Coastal megaprojects in the blue economy: Towards equity and transformation for the coastal poor – a case study from Bangladesh

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Dedicated to my parents

Abstract

The rapid changing of coastal and marine systems is driven by underlying socio-economic factors, including privatization, industrialization, and conservation initiatives. These dynamics present significant equity and justice challenges for small-scale resource users. This research investigates the social impacts of coastal megaprojects development initiatives. Empirically, the case of Maheshkhali Island in the southeastern region of Bangladesh is examined, where a coal power plant and deep-sea port have recently been implemented within the wider context of blue economy agendas and debates. The thesis addresses the phenomena of displacement, dispossession, and marginalization experienced by coastal communities in the wake of substantial investments by the government and international stakeholders in alignment with national blue economy strategies. The thesis investigates how these developments exacerbate existing inequity, disrupt the livelihoods of those affected, and undermine resource access. In doing so, the thesis addresses wider concerns regarding blue economy governance, justice, and sustainability.

The study employs an interdisciplinary approach within the marine social sciences, combining political ecology, coastal conflict studies, blue justice, and interactive governance frameworks to examine governance responses and identify pathways for equitable blue economy development. Methodologically, the study undertakes literature review on the blue economy and conducts qualitative data collection (interviews, focus group discussions, and participant observation), social network analysis, and discourse analysis. The core of this research is presented in 6 articles. The study's key findings, in Article 1, reveal discrepancies between global commitments to the blue economy and those in national policies. At the heart of these discrepancies is a lack of social equity and justice for marginalized resource users, identifying a need for scientific approaches to link to national policies to foster inclusive governance. Article 2 develops a conceptual framework for the creation of "safe spaces" with a focus on small-scale fisheries, offering equity-focused blue economy development for the implementation of equitable and sustainable practices that are grounded in international guidelines. Article 3 analyzes blue economy governance networks in Bangladesh, and reveals a concentration of power, the marginalization of local stakeholders, and a narrow focus on fisheries, tourism, and shipping in the blue economy governance perceptions of key national blue economy stakeholders. Article 4 offers empirical evidence of injustices and inequity in Maheshkhali Island and provides a critique of the development narratives along with geopolitics influences in Bangladesh. Article 5 explores the diversities and commonalities of the discourses that the blue economy stakeholders (i.e., local small-scale resource users) engage in and identifies the need for participatory processes to address environmental, health, and livelihood concerns. Article 6 uses "interactive governance" as a systemic framework to seek governance responses to injustice and inequity in blue economy initiatives in principles of

justice, encompassing recognition, procedural fairness, and distributive equity, to foster sustainable and inclusive blue economy transformations.

This research contributes to the growing scholarship on coastal and ocean conflicts within megaproject implementation, equity, and governance challenges in blue economy contexts of the Global South, and offers a basis for policymakers for informed policy-making. A policy brief with the most important findings and recommendations is under preparation.

Zusammenfassung

Der rasche Wandel der Küsten- und Meeressysteme wird durch grundlegende sozioökonomische Faktoren wie Privatisierung, Industrialisierung und Naturschutzinitiativen vorangetrieben. Diese Dynamik stellt die Kleinstnutzer von Ressourcen vor erhebliche Herausforderungen in Bezug auf Gleichheit und Gerechtigkeit. In dieser Studie werden die sozialen Auswirkungen von Entwicklungsinitiativen für küstennahe Megaprojekte untersucht. Empirisch wird der Fall der Insel Maheshkhali im Südosten Bangladeschs untersucht, wo vor kurzem ein Kohlekraftwerk und ein Tiefseehafen errichtet wurden. Dies geschah im weiteren Kontext von Agenden und Debatten zur blauen Wirtschaft (Blue Economy). Die Arbeit befasst sich mit den Phänomenen der Vertreibung, Enteignung und Marginalisierung, die Küstengemeinden im Zuge umfangreicher Investitionen der Regierung und internationaler Akteure im Rahmen der nationalen Strategien zur blauen Wirtschaft erfahren. Die Arbeit untersucht, wie diese Entwicklungen bestehende Ungleichheiten verschärfen, die Lebensgrundlagen der Betroffenen zerstören und den Zugang zu Ressourcen untergraben. Auf diese Weise geht diese Dissertation auf weiterreichende Bedenken hinsichtlich der Governance (Steuerung) der blauen Wirtschaft, sowie Gerechtigkeit und Nachhaltigkeit ein.

Die Studie verfolgt einen interdisziplinären Ansatz innerhalb der Meeressozialwissenschaften, der politische Ökologie, Küstenkonfliktforschung, „blaue Gerechtigkeit“ (blue justice) und interaktive Governance-Ansätze kombiniert, um Governance-Reaktionen zu untersuchen und Wege für eine gerechte Entwicklung der blauen Wirtschaft aufzuzeigen. Methodisch gesehen umfasst die Studie eine Literaturrecherche zur blauen Wirtschaft, eine qualitative Datenerhebung (Interviews, Fokusgruppen-diskussionen und teilnehmende Beobachtung), eine Analyse sozialer Netzwerke und eine Diskursanalyse. Der Kern dieser Forschung wird in 6 Artikeln vorgestellt. Die wichtigsten Ergebnisse der Studie (Artikel 1) zeigen die Diskrepanzen zwischen den globalen Verpflichtungen zur blauen Wirtschaft und den nationalen Regelwerken auf. Der Kern dieser Diskrepanzen ist ein Mangel an sozialer Gleichheit und Gerechtigkeit für marginalisierte Ressourcennutzer, was einen Bedarf an wissenschaftlichen Ansätzen zur Verknüpfung mit nationalen Regelwerken zur Förderung integrativer Governance aufzeigt. Artikel 2 entwickelt einen konzeptionellen Rahmen für die Schaffung „sicherer Räume“ mit Schwerpunkt auf der Kleinstfischerei und unterbreitet eine auf Gerechtigkeit ausgerichtete Entwicklung der blauen Wirtschaft für die Umsetzung gerechter und nachhaltiger Praktiken, die auf internationalen Richtlinien beruhen. Artikel 3 analysiert die Governance-Netzwerke der blauen Wirtschaft in Bangladesch und zeigt eine Machtkonzentration, die Marginalisierung lokaler Interessengruppen und eine enge Fokussierung auf Fischerei, Tourismus und Schifffahrt in der Wahrnehmung der wichtigsten nationalen Akteure der blauen Wirtschaft. Artikel 4 liefert empirische Belege für Ungerechtigkeiten und Ungleichheit auf der Insel Maheshkhali und übt Kritik an den Entwicklungsnarrativen und den geopolitischen Einflüssen in Bangladesch. Artikel 5 untersucht die Unterschiede und Gemeinsamkeiten der Diskurse, die von den Akteuren der blauen Wirtschaft (d.h. Kleinstnutzer von lokalen Ressourcen) geführt werden, und zeigt die Notwendigkeit partizipatorischer Prozesse auf, um Umwelt-, Gesundheits- und Lebensunterhaltsfragen anzugehen. In Artikel 6 wird die

„interaktive Governance“ als systemischer Ansatz verwendet, um auf der Grundlage von Gerechtigkeitsprinzipien wie Anerkennung, Verfahrensgerechtigkeit und Verteilungs-gerechtigkeit nach Governance-Reaktionen auf Ungerechtigkeit und Ungleichheit in Initiativen der blauen Wirtschaft zu suchen, um so nachhaltige und integrative Veränderungen in der blauen Wirtschaft zu fördern.

Diese Forschungsarbeit leistet einen Beitrag zu den wachsenden wissenschaftlichen Erkenntnissen über Küsten- und Ozeankonflikte bei der Umsetzung von Megaprojekten, über Gerechtigkeit und Governance-Herausforderungen in Kontexten der blauen Wirtschaft im globalen Süden und bietet politischen Entscheidungsträgern eine Grundlage für fundierte politische Entscheidungen. Ein Policy Brief mit den wichtigsten Ergebnissen und Empfehlungen ist in Vorbereitung.

Research articles in this thesis

Article 1: Blue Economy, Blue Growth, Social Equity and Small-scale Fisheries: A Global and National Level Review

Das, J. (2023). Blue Economy, Blue Growth, Social Equity and Small-scale Fisheries: A Global and National Level Review. Studies in Social Science Research, 4, p38.

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Article 2: Safe Space for Small-Scale Fisheries in Blue Economy Transformations

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Article 3: Stakeholder perceptions of blue economy governance networks and their equity implications in Bangladesh

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Article 4: Navigating development dilemma: An empirical case study of a coastal megaproject through the lens of political ecology

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Article 5: Engaging stakeholder perspectives in blue growth: Revealing resource user discourses of coastal mega projects in Bangladesh

Maheshwaran Govender, Jewel Das, Srijon Paul, Sourav Shil Shuvo, Samiya Selim, Marion Glaser

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Article 6: Megaprojects on coastal small islands: How to shape just transformation across governance orders

Jewel Das and Maheshwaran Govender

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Contents

Declaration according to Article 6 (3) Promotionsordnung

Declaration of my contributions to the co-authored articles

Article 1: Solely responsible for research question development, literature review, data collection and analysis, writing original draft, editing, and finalizing the manuscript

Article 2: Conceptualization of the research question, literature review, writing of original draft, editing, and finalizing the manuscript

Article 3: Conceptualizing the research questions, fieldwork, data collection, data analysis, writing original draft, editing, and finalizing the manuscript

Article 4: Fieldwork, data collection and analysis, writing an original draft, shared responsibility in conceptualizing the hypothesis

Article 5: Literature review, developing Q materials, data collection, writing draft, finalizing the manuscript

Article 6: Fieldwork, data collection and analysis, writing the original draft and finalizing the manuscript

Declaration according to Article 6 (6) Promotionsordnung

1. The work was performed without unauthorized assistance
2. Only the referenced sources and tools were used and
3. Direct quotations from the published or unpublished work of any source are identified as such.

1. Introduction

The oceans, seas, and coastal regions are vital ecosystems, with humans occupying a pivotal role as both beneficiaries and stewards. Coastal and marine ecosystems provide important support to millions of people worldwide. The "blue economy" agenda frames the ocean as the new economic frontier, attracting multi-national capital. The term "blue economy" is often used interchangeably with others such as "blue growth," "ocean economy," and "maritime economy" (Martínez-Vázquez et al. 2021). Blue economy, according to the World Bank (2017), "sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of the ocean ecosystem". It integrates environmental and economic interests by promoting biodiversity conservation while supporting marine-based industries. Emerging in recent decades as a key development paradigm, the blue economy emphasizes the reduction of pollution through innovative practices, the fostering of wealth generation, and the uniting of land and sea-based socio-economic development under sustainability principles. Blue growth represents a dynamic framework that has emerged from national and international marine policies. It aims to promote economic growth through the sustainable use of marine resources while ensuring the holistic management of complex marine socio-ecological systems. This research uses blue economy and blue growth as an integrated concept and encompasses economic activities related to coastal and ocean spaces. The need for mainstreaming the blue economy is reflected in Sustainable Development Goals such as SDG 14 (conservation and sustainable use of the oceans, seas, and marine resources), SDG 1 (no poverty), SDG 15 (life on land), and SDG 16 (peace, justice, and institutions) (UN 2012). Moreover, Ocean Decade Vision 2030 Challenge 4 specifies "develop a sustainable, resilient and equitable ocean economy" as a key challenge in coming decades[1]. Aligning with the objective of the United Nations Decade of Ocean Science for Sustainable Development (Ocean decade 2021- 2030), the blue economy complements the focus on sustainable use of coastal and marine research where ensuring equity and justice is important.

Blue economy widens the scope for regional development and maritime policies (Mogila et al. 2024) and many nations have embraced the idea (Brent et al. 2018) considering oceans and coasts as development space that can contribute to national welfare through sustainable management of marine and coastal resources. Least developing countries, where challenges like poor governance, political instabilities, and conflicts are frequent, can benefit by creating a sustainable blue economy vision (World Bank and United Nations Department

[1] https://oceandecade.org/challenges/

of Economic and Social Affairs 2017). Ocean Decade has the objective of restoring ocean health and functions as a unified platform for global ocean stakeholders (Lee et al. 2020). Stephenson & Hobday (2024) propose a blue economy blueprint with four steps – 1) defining shared blue economy goals (ecological, economic, socio-cultural, and governance), 2) establishing a governance framework to pursue these goals across all activities in a region, 3) creating a process to resolve conflicts, risks, and trade-offs, and 4) assessing cumulative impacts and management performance. Blueprints are critical for implementing nations to avoid contestation in coastal and ocean spaces and to address long-standing shortcomings of the blue economy such as designing frameworks for long and short-term goals and involving stakeholders by balancing economic interests and ecological health. The High-Level Panel for a Sustainable Ocean Economy advocates for approaches that combine effective safeguarding of marine ecosystems, sustainable production practices, and equitable economic benefits for societies[2] (IRP 2021). International Resource Panel (2021) describes the blue economy as an ocean-centered economy that delivers social and economic benefits fairly across both present and future generations. It aims to restore and safeguard the essential value and functionality of coastal and marine ecosystems, relying on clean technologies and circular resource flows. The global income generated by the blue economy is estimated at US$ 24 trillion, with an annual contribution of US$ 2.5 trillion (OECD 2016), and attributed to the potential to enhance economic prosperity, improve livelihoods, and foster social inclusion by responsibly and sustainably managing coastal resources (EC 2020). These benefits necessitate compatibility between economic returns from the ocean and its health. Multi-national investments linked to oceans and coasts are focused on a range of sectors including shipping, coastal and marine tourism, aquaculture, urbanization, port operations, oil and gas exploration, energy development, maritime transportation and other offshore businesses.

The blue economy development agenda aims to promote sustainable economic growth with potentials such as aquaculture and new food sources, sustainable tourism, marine renewable energy, and the decarbonization of shipping (Bleischwitz et al. 2023) but raises many concerns, including small-scale fishers and other marginalized coastal poor groups (Bennett et al. 2021; Das 2023). Prioritizing continuous economic growth frequently results in environmental harm and social inequities (Parrique 2023). There is concern that "*on current trajectories, efforts to delineate ocean and coastal space hold strong parallels (coastal or ocean grabbing) with other significant conversions of public or community-held resource into*

[2] https://oceanpanel.org/

private goods, risking the disenfranchisement of the maritime equivalent of peasant farmers" (Cohen et al. 2019, p 4). There are fundamental differences in ideologies, priorities, and approaches to blue economy project planning and implementation and holistic sustainability thinking. For instance, the ongoing growth of offshore fossil fuels is inconsistent with the Paris Agreement Goals (Shapovalova 2023). A deep understanding of both natural and human-induced pressures on the livelihoods of small-scale resource users, taking into account their socio-economic and political contexts, is essential for effective blue economy planning and management. This research therefore focuses on different groups of rural coastal poor people (fishers, aquaculturists, salt farmers, dry fish producers, and small entrepreneurs in the coastal areas) with a special focus on small-scale fishers in the face of massive coastal industrialization in the form of coastal megaproject establishments in blue economy initiatives on Maheshkhali Island, situated in the south-eastern coast of Bangladesh and explore potential governance responses.

Coastal megaprojects within blue economy initiatives in Bangladesh

Megaprojects are defined by their ambitious goals, significant scale, substantial investments, and the participation of diverse stakeholders with differing interests (Flyvbjerg, 2014). New coastal industries and megaprojects are expanding globally (e.g., Bangladesh, GED 2020) to drive economic growth and development. These projects often require substantial investments and setups. While they offer potential benefits like job creation, improved infrastructure, and increased trade, they also raise concerns about potential failures and negative environmental and social impacts, highlighting the need for thoughtful planning and management. Development in these sectors has direct and indirect implications for the livelihoods of the coastal small-scale resource users (EC 2010; 2017). Evidence from local contexts in Bangladesh and other developing countries indicates that issues related to tenure, access rights, and equity in small-scale resource users are being overshadowed by the current blue economy development. (Andrews-Speed et al. 2014; Bennett et al. 2021; Das 2023; Howard 2018; Isaacs 2020).

