribution of access to 'environmental goods'" and the " inequalities reflected in patterns of distribution or scarcity" (South & Brisman, 2020, p.359). In fact, the 2020 UN World Water Report explicitly refers to the intersectional nature of water insecurity, especially as it relates to race and class (UN Water, 2020). Moreover, a spatial analysis of water insecurity across the US (where a majority of such studies are situated), for example, found that deficiencies in household water and sanitation infrastructure are indeed concentrated in regions typically inhabited by racialized groups (Deitz & Meehan, 2019).

In the case of Bocas del Toro, colonial legacies and systemic racism may indeed manifest as persistent disadvantages regarding the development of water infrastructure, as policies and plans may be subject to embedded racial hierarchies—serving the needs of some and not others. Overall, the role that this relationship plays in the modern development of Bocas del Toro will be further explored in subsequent sub-sections, which discuss three key themes in support of my overall finding of a misalignment of government policies and local realities.

5.2 Key Theme – Accountability Concerns

"They released 5 million dollars. Where does it go? It's like ice in the sun, nobody knows where it goes" – Property Owner

This quote accurately depicts the overall feeling that those I spoke with expressed regarding the accountability of the central government. Accountability refers to the obligation of those in power to take responsibility for their decisions, actions, and performance in accordance with commitments made in the form of laws, regulations, guidelines and policies (Lambert-

Mogiliansky, 2015). In this case, accountability issues can be organized into matters of plan implementation and enforcing existing policies.

Ultimately, there exists deep concern and frustration with a historic lack of follow-through of plans on the part of the ATP and IDAAN. Respondents felt these governance actors were, and are, not committed to improving issues of sustainability, enforcement, and infrastructure capacity strewn throughout the archipelago. As such, while a majority of interviews shone a positive light on tourism and the benefits it brings to the region, there remain concerns regarding whether large plans to improve the industry, as well as water infrastructure, in Bocas del Toro, will come to fruition.

The results suggest that this may be perpetuated by a lack of prioritization of the needs of Bocas del Toro in relation to other districts and provinces. More specifically, while plans for more populated provinces like Coclé, for example, may be further expedited, given its proximity to Panama City, agendas for development in Bocas del Toro may perhaps be less prioritized. Thus, although there are indeed plans published on this matter, the timeline for when they will be completed, and their effectiveness may be questionable. This brings into play what it may mean to be a 'periphery' region on an intra-national scale—those that exist outside of larger metropolitan centres and markets (Nilsen et al., 2023)—as well as the power disparities that exist between urban and rural regions. Explorations of the concept of an 'urban bias' (Lipton, 1977) reveal that, while governments may be incentivized to align themselves with the urban core, collective 'rural insurgencies' can work to dissolve this tether (Pierskalla, 2016). While the scale at which road blockades and protests occurred in Bocas del Toro may not meet that of those studies by Pierskalla (2016), it is important to note that the literature does recognize such actions as mechanisms to advocate for the needs of rural or periphery regions.

Furthermore, results suggest that government turnover and changes in overarching political agendas may also perpetuate a lack of developmental progress. While general elections are held every five years in Panama, presidential candidates are unable to run for two consecutive terms. This poses potential issues for the continuity of long-term policies like that of the Master Plan for Sustainable Tourism Development and the Water Security Plan, which span over 30 and 35 years respectively. While policies outline overarching frameworks or approaches to tourism and water development, in this case, they are not legally binding and thereover are subject to the interpretation of the ministries that employ them. According to Wu et al. (2023), this can be referred to as 'policy uncertainty', where turnover in leadership may hinder the effectiveness of policies. In the case of China's air pollution policies, Wu et al. (2023) found that political turnover actually led to *increased* air pollution, whereby there existed inconsistencies in the application of said policies. Thus, while support for candidates and political parties in Bocas del Toro may vary, there remain concerns about stunted development plans as elections draw near.

Additionally, a perceived lack of enforcement of sustainable tourism standards was echoed across industry members (i.e., Chamber of Tourism members, tour operators, and business owners). For example, while there are indeed tourism police dispatched to the region (most often in Isla Colón), participant responses indicate that their effectiveness is questionable. An analysis of the organizational structure of marine ecotourism governance in Bocas del Toro demonstrates that reliance on centralized governance strategies greatly limits the capacity for on-the-ground enforcement of existing rules and regulations. For example, while the Chamber of Tourism is highly integrated into the larger Bocas del Toro community, maintaining strong relationships with local accommodations, restaurants, and tour operators, the resources and

support it receives from the larger ATP is highly limited, in that they are afforded no government budget or authority to enforce sustainability and development standards in the archipelago. Notably, the MPSTD does identify increasing the institutional capacity of the Chamber as a priority. However, there exist no published plans to do so.