After the settlement of disputes over maritime boundary delimitations, Bangladesh is entitled to approximately 118,813 sq. km of maritime area in the Bay of Bengal which is almost equivalent to the country's landmass (MoFA 2014). Following these, the Government of Bangladesh adopted the concept of "Blue Economy" in 2015 as a policy objective of the Seventh and followed in the Eighth Five-Year Plan (GED 2015; 2020) and considered it a major opportunity for the economic development of the country's coastal regions followed by

implementation. The maritime areas of the Bay of Bengal in the national jurisdiction of Bangladesh are a "hotspot" in the geo-political arena of Southeast Asia; the resources therein and the aspiration of blue economy growth offer both opportunities and challenges for the sustainable management of the coastal-marine resources and environment. The country's coasts along the northern Bay of Bengal have long been the centers of human habitation (about 40 million people), civilization, and livelihoods (Hossain et al. 2014). The government of Bangladesh invested in coastal megaprojects within blue economy initiatives such as power plants, deep seaports, gas terminals, tourism parks, and other industrial units designated within proposed economic zones[3]. Research is needed to assess the socio-economic and environmental impacts of these projects to ensure sustainable development and equitable benefits for local communities. This research on coastal megaprojects in Bangladesh is wide-ranging, addressing critical dimensions such as the socio-economic impacts of these initiatives on local communities and environmental sustainability. The issue of displacement, dispossession, insufficient compensation for displaced individuals, loss of livelihoods, hampered access rights to resources, and the health impacts on local communities have been raised by coastal small-scale resource users (Islam et al. 2020; Market Forces 2019; Mirza 2020; Selim et al. 2024). These concerns call for further research that evaluates the effectiveness of the management of coastal megaprojects in blue economy initiatives and their implications on coastal livelihoods.

Marginalized coastal groups

Marginalized coastal people are socio-economically disadvantaged groups that reside in coastal areas. These populations typically consist of low-income households, indigenous peoples, small-scale fishers, women, and other marginalized groups dependent on marine and coastal resources for their livelihoods. Understanding the intersectionality of these coastal marginal communities is important to foster equity and inclusivity. Coastal communities, indigenous peoples, and small-scale fishers have a deep relationship with the ocean. These groups, which have historically and structurally been marginalized, often encounter an aggregation of multiple structural, distributional and positional disadvantages that lead to their exclusion from cultural and political participation in marine decision-making (Blythe et al. 2023). Small-scale fisheries are among the oldest coast- and ocean-related practices, viewing fisheries not just as a source of economic gain but as a complex social-ecological system that embraces the diverse and interconnected human-environment relationships inherent in small-scale fisheries (Nayak

[3] https://bwged.blogspot.com/2018/11/maheshkhali-development-plan.html (accessed on 31 July 2024)

2022). Small-scale fishers have been, and still are the largest group of ocean users in Bangladesh for generations (Islam 2023). They play a crucial role in directly or indirectly managing the available tangible and intangible marine resources within the coastal settings (FAO 2023a). These fishers face cross-generation poverty, food insecurity, lack of education, gender inequity, and inequitable resource allocation. Their livelihoods and occupational continuity are threatened by blue economy initiatives that prioritize profit-seeking for elite investors over sustainable resource use (Ayilu et al. 2023; Das 2023). In blue economy contexts, the conflicting interests of different resource users, governance actors, and national and international private sectors generate a complex web of interrelated, converging, and competing demands. As Bangladesh continues to implement a host of coastal development projects, the benefits from ocean and coastal space use flow disproportionally to some actors such as international investors. For instance, implementing coal-fired power plants by foreign investors with the collaboration of the national government hampers access to natural resources for small-scale resource users on the coast (Das et al. 2024; Selim et al. 2024). Women represent a significant portion of the most impoverished, disempowered, and voiceless individuals, making it essential to examine their access to benefits not only in blue economy production but also across value chains (Brugere and Williams 2017; Islam 2014). While innovation processes may reinforce existing inequitable gender roles in decision-making and production, they may also create opportunities for women and other marginalized groups to expand social networks, enhance social standing, and improve access to resources and market benefits from blue economy (Baliki et al. 2019; Patalagsa et al. 2015). Strengthening these opportunities is critical to better benefit already marginalized small-scale resource users from the blue economy. This is the focus of this research.

1.1 Conceptual framework

This research is based on the two central concepts of "equity" and "transformation" in blue economy initiatives. These terms are often complemented by justice and governance respectively. Equitable transformation is gaining prominence in blue economy research and sustainability, with recent studies highlighting the importance of a more inclusive and equitable governance approach to ocean-based economic development (Bennett 2022a; Issifu et al. 2023 Termeer et al. 2024).

Equity and justice

The terms "equity" and "justice" are used as allied concepts in this research which merits clarification. Though these two terms are acknowledged diversely in global scholarship, they share a common understanding for this research. The concept of social equity relates to fairness and justice in treating people and in the formation and implementation of public policies (Alexander et al. 2022; Bennett et al. 2019; Österblom et al. 2020). It encompasses just and equal outcomes from resources and benefits, and inclusive participation in decision-making and policy processes (Croft et al. 2024; Crosman et al. 2022; de Vos et al. 2023). Inclusive participation is linked to equity. With the right to meaningfully participate in decision-making, marginal groups can contribute to co-designing structures and processes so as to generate greater equity (equal or fair outcomes). From justice (or as in this study: blue justice in the blue economy) and equity perspectives, coastal resource governance across the globe frequently ignores the customary and usufruct entitlements of the rural poor (Bansard and Schröder 2021; Farmery et al. 2021). Formal institutions (i.e., laws and regulations) of the state do not favor the redistribution of wealth or create opportunities for the disadvantaged sections of society (Feld and Schnellenbach 2014; Panaro and Vaccaro 2023). Traditionally, small-scale fishers have had minimal or no influence over decisions impacting their livelihoods, with their needs and concerns largely overlooked (WWF 2022) which raises concern to ensure equity and justice for them. Based on this equity and justice scholarship, this research understands equity as "ensuring fair access to and equal outcomes in ocean-based economic activities by addressing systemic barriers and historical injustices, considering inclusive and sustainable growth that benefits marginalized groups, through principles of fairness, justice, and participatory governance".

"Justice" represents a comprehensive concept that extends beyond fair resource distribution but also justice-based approaches aim to tackle and reform the systematic structure and continuous inequities. Justice is closely related to equity. Global research is increasingly

focusing on justice issues but falls short of clearly defining how to share the limited environmental space (Gupta et al. 2024) and there is an increasing advocacy for planetary justice (Biermann and Kalfagianni 2020). The concept of blue justice fits within the broader frameworks of environmental justice, ecological justice, and social equity and entitlement. As defined by Chuenpagdee (2020), blue justice is "*a critical examination of how small-scale fisheries and their communities may be affected by Blue Economy and Blue Growth initiatives that promote sustainable ocean development but neglect small-scale fisheries and their contribution to ocean sustainability."* Although small-scale fishers remain central to its mission, blue justice has evolved into a broader movement advocating for social, environmental, and economic equity for other marginalized poor as well in coastal and marine settings. A wide range of equity and justice issues are acknowledged across coastal and ocean sustainability research. For instance, Nayak's (2022) study on the Chilika Lagoon identifies four types of injustices faced by small-scale fisheries: historical and systemic injustices, unexpected disruptions (e.g., the 2020 global pandemic), recurring injustices, and economic injustices linked to the blue economy. These challenges, whether considered individually or collectively, serve to exacerbate the socio-economic vulnerabilities of coastal marginal communities.

Attaining fair and just outcomes for current and future generations requires a thorough examination of multiple aspects of equity and justice that tackle the unequal allocation of resources and benefits both within and among societies (Bennett et al. 2019). Equity and justice issues are considered in many forms in marine research reflecting an increasing awareness of complex social-ecological systems. Exploring the diverse nature of equity in coastal and marine systems reveals that equity issues extend far beyond basic concepts of fairness and equal distribution. In a discussion of the sustainability research agenda beyond 2030, Sahle et al. (2024) emphasize research approaches that promote equity and justice and address power dynamics and geopolitical conflicts. Equity and justice issues are, however, as documented above, a pervasive and key challenge of blue economy initiatives, where access to coastal and marine resources is often inequitably distributed (Issifu et al. 2023). This imbalance tends to benefit a select few (Allison 2024), at the same time, already poor and marginalized and therefore particularly vulnerable coastal groups and communities disproportionately experience the adverse consequences of coastal development in a blue economy context (Österblom et al. 2020).

Equity dimensions (Table 1) of coastal megaprojects and blue economy are central to this research. The key dimensions that are important to blue economy equity and considered in this research are centrally based on the existing literature by Bennett (2022a), Pascual et al. (2014) and Zafra-Calvo et al. (2017).

Table 1: Equity dimensions in the blue economy

Equity dimensions		Explanation
Recognitional	-	Individual or groups' rights, tenure, values, knowledge, and livelihoods
Procedural	-	Ensuring inclusive participation in decision-making through transparent and accountable governance
Distributional	-	Fair distribution of benefits and burdens across groups, including future generations
Management	-	The range of local involvement and leadership in management initiatives
Contextual	-	Social, economic, and political conditions affecting wealth, power, and capabilities
Environmental	-	Quality of environmental benefit to ecological and human health

Transformation

Transformation is a generic term characterized by "radical, large-scale, and long-term changes" (Feola 2015; Hölscher et al. 2018; Patterson et al., 2016). Etymologically, transformation refers to a "change in shape", and transformation analyses focus on identifying "what" undergoes change within emerging patterns of changes and examining the resulting systemic outcomes (Folke et al. 2010). In a normative dimension of system change, the goal of transformation is to create safe and fair conditions to prevent harmful changes in the system. (Olsson et al. 2014). Karl Polanyi uses the term "transformation (Polanyi 1994)" in two distinct contexts - 1) long-term metamorphosis: a slow, evolutionary shift in society; and 2) short-term radical rupture: a political-economic event marked by sudden change (Novy 2022). Polanyi emphasizes that economic growth should be embedded in societal norms and values; and raises concern about a tension between market expansion and societal protection (Madsen 2024). The notion of "transformation" in this research is predicated on the pursuit of equitable outcomes for all stakeholders in the blue economy. This pursuit necessitates a careful balancing of trade-offs between economic growth and sustainability across governance approaches toward an equitable blue economy. Such governance approaches are important to be designed to ensure safe and equitable conditions for local resource users, while simultaneously preventing other adverse systemic shifts in blue economy implementation. Just transformation requires the core principles of equity, pluralism, inclusion, and diversity in research (Bleischwitz et al. 2023).

The Nijmegen Agenda (ESG 2024) encourages transformative research, which integrates insights from multiple disciplines and collaborates with societal actors to combine academic knowledge with other systems, fostering holistic approaches to address unjust and unsustainable development. It assumes the need for a comprehensive shift towards sustainability and equity in the management of resources and processes in implementing blue economy initiatives and aims to enhance human well-being in coastal communities. This research conceptualizes transformation as an initiative that aims to establish equitable and sustainable conditions that prevent detrimental shifts, balancing economic growth with societal norms and values to ensure fair outcomes for all stakeholders.

With the growing demand for blue economy products such as fisheries, energy, oil, gas, minerals, etc., fair resource allocation is crucial to ensure equitable and environmentally sustainable arrangements to deal with ongoing changes in ocean uses, resource abundance, and distribution. Selecting effective governance strategies is critical for driving transformative change toward sustainability (Termeer et al. 2024). Actors (i.e., government, civil society, private sectors, academics, NGOs) play a vital role in guiding desirable transformations through agency and governance because the process involved in shaping the changes is inherently political, marked by power dynamics and conflict of values (Hölscher et al. 2018; Patterson et al. 2016; Sahle et al. 2024). The absence of strong governance structures, coupled with widespread corruption impede the development of effective policies and strategies, resulting in the mismanagement and misappropriation of resources. Evidence from various global regions suggests that this hinders sustainability and equity orientations in marine and coastal governance and regulation development for marine and coastal resources (Ferse 2023; March et al. 2024).

1.2 Research questions

This doctoral research project addresses the following overall research question: *How do blue economy mega-projects in Bangladesh impact poor people's access to resources and livelihoods and what are the future options?* The following specific research questions (RQ) substantiate this:

RQ1: What types of (in)equity, and (in)justice are prevalent in large-scale blue economy projects, particularly concerning the use of coastal and marine resources, and what underlying factors contribute to these?

RQ2: What initiatives are included in large-scale blue economy projects to promote or enhance coastal livelihoods? And how do these initiatives affect the socioeconomic conditions of poor coastal residents?

RQ3: Which institutional arrangements and policy instruments are crucial for safeguarding the rights and livelihoods of rural communities in the context of coastal and marine resource management, and how can these leverage more equitable outcomes in coastal governance?

1.3 Short abstracts of the articles from this research

To address the research questions, six peer-reviewed articles are at the center of this thesis (Figure 1). The short abstracts of these articles are in this section.

Article 1: Blue Economy, Blue Growth, Social Equity and Small-scale Fisheries: A Global and National Level Review

The ocean is a key economic frontier, with growing initiatives in the "blue economy", emphasizing the need to support small-scale fishers. This review synthesizes global literature on blue economy, blue growth, social equity, and small-scale fisheries, highlighting risks of inequity and overlooking social justice in national blue economy plans. Such neglect often leads to coastal and ocean grabbing, displacement, and exclusion, significantly affecting marginalized communities. Evidence suggests a disconnect between international policies and their implementation at the national level, calling for critical policy rethinking and further research on governance to sustain small-scale fisheries while advancing equitable blue economy goals.

Article 2: Safe Space for Small-Scale Fisheries in Blue Economy Transformations

The blue economy encompasses diverse coastal and ocean-based activities, framing the ocean as a new economic frontier. While countries increasingly invest in ocean-based sectors, this growth raises concerns about the impact on marine ecosystems and small-scale fishing communities. This chapter explores strategies to create equitable and sustainable pathways for small-scale fisheries within blue economy initiatives, emphasizing the disparity between international discussions and national-level implementation. Focusing on Bangladesh's coastal regions, it examines legal and policy frameworks, including the FAO Small-Scale Fisheries Guidelines, to ensure sustainable human–nature interactions with equity as a central goal.

Article 3: Stakeholder perceptions of blue economy governance networks and their equity implications in Bangladesh

The "Ocean Decade" emphasizes ocean governance aligned with Sustainable Development Goals. Using participatory network mapping, this study examines perceptions of Blue Economy governance in Bangladesh, highlighting 83 actors and diverse governance dynamics. Key themes include the centrality of government, the influence of international agencies, and the marginalization of local communities. Governance relationships are predominantly characterized by information, support, and funding, but a narrow focus on fisheries, tourism,

and shipping risks non-inclusive development. To address these challenges, the study advocates for a more inclusive, collaborative governance approach, emphasizing "blue equity," capacity building, and research-driven policy through an effective Blue Economy Cell.