Overall, the perpetuation of accountability issues through governance priorities, government turnover, and centralized enforcement strategies can not only lead to issues of plan implementation, but also perpetuate a distinct mistrust of the central government by those living in Bocas del Toro.

5.3 Key Theme – A Lack of Trust

"I don't look to the government for water, I pray to God" – Business Owner

Pervasive throughout all interviews conducted and observations made was a clear mistrust of tourism and water governance actors, as well as the Government of Panama more broadly. This can be described as a lack of 'political trust'—trust in institutions and governance actors stemming from group membership, government policies, and/or general political support or satisfaction (Bauer & Freitag, 2016). This is also often tied to a specific actor or case and reflects the ability of actors to deliver quality public services and respond to citizen demands (Murtin et al., 2018). In the case of Bocas del Toro, while issues of trust are intertwined with that of accountability, there indeed exist perceptions of government corruption and existing turmoil that hinder trust-building between those living in the archipelago and those that govern its development.

Concerns of political corruption, often coupled with feelings of fear, were consistently described during interviews. While this study does not serve to prove any of these accusations,

results have demonstrated that the *suggestion* of political corruption can shape perceptions of sustainable tourism and its ability to improve wellbeing. As put by one property owner when describing issues of water dispersion, “a government truck should be for the community, but it doesn't happen in Panama”. Expanding upon this, Karst & Nepal (2022) found that a lack of established trust between communities and actors that oversee marine ecotourism development can also, in fact, lead to an array of management challenges and future stakeholder conflict (e.g., inequitable distribution of financial benefits, stakeholder conflict, etc.).

Moreover, the results indicate that past handlings of water shortages in Bocas del Toro have led to increased reliance on fellow community members during shortages, and further shaped mistrust in IDAAN, more specifically. Additionally, the persistence of more frequent and intense shortages may indicate to locals that previous, and potentially future, government action regarding water insecurity may be unreliable or even futile. As seen in Enqvist and Ziervogel (2019), when compounded with historically tense relationships between communities and policymakers, the mishandling of water shortages can greatly erode public trust and support.

Overall, while published policies describe seemingly beneficial plans, a lack of trust rooted in concerns of corruption and past experiences with government inaction may further perpetuate skepticism of the ATP or IDAAN. As was found by Fragkou and McEvoy (2016) through an investigation of community attitudes surrounding risk, water scarcity, and desalinization in Latin America, traumatic past experiences and long-standing mistrust of local utility providers can also shape perceptions of future developments that could potentially improve water access, like desalinization plants; which are included in IDAAN’s water capacity plans.

5.4 Key Theme – Uneven Development Priorities

"Bocas has been developed in many ways, but not in basic things" – Business Owner

Closely tied to the overall outcome of this study—a disconnect between government development aspirations and the needs of communities in Bocas del Toro—is the notion that tourism development has been prioritized by the Government of Panama over that of water infrastructure. Notably, while a more intensive study would be required to definitively prove (or disprove) this idea, an evaluation of documents and personal anecdotes shared by participants points in the direction that the tourism sector in Bocas del Toro is indeed more developed than that of public infrastructure regarding water security. For example, while water insecurity remains pervasive throughout the archipelago, in that water shortages prove to be large threats to community well-being and infrastructural developments seem ineffective, the number of large-scale restaurant, hotel, Air BnB, and tour operations continues to grow (CTB, 2020). While there are additional variables that may add to this phenomenon (e.g., climate change), it is understandable that this reality may perpetuate the narrative that the government is 'leaving behind' social sustainability, per se, in pursuit of a lucrative marine ecotourism industry. I suggest here that the sheer profitability of the marine ecotourism sector, as part of the larger tourism industry in Bocas del Toro, inherently incentivizes the central government to continue to pursue its growth in terms of investment and future planning.

Recent estimates show that Bocas del Toro contributes significantly to the Panamanian tourism industry. Thus, if economic growth is a priority of the government, as is the case for many island economies, it would indeed behoove them to continue to develop the sector in Bocas del Toro, despite other public investment needs (i.e., water security). Furthermore, the profitability of the tourism sector likely attracts increasing amounts of foreign investors (even

that of ‘south-south’ bilateral investment (Broner et al., 2023)) in comparison to that of infrastructure development, whereby ‘foreign direct investment’ is an increasing trend in tourism development in SIDS and ‘developing’ nations (Tecel et al., 2020).

Theoretically, if the marine ecotourism sector in Bocas del Toro continues to rapidly grow without the development of essential infrastructure, there will indeed come a time when the archipelago reaches its tourism carrying capacity; tourism would impose both physical (e.g. transport, availability of accommodations) and social (e.g. community tolerance) pressures past what the destination could tolerate or recover from (Dioko, 2017). This may, perhaps, incentivize the ATP to prioritize the development of lucrative public utility infrastructure to ensure that Bocas del Toro remains a popular destination that can, in actuality, support the number of tourists it attracts. Notably, reaching this point, coined ‘overtourism’ in the literature (Dodds & Butler, 2019), would not be ideal from a social sustainability perspective. Overtourism refers to the arrival of excessive numbers of tourists at a destination of which imposes negative impacts on local communities. Dioko (2017) notes that ‘overtourism’ can also be an artifact of reactive tourism policies, where social sustainability considerations are less strategic and forward-thinking but rather become ‘stop gap’ measures.

While a causal link between the development of marine ecotourism and water insecurity or an understanding as to whether one undermines the other (as originally sought out in my research objectives) cannot be discerned through these results, the results explored in Chapter 4 suggest that there exists a distinct relationship between the two concepts as well as a critical disconnect between government aspirations of marine ecotourism growth and community realities and needs regarding water insecurity in Bocas del Toro. This chapter has further explored this outcome in relation to three key themes of accountability, trust, and investment.

The following, and final, chapter will summarize the objectives, key findings as lessons learned, and implications of my research, proposing areas for further inquiry into the relationship between marine ecotourism development and water insecurity in island regions.

Chapter 6: Conclusion

Chapter 6, summarizes the overall conclusions of my research, highlighting critical themes and theoretical concepts that underpin the disconnect between government policies and local realities regarding marine ecotourism and water insecurity in Bocas del Toro, Panama. Furthermore, the final subsection suggests areas of focus for future marine ecotourism development strategies in Bocas del Toro and other water-insecure island regions, as well as directions for future research in this space.

6.1 Summary of the Case

While few studies are situated at the intersection of marine ecotourism and water insecurity, this study, through a multi-method approach that centers community perceptions and anecdotes, examines the implications of pursuing a blue economy rooted in marine ecotourism on water insecurity in an island region. In doing so, objectives pursued include 1) documenting experiences with water shortages and insecurity in Bocas del Toro, including how some locals perceive the roles played by the central government and tourism sector, 2) examining whether water shortages have influenced policies and regional investment regarding water insecurity, and the extent to which marine ecotourism development undermines or promotes such changes, and 3) exploring the management implications of my findings related to Panama's blue economy, and marine ecotourism strategies in water insecure island regions more broadly.

Overall, while the results of this study do not reveal the extent to which marine ecotourism undermines water security in Bocas del Toro, they instead highlight the role that marine ecotourism development and water insecurity have played in shaping the current reality of those living in the archipelago and their perceptions of development in Bocas del Toro. Through exploring the history of economic development in the archipelago, assessing the regional landscape of marine ecotourism and water governance, understanding local experiences with water insecurity, and looking ahead to future development plans, I found that there exists a critical disconnect between the Government of Panama's aspirations for marine ecotourism and infrastructure in Bocas del Toro and the needs and experiences of those living in the region.

In discussing the theoretical underpinnings of issues of accountability, trust, and development priorities, the literature suggests that such conclusions can be attributed to urban biases in the treatment of periphery regions, the role of historical tensions in eroding relationships between the State and communities, as well as profitability as an incentive for continued growth of the marine ecotourism industry in Bocas del Toro. Moreover, these results can also be viewed through a socio-historical lens, regarding colonialism and systemic racism, which have emerged in the results as critical pieces in understanding the modern relationship between the Government of Panama and those local to Bocas del Toro, whereby policies and plans may be subject to embedded racial hierarchies—serving the needs of some and not others.

Using these findings, the following subsection will posit areas of focus for future marine ecotourism development in water-insecure island regions, as well as suggest directions for further inquiry in the space of blue economic development and access to essential public utilities, such as water.

6.2 Management Recommendations

These results have shown that this case is not strictly a matter of water infrastructure and marine ecotourism development, but rather the underlying issues that shape the nature of growth in island regions, as well as who proves to benefit from a sustainable blue economy. Moving forward, as the central government pursues a 'Blue Panama' through its NOP and MPSTD, and the global community continues to adopt a blue economy framework for sustainable ocean development, there exists a need to re-center and effectively internalize social sustainability as the primary goal of blue economic development.