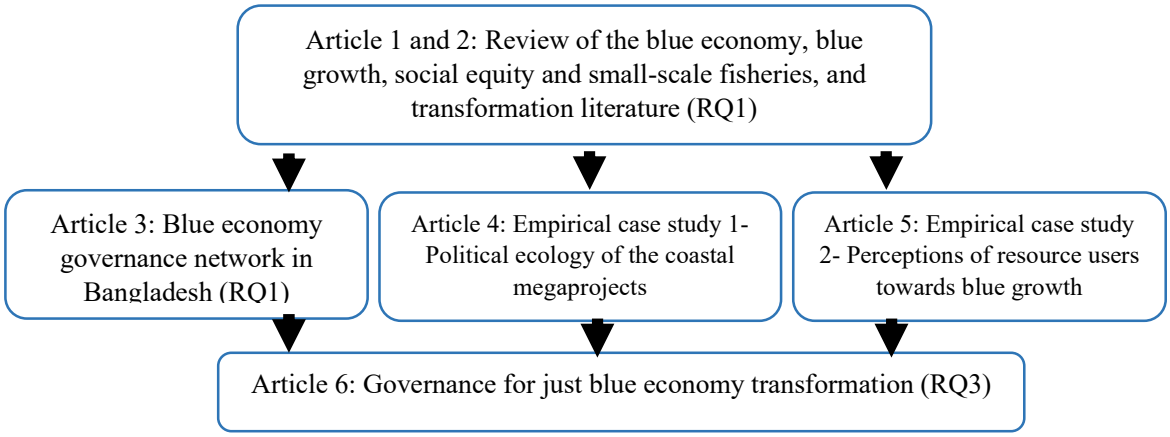

Figure 1: Flowchart of the research articles (1-6), and their links to the research questions

Article 4: Navigating development dilemma: An empirical case study of a coastal megaproject through the lens of political ecology

Maheshkhali Island, a strategic location in southeastern Bangladesh, has become a hub for energy infrastructure projects, central to national blue economy initiatives. This study examines the social-ecological impacts of a coal-fired power plant on the island through a political ecology lens using the 4E framework: Economic Enclosure, Political Exclusion, Ecological Encroachment, and Social Entrenchment. Empirical findings reveal significant injustices faced by marginalized coastal communities due to megaproject development. The research highlights the need to critically reassess policies and governance to prioritize equity and justice in coastal industrialization, contributing to global debates on sustainable development and investment strategies.

Article 5: Engaging stakeholder perspectives in blue growth: Revealing resource user discourses of coastal megaprojects in Bangladesh

Blue growth initiatives such as coastal megaprojects, especially in the Global South, often overlook local perspectives. Bangladesh, following its maritime dispute resolution, focuses on Maheshkhali Island as a blue growth hub for energy, trade, tourism, and economy. Using Q methodology, this study captures small-scale resource users' views on these developments,

identifying three discourses: injustice in growth, development within bounds, and calls for just compensation. Concerns include displacement, livelihoods, health, environmental degradation, and equity. Insights into justice dimensions—recognitional, procedural, and distributive—stress the need for inclusive, equitable blue growth, offering lessons for South Asia's coastal planning.

Article 6: Megaprojects on small coastal islands: How to shape just transformation across governance orders

Recent blue economy and growth initiatives, including coastal megaprojects on small coastal islands in the Global South, raise justice and equity concerns, especially for small-scale fishers. These projects, often disregarding local priorities, undermine sustainable development goals such as poverty reduction, ecosystem protection, and justice. This chapter explores how interactive governance (IG) theory can support just transformation in the context of small-island industrialization. Using a case study from Bangladesh, this research highlights how embedding justice principles—recognitional, procedural, and distributional—across governance orders can foster resilient, equitable, and sustainable pathways, ensuring that coastal communities' values and interests are prioritized in blue economy development.

Last but not least, a policy brief based on this doctoral research is under development with the collaboration of the Office for Knowledge Exchange (OKE[4]) at the Leibniz Centre for Tropical Marine Research (ZMT) Bremen, connecting the knowledge dissemination process from this research to the national government of Bangladesh.

[4] https://www.leibniz-zmt.de/en/cooperations.html

2. Synthesis of the findings

Equity and justice in implementing coastal megaprojects within the blue economy are at the core of this research. Additionally, blue economy-driven growth objectives in Bangladesh, sustainable development targets, geopolitical implications, governance challenges, socio-economic transformation, international investment and policy formulation are considered cross-cutting issues with equity and justice. This dissertation's overarching themes include ocean and coastal conflicts, geopolitics and governance of coastal megaprojects, and navigating blue economy transformations. The following section summarizes how the six research articles for this doctoral research project explore diverse aspects of equity and justice, as related issues within and across these themes.

2.1 Coastal and ocean conflicts in the blue economy

Equity and justice frequently give rise to ocean and coastal conflicts, as they address the underlying social dynamics and power imbalances that often contribute to heightened tensions over marine resources. Under the theme "Making Vision 2041 a Reality", the Ministry of Planning in Bangladesh developed the "Perspective Plan of Bangladesh[5]" (GED 2020). To support this vision, the government, in collaboration with private sector actors including large international investors, has been investing across the country, including in terrestrial, coastal, and marine areas (Article 4). Article 3 finds an increasing investment from international funders in blue economy initiatives in Bangladesh. These investments wield considerable influence over the national decision-making process, however, not considering equity and justice for small-scale resource users (Articles 1 and 3). As part of this industrialization effort, plans include establishing land and seaports, economic zones for export-oriented industries and ready-made garments, hi-tech parks, maritime industries, travel and tourism sectors, road and highway development, and investments in the power sector (ADB 2023). One of the major concerns regarding these national-level blue economy planning is the lack of social equity and justice consideration, highlighted in different international blue economy discourses and research articles (Article 1). In this case, one of the critical causes of conflict generation is competition for access to resources and space such as uses for deep sea ports, economic zones on the coast, coal-fired power plants, and traditional coastal livelihoods. While some respondents recognize potential benefits from the blue economy, such as employment

[5] https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://oldweb.lged.gov.bd/uploadeddocument/unitpublication/1/1049/vision%252020212041.pdf&ved=2ahUKEwjnjtGxoN2KAxVFhP0HHYEAORsQFnoECBQQAQ&usg=AOvVaw1bq90r2AwYZXj5OQv7dyEs (Accessed on 05 September 2024)

opportunities and enhanced infrastructure, concerns regarding power imbalances and exclusion predominate in local discourses on coastal Bangladesh (Article 5). The inequitable distribution of benefits, the absence of community participation in decision-making processes, and the prioritization of national and international interests over local needs have exposed deficiencies in the planning and execution of coastal industrialization initiatives. These shortcomings have led to an exacerbation of social and environmental inequity, risks and injustices for marginalized communities that fuel conflicts (Article 2).

An understanding of the various types of ocean and coastal conflicts, their origins and their impacts on stakeholders engaged in resource use is important for this research to analyze (i.e., variety of resource users operating at different levels) and provide valuable insights for the development of more inclusive and equitable coastal and marine resource management policies[6]. An awareness of the nature of coastal and ocean conflicts can assist stakeholders in preparing for the future by encouraging an open consideration of potential trade-offs and compromises, rather than relying on rhetoric that suggests a mutually beneficial outcome for all parties. This approach is vital for fostering a fair and equitable distribution of resources and ensuring an equitable blue economy. Even though conflicts among stakeholders may appear to impede the development of the blue economy as perceived by blue economy stakeholders in Bangladesh (Article 3), constructive tensions can serve as opportunities to foster collective dialogue, strategic planning, and the creation of effective governance frameworks (Knol-Kauffman et al. 2023; Tafon et al. 2021). It is not necessarily a typical conflict type (i.e., user-user or user-environment), rather it increasingly manifests sustainability conflicts. Articles 2 and 6 reveal user-user conflicts when coastal megaprojects grabbed commons such as salt farming areas, aquaculture, and fishing grounds and in some cases completely displaced communities that hampered their access to resources.

This exclusion of local small-scale resource users in decision-making and resource management jeopardizes the expected outcomes of coastal megaprojects such as equitable distribution of benefits, and consideration of local needs (Articles 5 and 6). Evidence of conflicts of interest and displacement, dispossession, and violating resource access rights for local users are part of the coastal industrialization process in the location of the focal case study of this work in coastal southeastern Bangladesh (Blue Economy Tribunal 2021; Articles 4 and 5). Increasing grievances and conflicts were visible on Maheshkhali Island as there were demonstrations and civil unrest involving local populations[7] during the megaproject site

[6] https://www.leibniz-zmt.de/de/forschung/wissenschaftliche-projekte/no-crises.html (Accessed on 20 November 2024)
[7] https://www.matarbari.org/ (Accessed on 20 December 2024)

selection, preparation, and establishment (Mirza 2020; Selim et al. 2024), which further elaborated in Articles 4 and 5. The involvement of local communities in the land acquisition and compensation process driven by local governments and private companies has been associated with challenges in ensuring equitable relocation for the large number of local people displaced by blue economy megaprojects. This is due to the inability of local government and megaproject implementing authorities to ensure fair treatment and compensation for affected individuals (Mirza 2020; 2021). Local NGOs in Bangladesh recorded displacement of approximately 20,000 people due to the establishment of megaprojects on Maheshkhali Island (Article 4) which fueled conflicts both among the resource users and between locals and investors during and after displacement. The primary allegations included a failure to consult with local communities before the development of these large-scale projects and the inadequate compensation provided to those who were displaced and dispossessed. Researchers find that increasing coastal and ocean conflicts are driven by institutional failures (Bennett et al. 2022a; Spijkers et al. 2018).

This research further reveals escalating conflicts and grievances in coastal megaproject establishments due to the failure of local government (institutions) in managing displacement and compensation issues, and livelihood security of the local resource users (Article 6). Additionally, Article 2 (Figure 4) argues that weak governance structures and the absence of dedicated policies for small-scale resource users hinder their resilience amid the blue economy. This is despite the availability of international small-scale fisheries guiding instruments like the FAO SSF Guidelines, which require integration with blue economy principles. To address these challenges, Article 6 proposes a comprehensive set of strategies aimed at incorporating local norms, values, interests, and rights, as well as the integrity of the ecosystem on which they depend, into the governance of the blue economy transformation.

Blue justice in the coastal context of Bangladesh, with a particular focus on its implications for small-scale fishers (Articles 1, 2, 5, and 6) is another major theme in this research. The concept of "blue justice", and the social movement(s) behind it (e.g., the "Too Big to Ignore[8]" initiative) underscore the importance of the establishment of a fair and equitable system for marginalized and vulnerable small-scale resource users. The challenges posed by competing coastal and marine users, emphasizing distributive justice, access rights, food security, power dynamics, gender equity, and sustainability are explored in this research (Articles 1, 2, 5, and 6). Coastal megaprojects, including ports, harm artisanal fishing

[8] http://toobigtoignore.net/home/ (Accessed on 10 October 2024)

communities through dredging, erosion, and restricted access to traditional fishing grounds, threatening livelihoods deeply tied to cultural identity and social structures. Resource users on Maheshkhali Island share concerns over livelihood losses, reflecting broader patterns in the Global South, where such projects prioritize neoliberal economic growth over social and environmental justice, often failing to provide adequate compensation or alternative livelihood options (Article 5). On Maheshkhali Island, concerns regarding forced displacement for projects such as the Matarbari power plant have emerged, with the majority of resource users expressing reluctance to relocate. This highlights the significant value they attribute to their land and coastal areas, which are crucial for their livelihoods, social networks, and cultural practices (Article 5). The conceptual framework (Article 2, Figure 4) shows pathways toward safe spaces for small-scale resource users and pursues equity and justice must be a central focus in blue economy initiatives.

2.2 Geopolitics of coastal megaprojects

The interplay among geopolitics, political ecology, equity and justice within coastal megaprojects is multifaceted and complex. It is imperative to acknowledge and address power dynamics and geopolitical conflicts, as they exert a substantial influence on resource control, social exclusion, and the participation of marginalized groups in decision-making processes (Boonstra 2016). Due to the strategic location and suitable navigation facilities with national and international ports, southeastern coastal Bangladesh, particularly Maheshkhali Island became a hotspot for implementing megaprojects such as economic zones, gas terminals and deep seaports (CPA News 2020). Drawing on a wide range of political ecology discourses (Article 4) across the natural and social science disciplines, this research reflects on the potential of the management and governance of coastal commons. Political ecology, beyond academic study, includes the knowledge and actions of people – often those who are disadvantaged, and affected by resource management interventions, and environmental initiatives (Bridge et al. 2015). Competition for space and resources in coastal areas due to the blue economy is likely to cause conflicts over who can access and control these resources. These conflicts represent critical subjects within the domain of political ecology (Bryant and Bailey 1997; Movik et al. 2023).

The historical forces of colonial and neocolonial development serve as long-standing obstacles to achieving high blue economy capacity including nations to sustainably manage ocean and coastal resources, improve livelihoods and ecosystem health in different regions across the Global South (Clark and Cisneros-Montemayor 2024), also revealed and discussed

in Article 4 and 5. Researchers argue that early greening is likely to bring economic co-benefits, such as improved competitiveness through efficiency gains and establishing a position in future markets. In contrast, delaying action risks irreversible environmental damage, lock-in of polluting technologies, and potential losses from stranded assets (Pegels and Altenburg 2020). Moreover, the results of industrial policy depend on whether the current political environment supports the policies and whether the state can implement them effectively (Juhász and Lane 2024). In this research, it was evident that coastal industries and large-scale projects generate controversies and carry risks of failure, as well as of negative social and environmental impacts, highlighting the need for better planning and supervision (Articles 5 and 6). Furthermore, the frequently externally driven planning and implementation of megaprojects (Kafi et al. 2023) raise critical issues related to fairness, equitable resource distribution, employment, gender considerations, access to traditional rights, and stakeholder participation in decision-making, and environmental impacts. One resulting central issue is the restricted access to resources, such as fishing grounds, and coastal aquaculture, for small-scale coastal stakeholders, who, as a consequence face challenges in the context of the large-scale coastal industrialization that characterizes many if not most blue economy initiatives. This study identifies three justice dimensions—distributional, recognitional, and procedural—within community discourses, highlighting risks like displacement, livelihood loss, and environmental harm, emphasizing the need for inclusive, people-centered planning to achieve equitable and sustainable transformations amidst climate vulnerabilities (Articles 4 and 5). Moreover, increasing international investors' involvement in megaproject implementation influences national governance and prompts critical questions regarding their goals, interests and agenda (Article 3). From the perspective of procedural equity, the limited representation of local actors in decision-making reinforces existing power imbalances and constrains local actors' capacity to influence the formulation of policies and practices that have a direct bearing on their lives and livelihoods. This also underscores concerns about distributional equity, where the costs and benefits of blue economy development are unevenly distributed, leaving communities to bear environmental and social burdens while receiving minimal to no economic benefits (Article 2, Box 1). Glaser et al. (2018a) argue that equity is not only a normative necessity but also a crucial element in ensuring social and ecological sustainability. Notwithstanding this growing focus, significant challenges persist, including power imbalances, the increasing influence of foreign investments in weaker economies, and the exclusion of marginalized communities (Article 3).

2.3 Governing the blue economy

Governance is recognized as a fundamental element of sustainability alongside ecological, economic, social, and cultural dimensions (Foley et al. 2020). However, most of the ocean policies are equity-blind (Österblom et al. 2020) and consistent methods to identify effective governance mechanisms for the blue economy are lacking (Voyer et al. 2018). The theory of interactive governance (Kooiman 2003) is central to Article 6 in this research. Interactive governance presents a promising approach by integrating diverse stakeholder perspectives, local knowledge, and adaptive governance modes to ensure equity and blue justice for small-scale fisheries within the blue economy. It offers a framework for addressing blue economy challenges, such as ecosystem health, social justice, and food security, by involving stakeholders directly impacted. This approach integrates ethical principles, local knowledge, and dynamic interactions between the "governing system" and the "system-to-be-governed" to address injustices (Jentoft & Bavinck 2014; Kooiman 2003). Governance constitutes a pivotal element of sustainability; however, contemporary ocean governance frameworks are deficient in their comprehensive focus on livelihoods, justice, and food security, particularly for small-scale fisheries which we revealed in article 5 and 6.