More specifically, in order to adhere to the original intent of a blue economy, this must not only include the prioritization of social equity throughout marine ecotourism and water governance but also in addressing the issues that underpin such misalignments found in this study. This can include an approach that focuses on the power disparities between groups through a socio-historical lens. Singh et al. (2023) refer to this as an 'anti-inequity' approach, whereby it is critical to investigate and understand the processes that perpetuate inequities in, in this case, water security. Such processes have been briefly discussed in this study, including that of colonialism. This approach can be used as a tool to prioritize the needs of those who have been historically "left behind", in future policies and plans. Moreover, a rights-based approach can ensure that the social dimension of both sustainable development and the blue economy is at the forefront of marine ecotourism and water governance.

6.3 Further Inquiry and Final Thoughts

As previously mentioned, this research serves to begin to fill knowledge gaps in the literature surrounding blue economic development and access to essential public utilities in

island regions—where high tourist attraction often coincides with limited infrastructure capacities. That said, in order to ensure that community perceptions and needs do not effectively 'fall through the cracks,' there exists a need to pursue community-centric research on the water insecurity implications of marine ecotourism in a variety of regions in the Global South and those countries considered to be on the global periphery; where infrastructural barriers may exist. Furthermore, research in this space should also include the implications of blue economic development on other essential public utilities, such as electricity or sanitation, where island regions often experience deficiencies as well.

Overall, this research has demonstrated that balancing well-being and development in the pursuit of a blue economy rooted in marine ecotourism in island regions is a matter far greater than 'growth', 'infrastructure', or 'development'. There exist important historical and theoretical underpinnings that shape the relationship between marine ecotourism governance actors and communities in which it is implemented, as well as local perceptions of development as a whole. Ultimately, marine ecotourism cannot be considered part of a sustainable blue economy strategy if it does not prioritize social equity. As such it is pivotal that future development strategies and research within this field consider the implications of pursuing a blue economy in communities that face existing barriers to social well-being and sustainability.

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Appendix A: Field Research Schedule

Week 1						
May 25th	**May 26th**	**May 27th**	**May 28th**	**May 29th**	**May 30th**	**May 31st**
						Interview 1 (Isla Colón)
Week 2						
June 1st	**June 2nd**	**June 3rd**	**June 4th**	**June 5th**	**June 6th**	**June 7th**
						Interview 2 (Isla Colón)
Week 3						
June 8th	**June 9th**	**June 10th**	**June 11th**	**June 12th**	**June 13th**	**June 14th**
	Environmental Emergency Declared				Observation: Well water (Isla Colón)	Interviews 3, 4, 5, 6, 7 (Isla Colón) Observation: Water protests (Isla Colón)
Week 4						
June 15th	**June 16th**	**June 17th**	**June 18th**	**June 19th**	**June 20th**	**June 21st**
	Interview 9 (Isla San Cristóbal)	Observation: Water protests (Isla Colón) Interview 8 (Isla Colón)		Observation: Public meeting (Isla Colón) Interview 10 (Isla Colón)		
Week 5						
June 22nd	**June 23rd**	**June 24th**	**June 25th**	**June 26th**	**June 27th**	**June 28th**
		Interviews 11, 12, 13, 14, 15 (Isla Carenero) Observation: Water infrastructure (Isla Carenero)		Interview 16 (Isla Colón)		

Appendix B: Description of Non-Participant Observation Events

Date	Event	Description
June 13th	Line-up for well water (Isla Colón)	During the water shortage long lines occurred consistently at Well #1 (Figure 10).
June 14th	Water protests at Calle 8 (Isla Colón)	Protestor blocked the street throughout the night in response to water issues on Isla Colón.
June 17th	Water protests at Calle 5 (Isla Colón)	Protestor blocked the street throughout the night in response to water issues on Isla Colón.
June 19th	Public meeting with IDAAN (Isla Colón)	A public meeting with IDAAN Regional Director Victor Serrano regarding water shortages was scheduled.
June 24th	Water dispersion (Isla Colón)	Locals line up to fill buckets and jugs with water from government sanctioned IDAAN trucks.

Appendix C: Water Infrastructure and Sources—Isla Colón

Big Creek Reservoir, Isla Colón. Taken 06-13-2023 by Abigael Kim

Bocas del Drago public well. Taken 06-21-2023 by Abigael Kim

Rain catchment system. Taken 06-17-2023 by Abigael Kim

Appendix D: Water Infrastructure—Isla Carenero

Rain catchment system. Taken 06-24-2023 by Abigael Kim

Water pipe feeding Isla Carenero. Taken 06-24-2023 by Abigael Kim

Appendix E: Water Infrastructure—Isla San Cristóbal

Water storage point. Taken 06-16-2023 by Abigael Kim

Water pipe system. Taken 06-16-2023 by Abigael Kim