Governance across three levels—Meta, second-order, and first-order—was analyzed to explore blue justice. Meta-order governance focuses on the guiding principles of governance systems; second-order governance examines institutional frameworks and their contributions to sustainability; and first-order governance analyzes daily stakeholder interactions and power dynamics (Article 6). Blue justice is examined within these levels, emphasizing the impact of power relations, institutional rules, and normative principles on coastal communities (Jentoft & Chuenpagdee 2022). The meta-order vision for Bangladesh's blue economy emphasizes unrestrained economic growth through large-scale coastal and marine ventures and presents substantial challenges in integrating justice and equity principles (Articles 2 and 6). To align with Sustainable Development Goals (SDGs)—such as SDG 1 (no poverty), SDG 2 (zero hunger), SDG 10 (reduced inequalities), and SDG 16 (peace, justice, and strong institutions)—local marginal resource users' interests must be balanced with the blue economy, social justice, and environmental sustainability. The meta-order (i.e., Blue Economy Cell, Bangladesh) serves as a critical leverage point for shaping rules and regulations that align with the blue justice principle which we argued in Article 6.

Effective governance plays a crucial role in addressing the challenges highlighted in Article 1, where evidence indicates that equity is frequently undermined in the context of blue economy initiatives. Factors like grabbing coasts and oceans, competition for spaces,

privatization of coastal and marine spaces, conflicts and injustices, inequitable share of benefits, and lack of fairness in distribution contribute to exacerbate inequity and cause equity-related failures (Article 4). Blue economy agendas at the national level require the diversification of existing policies, priorities, and country-specific attention. The literature review (Article 1) examines national-level blue economy policy frameworks, drafts, scoping reports, and intervention plans proposed by researchers. It is striking that these documents largely lack explicit provisions for ensuring social equity and justice. It is shown that although national-level policy documents frequently articulate sustainable development goals, they often lack a clear definition of social equity and strategies for blue economy policies. The needs and livelihoods of individuals, groups, and communities that rely on marine and coastal resources are omitted or marginalized, with the blue economy taking precedence over other considerations. Article 3 addresses the importance of inclusivity in blue economy initiatives in Bangladesh. This includes considering the local voice, and governance mechanisms to accommodate international investments, and regulating them to consider local interests. It also recommends creating spaces for communities to take part in blue economy decision-making and governance processes. This research argues with Österblom et al. (2020) that, to address the persistent trend of growing inequities and promote a sustainable blue economy, it is imperative that strong leadership, inclusive governance, and strategic, equity-focused long-term planning be implemented.

Governance for sustainability also requires transformative strategies, which is discussed in section 2.4, prioritizing equity, participation, and rights for marginalized small-scale fisheries (Crona et al. 2020). Leveraging decision-making systems to mitigate local-level conflicts is critical, inspired by Meadows' (2010) framework for complex systems. Article 5 reveals a disconnection between Bangladesh's top-down blue economy rhetoric and the perspectives of small-scale resource users on Maheshkhali Island, who largely dismiss the claim that coastal megaprojects alleviate poverty locally. The findings highlight the need for decision-makers to engage with marginalized community voices, challenging the assumption that indiscriminate development ensures socio-economic transformation. The dominance and centrality of government actors in blue economy governance networks (Article 3) hinder the holistic vision of national-level policy forming and implementation. Local resource users that are excluded in major decision-makers' perceptions of blue economy governance view coastal megaproject implementation overlook local concerns (Articles 4 and 5). Local resource users express their primary concerns regarding the impact such as coastal megaproject development on health, livelihoods, and displacement, as well as the implications for ecosystems. These

concerns underscore the necessity for equity-focused governance and criteria to guide the implementation of blue economy initiatives in coastal areas. To do so, collaborative efforts among stakeholders, the adoption of participatory frameworks like the "Monitoring, Evaluation and Learning Framework for small-scale fisheries (FAO 2023b, Article 2)," and the establishment of institutional mechanisms such as small-scale fisheries councils are essential for achieving sustainable and inclusive outcomes.

Article 3 proposes a blue equity approach to guide sustainability-oriented blue economy governance and posits that a commitment to equity and justice at its core is essential. A platform named "Community of Practice on Blue Economy Governance (CoP-BG)" was suggested through findings from governance netmapping. CoP-BG would facilitate a platform for stakeholders to communicate, exchange knowledge, monitor progress, and align their efforts, thereby reducing conflicts and promoting transparency, influencing decision-making by local resource users in blue economy governance. Regarding policy, Article 3 also suggests the implementation of effective blue economy governance in Bangladesh necessitates a centralized yet collaborative approach, integrating inclusive stakeholder engagement, knowledge-driven strategies, and decentralized governance to ensure transparency, accountability, and equitable outcomes. As an action, the idea of real-world lab initiation with the collaboration of the Government of Bangladesh's Blue Economy Cell and CoP-BG was proposed to encompass a shift in stakeholder mindset, fostering an enabling environment through funding, and promoting evidence-based policy formulation while prioritizing justice and equity. To address the persistent trend of growing inequities and promote a sustainable blue economy, it is imperative that strong leadership, inclusive governance, and strategic, equity-focused long-term planning be implemented.

Article 6 outlines pathways for governance interaction in the blue economy, emphasizing equity-based principles, inclusive governance, and stakeholder engagement to foster sustainable coastal resource management. The article (Article 6; Table 2) presents requirements across three interactive governance orders to promote blue justice in small coastal island blue economy contexts, emphasizing recognitional, procedural, and distributional justice at Meta, second, and first-order governance levels. It further delineates pathways toward effective governance strategies, encompassing the formation of justice-centered images in meta-order, the establishment of fair institutional frameworks, and localized capacity-building initiatives such as participatory management, conflict resolution, and equitable resource distribution. It is imperative to prioritize equity-focused development goals and foster co-governance, which is based on cooperation, trust, and local participation. This is crucial for

achieving these principles across governance systems and levels, particularly in the context of increasing competition for coastal resources (Connell 2018; Pascual-Fernández et al. 2018). The translation of meta-order visions into second-order institutions and first-order actions provides an avenue for the establishment and implementation of regulatory frameworks that align with these goals. This research concurs with Bennett (2022b) that increasing "human dimensions to think socially" is also important. This means shaping Meta order to think socially before creating images, making decisions, designing policies and implementing blue economy initiatives.

Voyer et al. (2022) analyze national-level blue economy interpretations, governance policies and approaches and emphasize that effective blue economy governance requires the establishment of coherent policies, strategies, and institutional mechanisms. Evans et al.'s (2024) study on the Bangladesh blue economy highlights the importance of identifying context-specific enablers and constraints in order to effectively address the underlying barriers to blue economy progress. As mentioned earlier, Article 3 suggests establishing a "Community of Practice on Blue Economy Governance (CoP-BG)" which has the potential to address existing knowledge gaps (knowledge), and facilitate and promote transparency (policy) and stakeholder engagement (action). The CoP-BG is likely to serve as a nexus for knowledge exchange between regional and international stakeholders, thereby facilitating capacity building and inclusive decision-making processes, particularly for marginalized groups. To this end, policies must emphasize coordinated efforts, decentralize governance, and integrate coastal communities as blue economy actors. One potential strategy to enhance coordination and policy execution is through the Blue Economy Cell in Bangladesh, as an apex governing body. A fundamental shift in stakeholders' perspectives is important, moving towards an inclusive blue economy approach, supported by research initiatives, financial resources, and mentorship programs. The CoP-BG should play a leadership role in facilitating policy changes that are equitable and informed by evidence-based strategies. To avoid perpetuating inequalities, CoP-BG should prioritize equity as the core principle in blue economy governance.

A transdisciplinary[9] approach is required to identify historical and ongoing injustices and ensure an equitable governance for small-scale resource users. Justice within the blue economy is operationalized across three dimensions: recognitional justice (acknowledging traditional governance systems), procedural justice (inclusive participation in decision-making), and distributive justice (equitable sharing of benefits) (Article 6). Historical and

[9] Transdisciplinarity (TD) considers knowledge beyond academia, including knowledge from stakeholders or practitioners, which can encourage innovation and transformation (Article 2)

systemic injustices, unexpected disruptions, recurring injustices, and economic injustices linked to the blue economy exacerbate the socio-economic vulnerabilities of small-scale fishing communities (Article 2). Addressing the risks and injustices of the blue economy necessitates fostering blue justice through community resilience, decentralized decision-making, and equity-centered governance for just transformation. This approach prioritizes the rights and needs of small-scale resource users and marginalized coastal communities. Collaborative actions, such as peaceful protests, social innovation, and the establishment of networks for collective action, supported by governments, NGOs, and civil society, can empower "Ocean Defenders[10]" to safeguard marine ecosystems, uphold human rights, and mitigate blue economy-related injustices. A comprehensive and inclusive approach that integrates diverse knowledge systems, including traditional, local, and scientific insights, along with transdisciplinary research, which is essential to addressing social, cultural, economic, and ecological dimensions of small-scale resource users and ensuring their viability and equitable participation in the blue economy (Article 2, Figure 4). Addressing the complexities of small-scale resource users' governance and the prevailing inequity therein necessitates a transdisciplinary approach, involving the integration of scientific, social, and local knowledge to formulate inclusive, context-driven solutions (Article 2). Based on the consideration of blue economy risks and injustices (Article 2, Figure 4), the conceptual framework was developed with recommendations such as - the need for ensuring equitable space for small-scale resource users within the blue economy, and the pursuit of equity must be a central focus in blue economy transformation.

Inspired by Bennett et al. (2019)'s suggestions for promoting social sustainability and equity in blue economy frameworks, policies, practices, and development approaches, and based on the findings from six articles in this research, this research recommends the following four key areas to consider in Bangladesh blue economy initiatives– i) Meta order governance (i.e. central government) rethinks and reshapes blue economy development framework and narratives (Article 6) so that initiatives prioritize people over profit by placing equity and justice in its core; ii) National-level blue economy policies, plans and discussions incorporate equity and justice principles (Article 1, 2, and 6), ensuring inclusion, benefit, action to protect human rights, and well-being for coastal marginal communities; iii) Shifting international and national investors' principles and practices from merely protecting rights to actively enhancing human well-being (Article 3), that benefit coastal communities in the blue economy; iv)

[10] https://oceandefendersproject.org/ (Accessed on 24 November 2024)

Emphasize the importance of inclusive and participatory decision-making that takes into account the diverse perspectives and concerns of local stakeholders to promote just and equitable blue economy in Bangladesh (Articles 4, 5 and 6).

2.4 Navigating blue economy transformation

Blue economy transformation, in this research, is assumed to pursue key values and principles such as equity, justice, human rights, and sustainability (Articles 2, 5, and 6). A transformation in the governance of coastal megaprojects in blue economy initiatives, in line with equity and justice-based principles is therefore also imperative. There is potential for a more transformative approach to advancing the blue economy in Bangladesh that may require a fundamental rethinking and redefinition of governance practices, moving beyond the predominantly structural changes that have been implemented to date (Evans et al. 2024). Governance processes (section 2.3) are essential as the transformation requires ongoing reflection, as outlined in Article 6, injustice occurred in three orders (Meta, second, and first) of interactive governance while initiating megaprojects in Maheshkhali Island. The central government's narrow vision of the blue economy (Article 3), ineffective implications of international guidelines in the national-level policies (Articles 1 and 2), and blue (in)justice occurrence toward small-scale resource users (Articles 4 and 5) necessitate serious attention. These altogether hamper procedural, recognitional, distributional, and contextual equity. Socio-technical changes are vital for sustainability and just transformation, involving co-development and complex interactions across industries, sectors, technologies, markets, policies, and cultures (Geels 2012). For instance, locals' capacity building is important to benefit them by engaging in diverse livelihood options including employment opportunities in megaproject operations (Article 6, Table 2).

In Maheshkhali Island, achieving a just transformation in complex social-ecological systems necessitates a consistent vision across governance levels to balance needs and support adaptation to changing contexts (Articles 2 and 6). The assurance of fairness also necessitates the transformation of antagonistic relationships into constructive collaborations and the efficacious implementation of global principles of equity and justice at all levels, including the locals (Articles 3 and 4). This calls for meta-level governance designed to embed core elements such as values (e.g., equity), norms (e.g., blue justice), principles (e.g., diversity), and choices (e.g., the rights of small-scale resource users) to provide better support for small-scale resource users in just transformation of the blue economy as we argued in Article 5 and 6.

Prioritizing women's engagement in the blue economy is recommended in recent literature to achieve ocean sustainability (Matovu et al. 2025). Extensive coastal industrialization in Bangladesh has had impacts on gender dynamics. The historical marginalization of women is found to be further exacerbated by the coastal megaprojects (Articles 4 and 6). Land grabbing due to preparing grounds for the establishment of coastal megaprojects displaced families and seriously hampered the subsistence livelihoods of women. The women displaced by megaproject development in Maheshkhali lost their homestead farming, vegetation, participation and benefits in post-harvesting activities as well as their mobility and social interaction, and support networks. Coastal industries in Maheshkhali Island also have limited scope for women to benefit from employment created. This situation creates a social problem because it results in women having few safe social spaces in which to pursue their needs and rights (Article 4). Women's participation and getting benefits in blue economy sectors remain a significant challenge. There are gender gaps across wages, working conditions, and perceived lower degree of gender-focused initiatives implementation (García-Echalar et al. 2024). These dynamics altogether deepen socio-economic vulnerabilities.

Matovu et al. (2025) also pursue to design targeted interventions—including training programs, financial support, and gender-disaggregated data-driven policies— which are essential to dismantling barriers and creating pathways for women's holistic participation and leadership in blue economy sectors. As cited in Article 4, one woman participant of displaced communities (March 2022, FGD) states "*If it were up to me, I would not let them take away my land, and they would have to go over my dead body for it. But I had not known about the deal my father had made with the project entities before it was too late. We could not even bring any of our plants from that place. And in this new housing, there is barely any soil for us to grow plants. That is the most painful part of this whole experience".* In this research site, however, initiatives from the NOCRISES[11] project facilitated displaced women's engagement in creative art (Article 6) to bring their displacement experiences to the national and international arenas and follow up initiatives enhanced through resilience and generated alternative livelihood options[12] for displacement affected women and men[13]. Through embroidery, these women were able to share their stories and art with the world, finding both a voice, a means of expression, and a contribution to constructing an alternative to their lost

[11] https://www.leibniz-zmt.de/de/forschung/wissenschaftliche-projekte/no-crises.html (Accessed on 20 November 2024)

[12] https://stories.marketforces.org.au/stitching (Accessed on 28 November 2024)

[13] https://www.linkedin.com/posts/center-for-sustainable-development-ulab_csd-marketabrforces-resilience-activity-7136961161001934849-_bTQ/?utm_source=share&utm_medium=member_android (Accessed on 22 December 2024)

livelihoods. These initiatives in Maheshkhali Island facilitated displaced women in building capacities, empowerment, and community building which is a necessary step towards just transformation, in line with the idea of "strategic sustainable transformation pathways", proposed by Matovu et al. (2025). These facilitate coastal women's empowerment to promote equity and just transformation in the blue economy.

Based on global scholarship, findings of equity dimensions in this research and proposed just blue economy transformation framework, an equity-centered conceptual framework for coastal megaprojects within blue economy initiatives in Maheshkhali Island was developed in Article 6. This framework sheds light on actions needed for a just and equitable blue economy transformation (Table 2);

Table 2: Implement pathways for equitable blue economy transformation in Bangladesh

Equity dimensions	**Problem areas**	**Recommended actions toward just and equitable blue economy transformation pathways**
Distributive	Assessing the impacts of coastal megaprojects that change social-ecological systems in terms of distributing costs, benefits, and risks	- Comprehensive environmental and social impact assessment - Risk and benefit-sharing frameworks and protocol - Adaptive capacity building for the local resource users
Procedural	Ensuring equal basic rights in coastal megaproject decision-making, and legal provisions to actions favoring marginalized groups concerning displacement, dispossession, unable to access to resources	- Inclusive and participatory decision-making ensuring stakeholders' and right-holders' voices are heard - Ensuring legal aspects of injustice due to coastal megaproject implementation - Effective and meaningful social and environmental impact assessment
Contextual	Consider historical and existing inequity, social, economic, and political conditions affecting wealth, power, and capabilities –which limit or enable local users' benefit or resource distribution within coastal megaproject implementation	- Mapping impacted stakeholders, historical inequity, power dynamics, intersectionality, governance structure, adaptive capacity of the existing local resource users, and environmental justice
Recognitional	Respecting individual or groups' rights, tenure, values, knowledge, and livelihoods in coastal megaproject implementation	- Consider traditional knowledge, rights, cultural values, intergenerational equity, diverse representation, and gender

Social equity is an enabling condition (Cisneros-Montemayor et al. 2021) and a legal concept (Schweinberg and Raspotnik 2024) in blue economy transformation. Discussions around the blue economy reflect the centrality of equity and justice in attaining just and equitable outcomes. It is evident that deliberating the equity objectives of a policy or program, and the definition of a positive impact on social equity in a particular context, can empower individuals to influence the systems that will impact their future well-being (McDermott et al. 2013) and just transformation. The concept of equity and justice in the context of blue economy transformation encompasses a multitude of dimensions, each addressing distinct aspects. Distributive equity emphasizes the fair distribution of costs, benefits, and risks of coastal megaprojects through comprehensive assessments, sharing risks and benefits frameworks, and capacity building for local communities in implementing blue economy initiatives. Procedural equity ensures fair decision-making by assessing impacts, including marginalized groups in key decisions to form blue economy policies and implementation and providing legal protections to address issues like displacement or loss of resources. Contextual equity recognizes historical and ongoing inequalities shaping wealth, power, and access to resources due to coastal megaproject implementation, calling for stakeholder mapping and intersectional analysis of socio-economic and environmental injustices. Lastly, recognitional equity values the rights, contributions, and knowledge systems of individuals or groups in blue economy planning and implementation, recommending the integration of traditional knowledge and ensuring diverse, equitable representation in planning.

Such a framework, in and of itself, is incapable of ensuring an equitable blue economy transformation if other factors do not support it. Factors, such as power (Jentoft 2007; Saunders et al. 2024); the impact of prioritizing one equity dimension on other dimensions (McDermott et al. 2013); the role of decision-making (Saito-Jensen et al. 2010); and the influence of the market (Angelsen et al. 2009) are also important to consider. It is crucial to emphasize that a clear vision encompassing justice and equity principles in blue economy initiatives. The vision should address injustice, converting conflicting relationships into positive synergies, fostering inclusive and interactive governance, and implementing international guidelines within the context of blue economy transformation, as articulated in Article 6. Global sustainability transformation discussions emphasize that achieving equity and justice is essential for realizing broader sustainability goals.

3. Study Site

This study case region is the southeast region of coastal Bangladesh, represented by Maheshkhali Island with different resources and livelihood systems (Figure 2). The island was selected since it has been subject to large-scale coastal development projects in the blue economy context with effects on poor coastal residents in terms of displacement, dispossession, livelihood, income, generational rights of access to fishing sites, and conflicts (Articles 4 and 5). Moreover, this context is documented in the Global Atlas of Environmental Justice[14] as a potential case.

Maheshkhali Island, situated in the southeastern coastal region of Bangladesh, encompasses an area of 362.18 Km^2 and is inhabited by approximately 0.32 million individuals (Siddiqui et al. 2020). The island's economy is predominantly agrarian, with fishing, aquaculture, salt farming, agriculture, and local businesses representing the primary sources of revenue. The island's cultural heritage, religious sites, archaeological landmarks, and ecological diversity contribute to its popularity as a tourist destination. The island's strategic positioning near two major ports, coupled with the availability of suitable navigation and mooring facilities, has contributed to its emergence as a pivotal hub for Bangladesh's coastal development and industrialization initiatives. Recently, a considerable influx of investments from both domestic and international sources, including joint ventures such as BIG-B[15], has been observed in Maheshkhali. These investments are aimed at transforming the island into a regional economic hub. At present, approximately 37 significant infrastructure projects are underway, including power plants, a deep seaport, gas terminals, a tourism park, and industrial units within proposed economic zones. This rapid industrialization, however, poses a significant threat to the livelihoods of approximately 14,000 registered and 10,000 unregistered fishers, as well as those involved in salt farming and agriculture. The island has been experiencing negative impacts due to the coastal industrialization process in terms of displacement, dispossession, loss of livelihoods, and hampered access rights (Islam et al. 2020; Mirza 2021; Selim et al. 2024).

[14] https://ejatlas.org/ (Accessed on 10 December 2024)

[15] BIG-B – The Bay of Bengal Industrial Growth Belt (BIG-B) is a body works on the Dhaka-Chittagong-Cox's Bazar belt area and beyond. The strategic plan focuses on three key aspects of developing economic infrastructure, improving investment environment and fostering connectivity. (See https://www.jica.go.jp/Resource/bangladesh/english/office/activities/initiative.html)

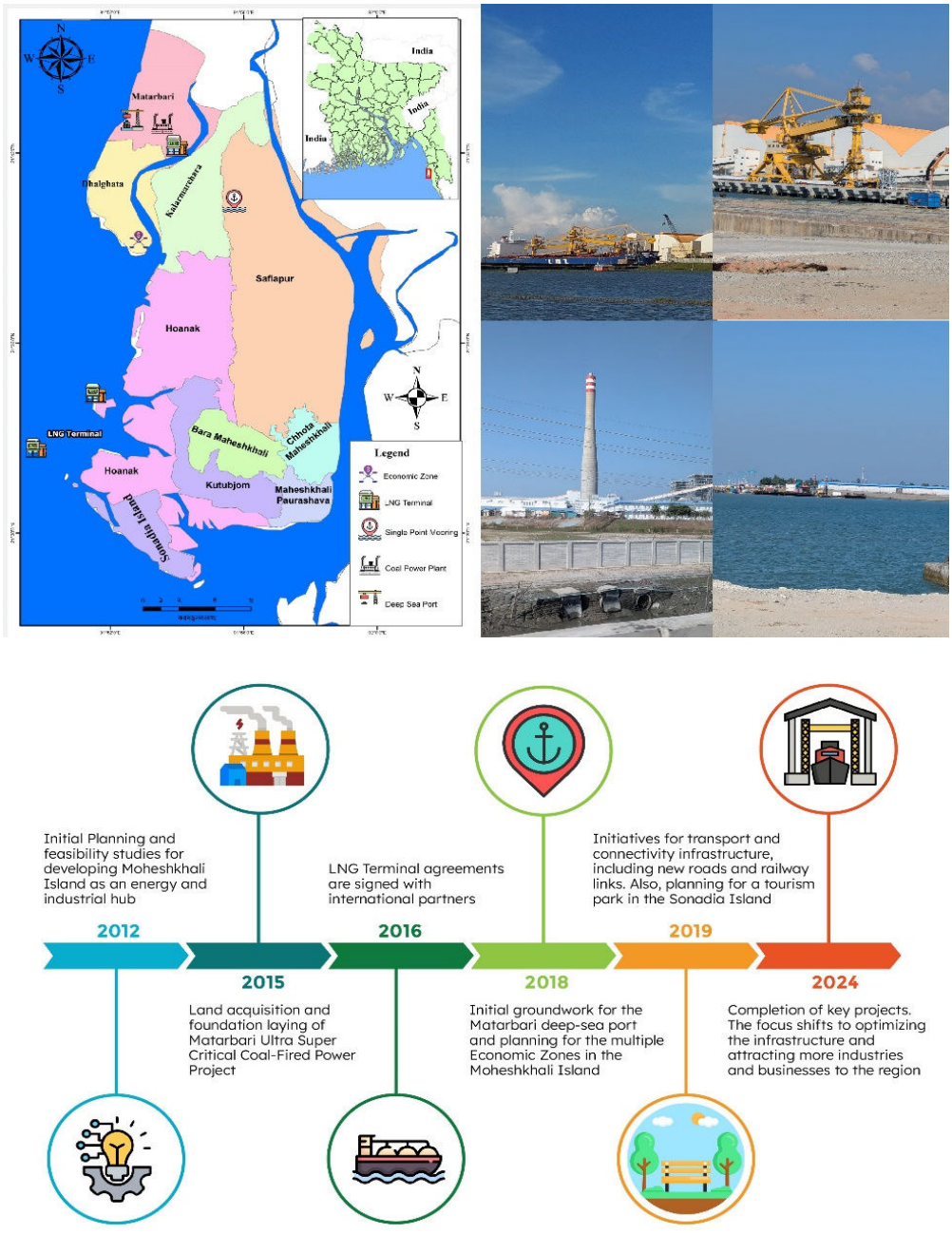

Figure 2: Research site: Maheshkhali Island and development background*

*The industrialization of Moheshkhali Island commenced in 2012, with the acquisition of land for major projects initiated in 2015. This development led to the initiation of projects such as the Matarbari power plant, gas terminals, and a deep-sea port by 2018. Since 2019, till to date, there have been expansions such as deep seaport, economic zones, roads, infrastructures and a proposed tourism park.

4. Methodology

This research is participatory and people-centered and considers the perspectives of marine social sciences (Bleischwitz et al. 2023; Partelow et al. 2023; Pelke and Simonn 2023). I adopted a collaborative and iterative process of shared learning and knowledge exchange. The research participants comprise both professional hereditary fishers and seasonal new entrant fishers who join during peak fishing seasons for subsistence, along with other small-scale resource users of the island including aquaculturists, dried fish producers, salt farmers, agriculturalists, and small entrepreneurs. This flexibility enabled the capture of a diverse range of rural communities within the context of Maheshkhali Island. Stakeholders associated with Bangladesh's blue economy initiatives from local to national level were consulted and interviewed accordingly. Qualitative approaches were employed to assess social and economic inequity (Deb 2009) of the groups expected to be especially vulnerable due to large-scale blue economy investments on the island.

Three field visits were conducted throughout this doctoral research, occurring in consecutive years in 2022, 2023, and 2024. The research did not consider the sample size as a representation; rather, it addressed a broader understanding of the context. The respondents were selected through purposive sampling. The research process was designed to ensure the participation of both men and women with equal voice and representation, including individuals from diverse age groups, marginalized occupational groups, wealth strata, and power hierarchies. The research was conducted following the ethical standards set forth by the relevant professional bodies, and the anonymity of the data providers and information was ensured. The findings of the study were published and submitted as 6 peer-reviewed articles. A policy brief is under development to disseminate to decision-makers and other relevant stakeholders of Bangladesh, and on public information-sharing platforms in collaboration with the ZMT Office for Knowledge Exchange (OKE). The following sections provide an overview of the methods employed in this research.

4.1 Case study approach: A case study was adopted since it is agreed to be an approach that represents an effective strategy of in-depth inquiry, offering flexibility in the selection of research designs and data collection methods for comprehensive analysis of phenomena (Creswell 2014; Yin 2009). This necessitated the implementation of a transdisciplinary and participatory action research (PAR) methodology to procure empirical data of my research and a comprehensive understanding of the roles of competing sectors, including port development, fisheries, local development, and power generation and coastal industrialization decision-

making scenarios. Articles 2, 4, 5, and 6 are based on the case study approach to document the impact of coastal megaprojects on small-scale resource users in the island. This method facilitated comprehensive investigations into the specific research context, enabling the exploration of underlying issues that were connected to the theoretical knowledge.

4.2 Semi-structured interviews: I conducted semi-structured interviews to gain in-depth insights into participants' experiences, beliefs, and perspectives. The combination of flexible open-ended questions and semi-structured interviews allows for the collection of comprehensive qualitative research data and information. It facilitates the examination of specific topics and the development of new avenues for responses based on the responses provided by the participants. Additionally, researchers can adapt the course of the discussion based on the responses received, thereby facilitating insights into the perspectives of the participants (McIntosh and Morse 2015). The research articles 2, 4, 5, and 6 employed this research tool.

4.3 Participant observation: Participant observation is a qualitative research method involves me engaging with the subject matter under investigation. It is a qualitative research method that enables researchers to gain profound insights into the social and ecological context of a given setting. This approach allows for a nuanced understanding of the cultural settings, interactions, and behaviors of local stakeholders, offering a unique vantage point to comprehend the social dynamics of a community from an insider perspective (Robey and Taylor 2018; Rossetti 2024). This method was employed to gain insights into the experiences of coastal small-scale resource users on the island reflected in articles 2, 4, 5 and 6.

4.4 Focus Group Discussions (FGDs): Using FGDs in this research (Articles 2, 4, 5, and 6) facilitates yielding insights through an interactive session in which a group of individuals reflects on and validate the information presented through discussion among the participants. This technique is useful for validating data and information, as it reduces bias and provides an accurate method (O. Nyumba et al. 2018). It facilitated an understanding of the diverse viewpoints, attitudes, and perceptions about coastal industrialization on Maheshkhali Island.

4.5 Netmapping: The participatory network mapping (Net-Map) method allows a group of participants to collectively construct visual representations of social networks based on their shared knowledge and perceptions (Schiffer & Hauck 2010). The participatory network mapping approach encourages discussion among respondents, allowing them to identify the

roles, relationships, and power dynamics of actors who influence decision-making within the governance system (Glaser et al. 2018b; Glaser & Schröter 2021). Article 3 employed the netmapping method entirety to construct governance networks for the blue economy, as perceived by representatives of a variety of stakeholder groups in Bangladesh. One of the methodological challenges during this exercise was not bringing local stakeholders into the discussion due to some unavoidable barriers which I covered through a follow-up study using Q methodology to know perceptions of local resource users.

4.6 Local stakeholders' discourse analysis using Q methodology: By integrating both quantitative and qualitative methodologies, Q methodology provides a statistically robust technique that is firmly rooted in qualitative reasoning, enabling the capture and analysis of perspectives. Q methodology is particularly suited to the examination of diverse viewpoints, which is why it is an ideal technique for engaging a smaller group of respondents (Brown 1993). For Article 5, we applied the Q methodology to gain insight into the diverse views of small-scale resource users concerning coastal megaproject developments on Maheshkhali Island in Bangladesh. Analysis of local blue economy resource users' view was a weak point in Article 3 which is addressed in Article 5.

4.7 Conferences/Workshops: Conferences and workshops are instrumental in the collection of data and information for my doctoral research, as they offer invaluable opportunities for interaction and collaboration among researchers. In 2022, I collected data from an international conference, which I subsequently published (Article 3) as part of my investigation into the governance network of the blue economy in Bangladesh. Furthermore, the block seminar held by the Leibniz Centre for Tropical Marine Research (ZMT) and the University of Bremen provided a forum for the presentation of preliminary findings and the receipt of feedback. Other international conferences, such as the IASC conference in Kenya and the MARE conference in the Netherlands, the Small-scale Fisheries regional Symposium in Japan, and the CSD conference in Bangladesh provided invaluable feedback that proved helpful in the advancement of my research. Moreover, workshops and conferences offer a broader platform for the presentation of research, networking, and the receipt of constructive feedback from experienced scholars. This is essential for the improvement of research questions and methodologies, which ultimately enhances the quality of the research. Both approaches facilitate the exchange of ideas and contribute to the formation of a community that significantly enhances the research process. The feedback and suggestions were incorporated into Articles 3, 4, 5, and 6.

4.8 Secondary literature analysis: In the course of my doctoral research, I gathered and analyzed a wealth of secondary data, information, and documents to enhance the overall research process. Given the dearth of empirical evidence in this field, it was crucial to draw upon all available recent knowledge. I gathered a variety of my research-related project reports, policy documents, and proceedings pertinent to this research from international, national, and local sources. Articles 1 and 2 present the findings of a review of the secondary literature, and they also make a significant contribution to the remaining four articles in the series. The secondary literature provided valuable insight into global scholarships related to my research and the Bangladesh government's initiatives related to the expansion of the blue economy and the promotion of blue growth through the implementation of coastal megaprojects. Moreover, international policy documents and published articles offered insights into the current challenges and gaps in research on the blue economy and coastal small-scale resource users.

4.9 Data analysis: The data collected during the interviews were recorded using mobile devices. The data were transcribed on the same day while I was in the field. Two field assistants were contributory in facilitating fieldwork and transcription. In the event of any ambiguity regarding the data, the subsequent days were dedicated to the verification and validation processes, or through direct communication via mobile phone. The data were subsequently analyzed at the desk. For Article 1, Vosviewer was employed, while for Article 3, the social network analysis software Gephi was utilized. Article 5 used Q-Ken software to analysis data. Maps were generated through ArcGIS and Microsoft Excel was used for data analysis. Overall reference management of the whole research was done by using ZOTERO software.

5. Limitations of the research

5.1 COVID-19 pandemic: The doctoral research commenced in 2021 during the period of the global pandemic caused by the coronavirus. It was of paramount importance to ensure the safety of both the participants and me. The imposition of travel restrictions, social distancing requirements, and partial lockdowns posed significant challenges to the collection of primary data. The number of face-to-face interviews, focus group discussions, and field visits was restricted; however, these were conducted in accordance with all precautionary measures and pandemic rules. In addition to their regular responsibilities, government and NGO officials, as well as other civil society entities in the field, were required to engage in public services related to the pandemic, frequently compared to normal time, which occasionally resulted in participants being unavailable during data collection.

5.2 Gatekeeping, getting access to high government officials and some reports: The local government officials were reluctant to share sensitive information and instead recommended contacting the central government and consulting government reports. Furthermore, the impact assessment reports of the megaproject and other planning documents were inaccessible and partially accessible to the public in some cases. I attempted to obtain reports and information via an online portal but mostly were unsuccessful. Even local stakeholders were reluctant to engage in discussions concerning conflict-related matters in group settings or the presence of superiors. The use of participant observation proved effective in addressing these challenges. Moreover, coastal communities were difficult to access, I managed to communicate with the vulnerable communities and women with the assistance of a local NGO.

5.3 Insufficient funding: This doctoral research was funded by Bangladeshi currency. Due to the increasing inflationary pressures that have affected PhD kick-off funding in subsequent years, the scholarship funding available was significantly reduced. This funding did not extend to fieldwork, which was managed through external sources such as ZMT, GLOMAR and BremenIDEA. These included research stays, conferences and workshop participation, and publication fees.

6. Ethical approval

Ethical considerations are important in field research. It is incumbent upon the researcher to be fully cognizant of the rights and extent of data and information usage (Nii Laryeafio and Ogbewe 2023; Sobočan et al. 2019). Before commencing fieldwork, the research team ensured that the necessary ethical approvals had been obtained. To this end, the ethical approval form of the Leibniz Centre for Tropical Marine Research (ZMT) was completed and reviewed by two experts. The feedback and comments received were incorporated into the final version of the proposal. The interviewees were informed about the objective of the research, the intended use of the data, and the manner of its dissemination. Before conducting interviews, taking photographs, and recording conversations, discussions, and workshop/conference exercises, consent was obtained from all participants. The anonymity and privacy of the participants were maintained following the relevant research ethics.

7. Way forward: blue equity

This research contributes to the growing body of knowledge on blue economy, equity, justice, coastal conflicts, and governance challenges in the Global South, offering policymakers a basis for informed decision-making. The potential of economic growth through the blue economy in Bangladesh is seen (Liza et al. 2025), however, there are significant gaps in equity and justice consideration in blue economy policies, planning, and implementation in Bangladesh. By filling knowledge gaps and engaging stakeholders, this research advocates for a just transformation to a blue economy that prioritizes marginalized communities, aligns with sustainability goals, and promotes equitable development pathways. International instruments exist to guide coastal states to manage the blue economy. For instance, Natural Resource Charter (NRGI 2014), provides guidance to manage non-renewable resources effectively. Other global initiatives such as the FAO small-scale fisheries guidelines, UN Decade of Ocean Science and Sustainable Development, Sustainable Development Goals (SDGs), Kunming-Montreal Global Biodiversity Framework, Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES), Convention on Biological Diversity (CBD) are some international guidelines, as we argued in Article 2, are important to follow before planning coastal megaprojects within blue economy initiatives. A forthcoming policy brief will disseminate this research findings to inform national and international decision-making.

The present study, however, did not investigate the impacts of coastal megaprojects on the environment and natural resources, which represent a significant source of livelihood and income for the coastal marginal poor. It is of the utmost importance to assess and monitor the immediate and long-term impacts of coastal megaprojects on the environment and human health. In light of the shortcomings of the Environmental Impact Assessment (EIA) reports for the coastal megaprojects in Maheshkhali Island, it is imperative that future research adopt a more rigorous approach to EIA including comprehensive disclosure. Moreover, there are concerns regarding massive health risks from coastal megaprojects on Maheshkhali Island due to toxic emissions and exposure to public health (Ahmed 2019). This entails monitoring environmental dynamics and their implications in society, while also engaging citizen science to track future changes and cope with the consequences. As a follow-up to this doctoral research, I will explore collaborative research opportunities with a project called MODCOMS[16] which has been designed for thorough environmental monitoring and pollution management in

[16] https://www.leibniz-zmt.de/en/research/research-projects/modcoms.html

one of the megaprojects (i.e., coal-fired power plant) on Maheshkhali Island. The consortium among institutions involved in this project caters to create scopes for me to initiate pollution governance and connect citizen science in this small coastal island along with overall coastal management in Bangladesh.

The necessity for a comprehensive framework to assess "blue equity" is becoming increasingly evident in research on the blue economy and equity research. This framework must address concerns over resource distribution, inclusive governance, and policy effectiveness (Chen et al. 2024; Crosman et al. 2022). This research proposes the integration of blue equity as a guiding normative principle, particularly in least-developed countries. Crosman et al. (2022) put forth a structured framework for blue equity assessment, posing critical questions regarding the circumstances under which equity is considered, the rationale behind this consideration, the recipients of the distributed resources, the timing of the prioritization of equity, and the influence of governance structures in this process. Chen et al. (2024) builds upon this work by proposing a framework that encompasses distributional, procedural, recognitional, and contextual justice. These frameworks are designed to enhance societal awareness of equity in blue economy initiatives and to inform global ocean governance to reform. These frameworks provide practical avenues for future research for promoting equitable ocean governance and ensuring fairness in blue economy strategies. As these frameworks continue to evolve and gain traction, they offer a promising path towards achieving a more equitable and sustainable blue economy. Ultimately, this will contribute to the realization of the United Nations Sustainable Development Goals and foster a more just relationship between humanity and the oceans.

Within the dimensions of equity, "knowledge equity (Hampton-Smith et al. 2024)" can also play a vital role in considering worldviews and diverse knowledge systems related to the blue economy and equity research that facilitates the production, distribution, and sharing of knowledge. The concept of "Real World Labs" or Living Labs (Franke et al. 2022; Articles 3 and 6) offers a potential platform for information sharing through assessing the tangible impacts of coastal megaprojects and blue economy and developing evidence-based strategies for transformative change. Another concept is the "Research Engagement Network (REN)[17]" which involves collaborative networking to encourage community engagement in research, to promote knowledge equity which could be a way forward approach.

[17] https://arc-gm.nihr.ac.uk/ren (Accessed on 21 December 2024)

These research findings will become part of a "policy brief" that will be disseminated to the key stakeholders, including the national government of Bangladesh, specifically the Blue Economy Cell. The objective of this dissemination is to encourage stakeholders to consider the recommendations outlined in the findings when making future decisions. As mentioned in section 2.5 (Table 2), the blue economy approach in Bangladesh needs to prioritize inclusive, participatory decision-making processes that incorporate social and environmental impact assessments, the cultivation of adaptive capacity, and the establishment of risk-sharing protocols. These processes are intended to address legal and justice concerns associated with coastal megaprojects. Further studies can focus on integrating intersectionality, traditional knowledge, cultural values, and diverse representation, to ensure intergenerational equity and identify historical inequities, power dynamics, and governance structures to advance comprehensive blue justice and equitable blue economy for all. The absence of detailed analysis of blue economy transformation on-the-ground limits the ability to draw practical lessons for future efforts (Evans et al. 2024), which could be a forthcoming research objective in Bangladesh to shape blue economy initiatives. Further research perspectives should also consider strengthening the governance structure for the blue economy through enhancing regional cooperation, and robust blue economy monitoring framework to achieve equitable and just blue economy in Bangladesh and elsewhere in the world.

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Article 1

Blue Economy, Blue Growth, Social Equity and Small-scale Fisheries: A Global and National Level Review

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Original Paper

Blue Economy, Blue Growth, Social Equity and Small-scale Fisheries: A Global and National Level Review

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Abstract

One of the most promising economic arenas in the coming decades is the ocean and there are currently numerous initiatives to the 'blue economy' discourse that revolves around the argument that small-scale fishers' livelihoods require greater attention. To synthesize current scientific knowledge and address prevailing research gaps surrounding this discourse, I conduct a scoping review of global literature on the blue economy, blue growth, social equity, and Small-Scale Fisheries (SSF) and analyse different international policy papers and national-level blue economy plans. To explore the need for further research, this review focuses on how different aspects of the blue economy risks lead to inequity in the pursuit of ocean sustainability. Based on the initial content analysis, I identify evidence for undermining social equity and justice related to the ocean and find that social equity is often overlooked in national-level blue economy and blue growth initiatives. This overlooking leads to or accelerates processes of coastal and ocean grabbing, displacement, dispossession, and exclusion which strongly impact the livelihoods of marginalized coastal communities, particularly, small-scale fishers in various parts of the world. The collected evidence suggests that there is a missing link between international policy deliberations and national-level implementation plans in the blue economy context. Numerous studies claim that critical re-thinking of policies is required to ensure the sustainability of blue economy trajectories. Unchecked economic growth in the ocean as in other realms can reinforce inequities and unjust and inequitable resource distribution patterns. To pre-empt, mitigate, and resolve likely conflicts, deeper insights are needed to address the impacts of the blue economy and blue growth on coastal livelihoods. I suggest investigating the causes of conflict and further research on how governance responds to sustain small-scale fisheries while embracing the blue economy and blue growth agendas.

Keywords

blue economy, blue growth, equity, small-scale fisheries, conflicts

1. Introduction

Coastal and marine economies provide support to millions of people worldwide (Ebarvia, 2016). Marine and coastal spaces are crowded and becoming busier and the perceptions towards the ocean have changed gradually. Once discussed as a common heritage of mankind (Pardo, 1984), the tragedy of the commons (Berkes et al., 2006), ecological frontiers (Steinberg, 2008), oceans along with coastal areas are now viewed as epistemological frontiers (Havice and Zalik, 2019) and as new economic frontiers (Bennett et al., 2021). In addition to fisheries and serving as navigational waterways, oceans are evolving into a hub for sustainable commercial activities, which could contribute positively towards the Sustainable Development Goals (SDGs) and the UN 2030 agenda (Golden et al., 2017).

After Pauli's (2010) coining of the Blue Economy (BE) concept and the United Nations (UN) conference on Sustainable Development Rio+20 in 2012, the BE in the wake of the green economy has emerged as a paradigm to harness development with a wide range of issues associated with the marine and coastal economy (UNCTAD, 2012; Bohler, 2018; Mostaque, 2018; Midlen, 2021). Oceans have received particular attention under the BE concept (Silver et al., 2015) and ocean governance discourses have revolved primarily around BE in the last decade (Brent et al., 2018), reinforcing linkages between ocean ecological systems and human activities in the context of ocean economies (Patil et al., 2016). The estimated global income from BE is US$ 24 trillion, which is US$ 2.5 trillion annually (OECD, 2016). These estimates are significant because the oceans are seen as crucial to post-pandemic global economic growth (Northrop et al., 2020).

The term 'blue economy' is sometimes used interchangeably with 'blue growth', 'ocean economy', 'marine economy', or 'maritime economy' (Martínez-Vázquez & Valenciano, 2021). These terms lack clear distinction in practice and principle, and are adopted by different actors based on their goals and agendas (Silver et al., 2015; Voyer et al., 2018). Moreover, the objectives and interests of different stakeholder groups compete to embrace BE due to their different value systems. For instance, the economic objectives of BE are likely to be incompatible with conservation and social equity goals (Voyer & Leeuwen, 2019). The prevailing economic objectives could lead to 'blue acceleration' (Jouffray et al., 2020) and the ocean equivalent of the great acceleration that characterizes the post-1950 global social-ecological system dynamics. To achieve the SDGs, sustainable management of ocean resources is crucial. In line with the increased attention to the oceans, many countries have incorporated and implemented the BE concept in their policies. Countries such as Seychelles and Kenya have formed or employed entire ministries and departments to address BE (Brent et al., 2018). BE could promote economic well-being, improve livelihoods, and social inclusion through judicious and sustainable management of coastal resources (EC, 2020). In addition to developing BE, coastal policy-makers need to ensure connection among societies, economies, and biosphere to reflect SDG goals in the desired future pathways (Nash et al., 2020).

1.1 BG and BE

The term 'blue growth (BG)' revolves around the idea of the 'blue economy' in much of the literature (Mulazzani and Malorgio, 2017). Lillebø et al. (2017) argue that the European Commission's (2012) BG agenda focus on maritime economic activities, while Burgess et al. (2018) consider BG to manage complex marine social-ecological systems holistically. Approximately 1 to 5 percent of the gross domestic product (GDP) of many developing countries is generated by ocean-based economies (Kildow, 2010). As proposed by the European Commission (2021), a paradigm shift from 'blue growth' to a 'sustainable blue economy' is important to reduce the cumulative impacts of ocean-based economic activities. BG does not have a specified definition and varies widely depending on context, region, and priorities (Eikeset et al., 2018), it has been adopted by different regional and international institutions to develop their policies related to BE. Guerreiro (2021) claims that BE or BG is a system with overlaps between state politics, privatization, and scientific advancement and new marine industries are becoming the political agenda (van den Burg et al., 2019). I consider the working definition of a sustainable blue economy from WWF (2018) and IRP (2021): "*a Blue Economy is an ocean-based economy that provides equitably distributed social and economic benefits for current and future generations while restoring and protecting the intrinsic value and functionality of coastal and marine ecosystems and is based on clean technologies and circular material flows.*"

The concepts of BE and BG are also promising in addressing problems such as natural resource depletion and climate change by creating a new platform to minimize environmental impacts (Bowen et al., 2011; Yarkina and Natalia, 2021). Originally, the main sectors of BE or BG were coastal and marine tourism, renewable energy, aquaculture, minerals, and biotechnology (EC, 2010), and various nations added other potential sectors such as fisheries, offshore hydrocarbons, salt, water, transportation, ship and boat building, blue biotechnology, deep sea mining, and nautical tourism. (Klinger et al., 2017; EC, 2017; Guerreiro, 2021). The appetite for exploration and exploitation of oil, gas, minerals, proteins, and energy is exacerbating pressures on the oceans (Brent et al., 2018). Multiple use of marine space in the form of both synergistic (e.g., renewable energy and tourism) and antagonistic (e.g., fishing and drilling) sectors (Crona et al., 2021) require 'spatial efficiency' (Kyvelou, 2021). With increasing BE activities and associated challenges (Bellanger et al., 2020), researchers and policy-makers are calling for better analysis of BE (Wenhai et al., 2019). In addition, the United Nations "Decade of Ocean Science and Sustainable Development" aims to restore ocean health and provides a common platform for ocean stakeholders worldwide (Lee et al., 2020).

1.2 Equity

Social equity[1] and justice are generally concerned with how people are treated equitably with respect to the effects of an event, intervention, institution, or other factors. Equity is a growing theme in global policy deliberations, decision-making, and designing interventions for coastal and ocean conservation, management, and BE initiatives (Bennett, 2022a; UNDP Human Development Report, 2022). Concepts such as marine justice, ocean justice, ocean equity, eco-justice, and blue justice are well established in the scientific literature (Silver et al., 2015; Martin et al., 2019; Armstrong, 2020; Österblom et al., 2020; Bennett et al., 2021). 'Blue justice' is an approach adopted by researchers, communities, development partners, and research networks (e.g. TBTI[2]) to critically assess the implications of BE development initiatives for SSF (Beerwinkel, 2019; Jentoft, 2019). Inequities contribute to generating conflicts and struggles over coastal and ocean resources (Finkbeiner et al., 2017; Homer-Dixon, 1994)[3]. The mounting interest to consider social equity in international ocean governance and framework is promising (Ulloa, 2017; Österblom et al., 2020; Engen et al., 2021; Bennett, 2022a).

1.3 Small-scale Fisheries (SSF)

The discourses around BE describe oceans as serving as *natural capital*, *good business potentials*, *integral to Pacific Small Island Developing States* and *small-scale fishers' livelihoods* (Silver et al. 2015). In this review, I focus on the livelihoods and human rights of small-scale fishers in light of BE. Small-scale fisheries (hereafter SSF) or artisanal fisheries are an integral part of this review because they are a lever for achieving the goals of the UN SDG. SSF plays a significant role in the ocean-based economy as it has the highest participation of men and women among the ocean-centric sectors (World Bank, FAO, WorldFish, 2012; OECD, 2016). About 90% of the world's fisheries workforce belongs to SSF, and it contributes to the coastal livelihoods (FAO, 2020; Smallhorn-West et al., 2022). The SSF is threatened by overfishing, improper management, governance, and a resulting lack of sustainability (Rashid et al., 2020; Smith et al., 2021). Moreover, small-scale fishing communities are vulnerable to economic and social exclusion, direct exposure to natural hazards, and a range of harmful instabilities such as pirate attacks, collisions with larger boats, and engine failure (Islam and Chuenpagdee, 2013; Rahman and Schmidlin, 2019), and a wide range of embedded social and economic injustice (Deb, 2009) requiring immediate blue justice actions (Chuenpagdee, 2020; Bennett et al., 2021). Although SSF is being studied in different contexts of the world, its adaptive capacity for transformative change is largely unexplored (Villasante et al., 2022). Less attention has been paid to marine social research focusing on fishers'

[1] Österblom et al. (2020, p. 24) state ocean equity '*as a systematic feature of the current ocean economy. It is embedded in existing political and economic systems, the result of historical legacies and prevailing norms. This has brought global environmental challenges and negative effects on human well-being*.'

[2] TBTI (Too Big To Ignore) is a global research network and knowledge mobilization partnership. See www.toobigtoignore.net

[3] Recently, Bennett (2022) categorises types of ocean equity as *Recognitional* (consideration and acknowledging local rights, cultural diversity, value practices, and knowledge systems) *Procedural* (inclusion and participation in the decision-making process, accountability, and transparency in getting information), *Distributional* (fairness and equitable distribution), *Management* (local leadership and their active engagement, ensuring policies and sustainable financial management), *Environmental* (conservation, protection of ecosystems, tangible benefits to local) and *Contextual* (broader contextual factors such as economics, governance, social structure, environment or law influence social equity).

struggles, power relations, and collective social action (Deb, 2009; Pauly, 2017; Bavinck et al., 2018; Smith et al., 2021).

By exploring the contexts of SSF in the emergence of BE and BG initiatives, this article synthesizes gaps in BE research and policy documents. Finally, this review aims to promote the inclusion of the various dimensions of social equity in BE research and policy. The next section describes the process of this review. I then explain evidence and incidents associated with social inequity generations analysing selected peer-reviewed articles and international and national policy documents. The final section of this article summarizes key gaps and calls for an explicit way forward attention to social equity in the BE initiatives.

2. Material and Methods

2.1 Scoping review

This scoping review was conducted using scholarly publications focused primarily on selected constructs (i.e., blue economy, blue growth, social equity, and small-scale fisheries). However, to comprehend the search, I used terms such as 'marine economy', 'ocean economy', 'social equity', and 'blue justice' along with other related keywords and synonyms such as inequity, equality, inequality, coastal growth, coastal megaprojects, etc. The keywords were considered to discover new lines of findings to answer the research question and guide the review. An iterative database search was conducted filtering by topics in the title, abstracts, and keywords. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA, Figure 1) system (Moher et al., 2009; Haddaway et al., 2020) was used to identify articles from the SCOPUS (www.scopus.com) and Web of Science (WoS) (www.webofscience.com) databases. Core collections from these databases visualizing scientific output over time until April 2022 were extracted from these databases and updated in August 2022. Scopus and WoS are reliable and globally recognized databases that provide multidisciplinary scientific outputs in exclusive and reputed journals (Mongeon and Paul-Hus, 2016).

To ensure the completeness of the data, a WoS search was performed following the initial search from Scopus, to make the review comprehensive (Harzing and Alakangas, 2016; Martin-Martin et al., 2018). Articles were limited to the English language (Drubin and Kellogg, 2012) and peer-reviewed with due consideration to impact factors in journal citation reports (Dahl, 2015) and open access criteria. Based on previous systematic literature review research, an inclusion and exclusion criterion (following Nejad et al., 2021; Bretas and Alon, 2021) was established to select research articles from the initial search to address research questions. After the primary search in WoS and Scopus, I found 1423 articles that met my study objective. After removing duplicates from both databases, the number of articles was 1008. In the next phase, the title and abstracts of the 1008 publications were studied and 74 articles (n = 74) were found that were primarily relevant to my research question.

2.2 Backward search

A 'backward search (Horsley et al., 2011)' was conducted using the reference lists of publications from the primary records (n = 74) to avoid the underrepresentation of important and recent research articles. These sources were evaluated and selected based on the criteria of reliability, validity, accuracy, authority, timeliness, and point of view or bias (Taylor and Dalal, 2014). Based on this backward search strategy, I add 64 potential publications in the selection avoiding duplication issues and found 138 (n = 138) final records.

These articles (n = 138) were studied to align with the eligibility criteria I established for content analysis. In this study, 86 articles were found that met the criteria we established. To check the representativeness of the keywords, a word frequency analysis (Figure 2) was conducted using Vosviewer software with regard to blue economy and blue growth research articles from the initial search (n = 1008). This analysis was conducted to study the position of social equity, inequity, equality, and inequality in the scientific literature related to BE and BG. Moreover, this analysis reveals if any central terms or aspects of blue economy and blue growth were missing in the search method.

2.3 National-level blue economy policy documents and research article selection

Another part of the search strategy retrieves blue economy policy documents at the national level (Table 1), implementation plans, and strategic frameworks that have either been finalized or drafted by national governments or proposed by researchers. It is always a challenge to select national-level policy documents because different countries have different levels of institutional setup to implement BE. Few countries have finalized their BE policy documents and implementation frameworks, some countries are working on their BE plans and some countries have not yet made adequate arrangements to produce clear, publicly available BE plans or frameworks. I use another 'backward search (Horsley et al., 2011)' of selected articles to explore available national-level policy documents. A recent publication (Voyer et al., 2022) and its supplementary file also facilitate the examination of the BE status of 54 Commonwealth countries. In total, eighteen countries and one continent (Africa, Bangladesh, Cambodia, China, Grenada, India, Indonesia, Japan, Malaysia, Maldives, Mauritius, Myanmar, Philippines, Seychelles, Singapore, Sri Lanka, Thailand, Timor-Leste, and Vietnam) were selected based on their publicly available BE documents (plans, policies, draft reports, and research articles) that are represented in the research and are implementing and advancing the BE at the national level (n= 26). Since national-level policy documents are not well-established sometimes, it is unknown if any specific country designs other forms of policies which are not publicly available and not included in this study.

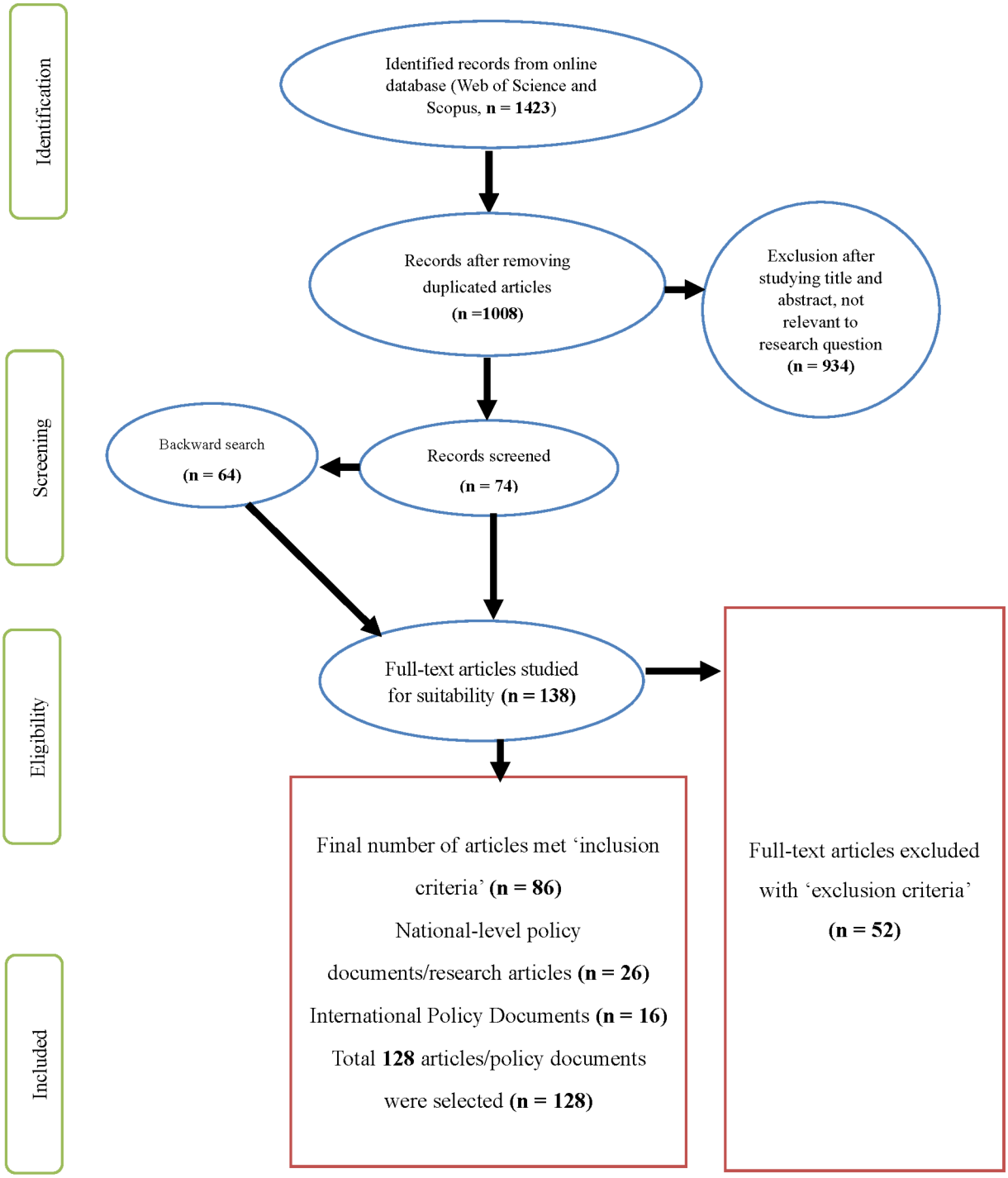

Figure 1. PRISMA searching and screening process including backward search

Table 1. Selected national-level BE strategies, frameworks, and research articles

Country	Sources
Africa[4]	Failler et al., 2020
Bangladesh	Hossain et al., 2017; Patil et al., 2018; Sarker et al., 2018; Islam et al., 2020
Cambodia	www.pemsea.org (PEMSEA and Ministry of Environment, Cambodia), 2019
China	Fabinyi et al., 2021
Grenada	Blue Growth Coastal Master Plan, 2016
India	Economic Advisory Council, 2020; Mitra et al., 2021
Indonesia	World Bank, 2021
Japan	Chansoria, 2020
Malaysia	Kaur, 2016
Maldives	Blue economy insights, 2021
Mauritius	World Bank, 2017
Myanmar	Oo, 2020
Philippines	Mendoza & Valenzuela, 2018; Satizábal, 2019
Seychelles	Marine spatial plan, 2020
Singapore	Quirapas-Franco, 2021
Sri Lanka	Madara and Perera, 2020; Premarathna, 2021
Thailand	www.pemsea.org; Kondee et al., 2022
Timor-Leste	Voyer et al., 2020
Vietnam	www.pemsea.org

2.4 International BE and BG policy document selection

The final selection of the search includes international BE and BG policy documents that address important global BE and BG agendas. Sixteen (n =16) multilateral and international BE and BG policy documents were selected to comprehend the review. A recent review article on BE and SSF by Ayilu et al. (2022) inspired and guided the inclusion of established international policy documents in this review. Finally, a total of 128 selected (n = 128) articles and policy documents were examined and analysed. A qualitative content analysis was conducted to identify current trends and gaps related to the blue economy, blue growth, social equity, and SSF research. This review is not purposive to be systematic, nor does it address inclusive coverage of the entire themes. The objective was to glean a recent set of research findings, policies, case studies, and trends while providing profundity through BE research addressing SSF, social equity and examples focused on the coastal and ocean environment. However, confining my search to English-language works results in limiting access to the broader local knowledge domain.

[4] Though Africa is not a country, there is a comprehensive policy document named 'Africa Blue Economy Strategy' (AU-IBAR, 2019. Africa Blue Economy Strategy. Nairobi, Kenya) which has been considered in this review as it talks about 38 African coastal states and tailors the needs of the continent.

3. Results

In addition to the two selected keywords 'blue economy' and 'blue growth', the word cloud analysis (Figure 2) provides several other key terms: sustainability, spatial planning, fisheries, marine environment, aquaculture, climate change, and economics. Terms that are in some way associated with social equity are sustainability, sustainable development goal, humans, nonhumans, economic and social effects, economic growth, governance, maritime security, risk assessment, and policy that emerged in the analysis. Comparing the word clouds in the scientific literature (n = 1008), I find through selected keyword (i.e. blue economy and blue growth) searches, social equity is clearly absent. In fact, not a single term appears that deals with social equity. This stands in contrast to a substantive emphasis on BE and BG-related terminologies. The word cloud also shows that BE sectors have received much more attention in the academic literature in the context of the clear pursuit of economic growth. The word clouds show the intent of BE and BG and their links to other thematic areas such as economic growth, aquaculture, resource development, fisheries, exploitation, investment, innovation, etc. The colours of the nodes show the thematic concepts that are generally used together in the original selected articles.

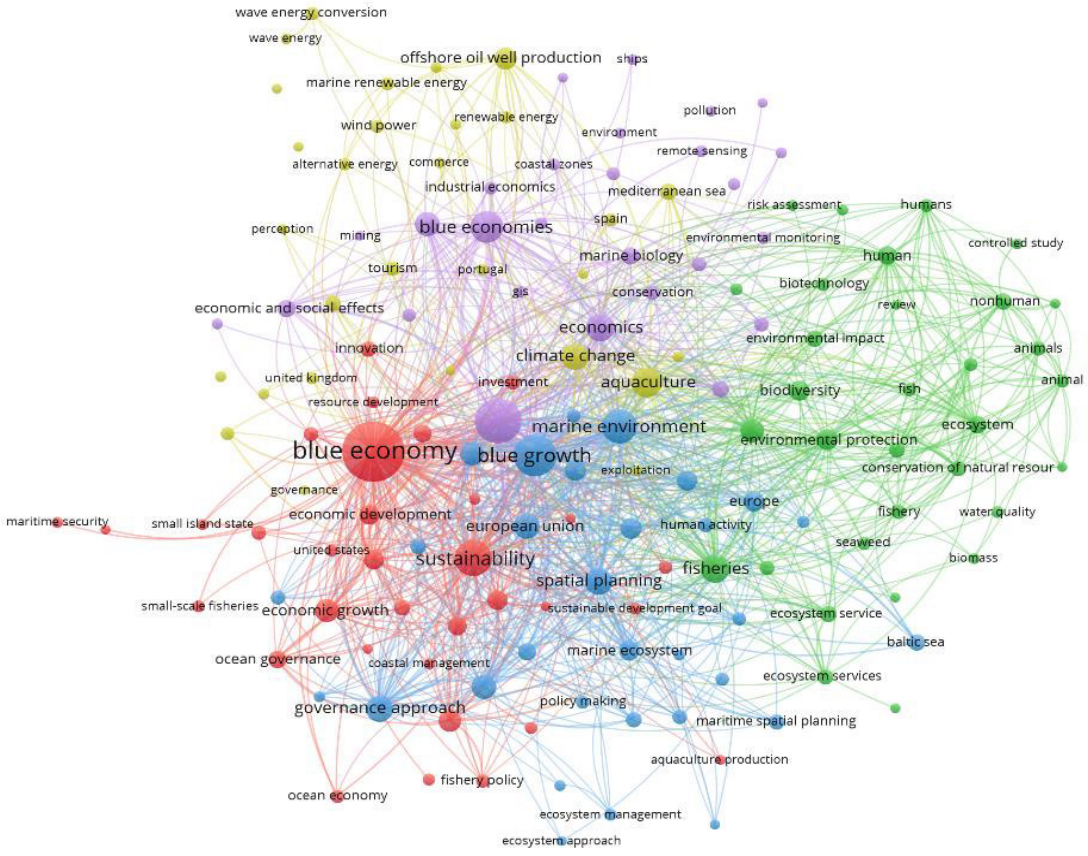

Figure 2. Word cloud generated by Vosviewer from the primary search of the literature (n = 1008). Each word size represents the percentage of all occurrences compared to the other Words

2.1 'Social Equity' or 'Ocean Equity and Justice' missing in BE or BG initiatives

Explicit prioritization of social benefits and equity is a concern of the ocean economics discussion (Cisneros-Montemayor et al., 2019; Österblom et al., 2020; Haward and Haas, 2021). Bennett (2022a) focuses on equity and justice in the oceans categorizing six types in his study as recognitional, procedural, distributional, management, environmental, and contextual. Most coastal states embrace BE to promote industrial economic growth. This review reveals that this is likely to generate inequity, injustice, and conflicts in the coasts and oceans. Moreover, for SSF, the TBTI network finds that injustice may be generated in ways such as – social, market, infrastructure/wellbeing, procedural, and justice in the wake of unexpected events or crises (e.g. COVID-19), with environmental, regulatory, economic and distributional dimensions[5].

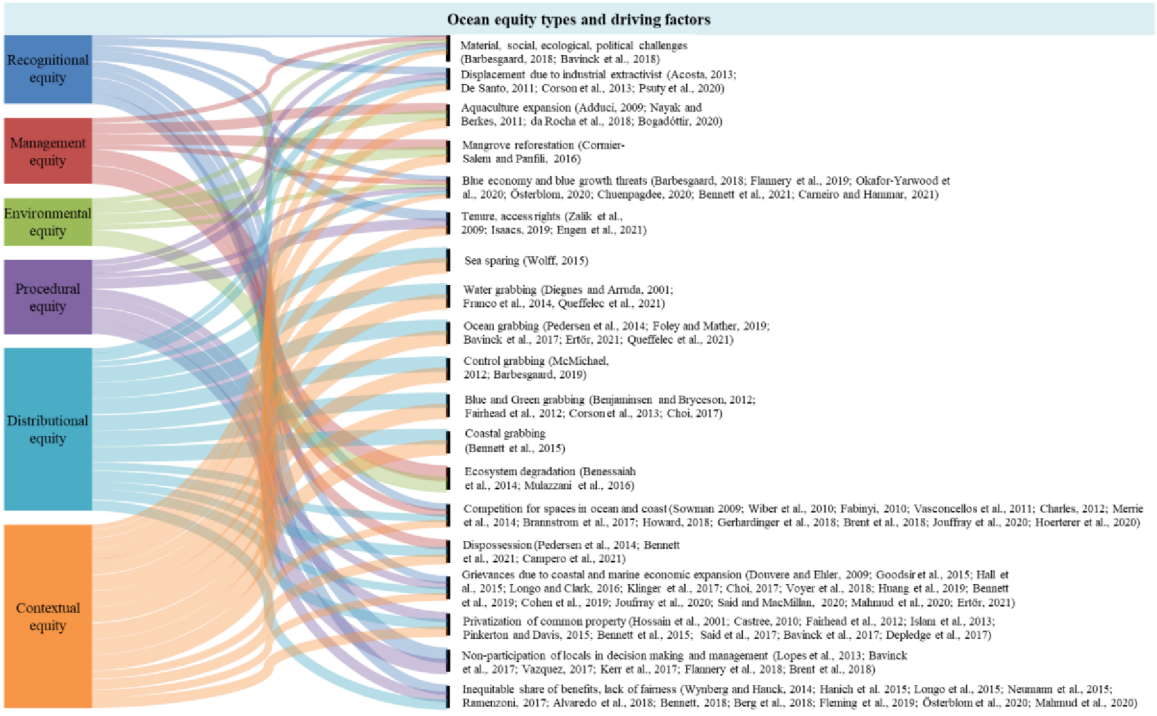

Figure 3. Evidence from scientific literature that are responsible to reinforce social inequities in the coasts and oceans (ocean equity types adopted from Bennett, 2022a)

Bennett et al. (2021) review the literature on ocean-based economic development and identify ten likely social injustices caused by BG that require attention: grabbing and displacement, tenure and access, environmental justice, ecosystem services, small-scale fisheries, food security and well-being, economic benefits, marginalization of women, human rights, and inclusive governance. While these risks to coastal populations are historical, they are exacerbated by blue economic growth. My review records underlying causes of equity-related failures in coastal development that have been previously identified in the literature (Figure 3).

[5] http://toobigtoignore.net/blue-justice-for-ssf/

3.2 Coasts and oceans are occupied in many forms

Grabbing coasts and oceans: Although "sea sparing" (Wolff, 2015), "blue grabbing" (Benjaminsen & Bryceson, 2012), and "green grabbing" (Fairhead et al., 2012) are some of the existing forms of ocean and coastal grabbing, BE and BG have recently reinforced competition for coastal space and resources under the heading of grabbing. This puts SSF at a disadvantage in terms of actions, policies, and initiatives (Bennett et al., 2015). Occupying coastal and marine spaces or "grabbing" is discussed extensively in marine sociology (WFFP, 2014; Barbesgaard, 2018, 2019; Foley and Mather, 2019; Ertör, 2021). Control of water by dominant actors through "water-grabbing" is another major problem (Franco et al., 2014). Small-scale producers and coastal communities are the main victims of the state and capital initiatives that lead to ocean grabbing (Foley and Mather, 2019). Increasing instances of grabbing lead to 'spatial injustice' for fishers resulting in "control grabbing" (Barbesgaard, 2019; Ertör, 2021).

De Schutter (2012) identifies coastal and ocean grabbing as one of the greatest threats to SSF and food security[6]. Tropical Atlantic countries such as Brazil and Senegal have already experienced ocean-grabbing phenomena (Queffelec et al., 2021). Numerous coastal development initiatives have displaced SSF (De Santo, 2011; Psuty et al., 2020). Several decades ago, in Myanmar, fishers were displaced due to pipeline construction in Yadana in the form of 'control grabbing'. Other consequences of grabbing for fishers include stock dwindling, reduction of physical ocean space, and the emergence of new competitors (other livelihood opportunities) (Barbesgaard, 2019). Bavinck (2017) mentions 'coastal grabbing' as an emerging problem in countries such as Canada, Brazil, India, and South Africa. Large-scale coastal land grabbing is also linked to current globalization and privatization of sectors (e.g., fisheries) adding further layers to this phenomenon (Bennett et al., 2015; Fairhead et al., 2012). These privatizations affect coastal conservation and livelihoods (Bavinck, 2017).

Competition for space: Increasing use of marine space and resources (Jouffray et al., 2020) and the growing need to share coastal and marine areas due to development could result in a 'crowded ocean' (Merrie et al., 2014). For SSF communities this results in limited access to marine space and resources, and thus to livelihoods (Cohen et al., 2019; Ertör, 2021). Fishers' fishing grounds are threatened by ecological impacts due to resource exploitation (e.g., deep-sea mining, renewable energy, for instance, Senegal in Queffelec et al., 2021, Brazil in Diegues and Arruda, 2001). They may be displaced due to tourism (Howard, 2018; Queffelec et al., 2021), port development (Gerhardinger et al., 2018), energy industry development (Brannstrom et al., 2017), aquaculture expansion (da Rocha et al., 2018), and mangrove reforestation (Cormier-Salem and Panfili, 2016).

BG generates risk for coastal peoples, and in particular for small-scale fishers in various ways (Figure 3). Okafor-Yarwood et al. (2020) use the Full Spectrum Sustainability (FSS) approach (with a

[6] FAO promotes BG in 2014, as "*a cohesive approach for environmentally compatible, integrated and socioeconomically sensitive management of aquatic resources including marine, freshwater, and brackish water environments"* (Moffitt and Cajas-Cano, 2014). However, the current BG policy documents have paid limited attention towards the socioeconomic impacts of blue expansion on SSF.

category of ecological, economic, social, cultural, and governance and institutional) described by Jones and Stephenson (2019), to evaluate the balance or imbalance of sustainability for selected cases from Africa to evaluate BE initiatives. They find some BE initiatives outcompete SSF in Africa and the Port of Kribi project in Cameroon, the Vridi Canal project in Côte d'Ivoire, the Lamu port project in Kenya, the sandpiper marine phosphate mining project in Namibia cause huge costs for the locals and hampered biodiversity (Okafor-Yarwood et al., 2020). On the other hand, the TRY oyster women's association in the Gambia, Vezo community fishers in Madagascar, Mikoko Pamoja in Kenya, seaweed farming project in Kenya were successful because of involving local communities for management and environmental sustainability (Okafor-Yarwood et al., 2020). These outcomes clearly indicate how important the consideration of social equity or inclusion in BE and BG initiatives is.

Coastal investments and mega-projects: Inequalities and injustice, conflicts due to the global capitalist marine economy have been recorded (Ertör, 2021). Large-scale project establishment on the coast hampers associated ecosystem integrity and social cohesion. For instance, thermal and nuclear plants' discharge caused increased water temperature, stratified seawater, and pollution (Huang et al., 2019). Energy-generating large-scale projects on the coast and offshore increase mobility and there are considerable challenges to managing compatibility among industries and sectors in the context of BG (Goodsir et al., 2015; Klinger et al., 2017). These impact SSF adversely, reinforce current inequalities, and generate conflict (Ertör, 2021). BE and BG agendas for economic expansion are leaving SSFs with unpromising prospects (Muallil et al., 2011; Schreiber et al., 2022). Diverse authors (Choi, 2017 for China; Schutter et al., 2021 for Seychelles, Rivera, 2022 for Fiji) argue that BE itself is a complex governmental project opening new governance spaces and increasing global visibility. The range of investments in coastal mega-projects and urbanization reinforce inequalities for SSFs and hence fishers react as 'social actors' to confront these issues (Mills, 2018; Ertör, 2021).

Privatization of coastal and marine spaces: The leasing or privatization of coastal spaces is a similar kind of BE/BG risk for marginal poor coastal populations (Pinkerton and Davis, 2015). This hampers communities' living, income, and resource management patterns (Said et al., 2017; Bavinck et al., 2017). For example, the Atlantic Canadian fishing communities suffered due to resource-based threats because of the appearance of new ocean user types such as petrochemical developments (Wiber et al., 2010; Charles, 2012). Mining impacted communities' livelihood and resource conservation plan in Olifants estuary, South Africa (Sowman, 2009). Large-scale aquaculture affected 91% of the fishing villages in terms of losing resource access rights and livelihood loss in the form of 'encroachment' in Chilika lagoon, India (Nayak and Berkes, 2011). In Bangladesh, coastal small-scale fishers lost fishing grounds in mangrove areas due to the privatization of common property (Hossain et al., 2001; Islam et al., 2013). Large-scale desalination in the Antofagasta region of Chile generated dispossession and physical displacements of the coastal poor. (Campero et al., 2021). Thus, BG can reinforce marginalization due to the privatization of coasts.

SSF and historical trends of struggle: Globally, small-scale fishers experience material, political, ecological, and social challenges (Barbesgaard, 2018; Bavinck et al., 2018) including organised crime (Witbooi et al., 2020), blue crime (Satizábal et al., 2021) such as criminal activities including sea-piracy, robbery, illegal fishing, dumping toxic materials, and drug trafficking in the sea. Displacement due to industrial 'extractivist' in the form of large-scale development in coasts (Acosta, 2013) and aquaculture expansion (Adduci 2009; Bogadóttir 2020), blue growth threats (Barbesgaard 2018; Bennett et al., 2021) cause fisheries injustice (Mills, 2018), recently, termed as epistemic injustice – testimonial and hermeneutical (Schreiber et al., 2022). Tenure and access rights along with inequity issues faced by small-scale fisheries are further jeopardized by the current BE development agenda (Isaacs, 2019; Engen et al., 2021). Displacements of locals and hampered livelihoods are evidenced in development initiatives (De Santo, 2011; Bavinck et al., 2017; Barbesgaard, 2018; Psuty et al., 2020). Said and MacMillan (2020) view 'blue growth' as a capitalist-ridden model which exacerbates SSF communities and is likely to increase disruption on the SSF resilience. Brent et al. (2018) state that small-scale fishers are not invited to the 'blue party' and SSF efforts are becoming less viable to grip fishing areas due to increasing ocean industrial development.

Changes in Social-Ecological Systems: Coastal inhabitants are an integral part of marine and coastal social-ecological systems (Berkes et al., 2003; Glaser & Glaeser et al., 2014) as they largely interact with and depend on the goods and services provided by the coastal and marine ecosystem (Seitz et al., 2013). The critical relationship between nature and local users in social-ecological systems (SES) is associated with a focus on sustainability and resilience (Berkes et al., 2003; Armitage et al., 2017). Coastal grabbing with its deleterious result might generate new social-ecological systems by excluding the associated local communities (Bavinck et al., 2017). Financing the BE creates a growing demand for attention to social accountability in terms of impacts on fisheries and maritime workers (Havice and Zalik, 2019). Sector-specific analyses of local BG in developing countries find an absence of *policy coherence, institutional coordination,* and *collaboration* that negatively correlates with SSF well-being (Carneiro and Hammar, 2021). As a result, though mega projects with multinational investments provide employment opportunities for the local community, they often deplete the coastal environment having long-term livelihood impacts (Howard, 2018).

Conflicts and injustice: Globally, conflicts in coasts and oceans are increasing (Dahlet et al., 2021). Conflict over resource access is an embedded dynamic that is connected with any change and management in human-nature interactions (Meyer-Lclean and Nursey-Bray, 2017). Currently, natural ecosystems and resources are affected by increasing deterioration (Diaz et al., 2019). As a result, the growing ocean multiuse could generate conflicts in the ocean realm. Douvere and Ehler (2009) identify two types of conflicts due to increasing pressure on marine biota: *user-environment* conflicts and *user-user* conflicts. BG dynamics and infrastructure development in the coasts generate and reinforce both types of conflicts. Conflicts among BE sectors such as industrial vs artisanal fisheries (Said and MacMillan, 2020) or carbon-intensive industries create considerable conflicts between '*oceans as*

natural capital' and '*ocean as good business*' (Voyer et al., 2018). Brent et al. (2018) argue that a comprehensive blue growth agenda leads to contradictions in ecological and social implications for the access and distribution of marine and coastal spaces.

Inequitable share of benefits, lack of fairness in distribution: The risk of inequality in enforcing the distribution of benefits from the oceans always prevails (Wynberg and Hauck, 2014). A crucial equity problem is the unfair distribution of access to ecosystem services, which leads to destabilising environmental sustainability and resilience (MEA, 2005; UNDP Human Development Report 2020). For instance, Islam et al. (2020) argue SSF is being and likely to be further marginalized due to BG in Bangladesh. Mahmud et al. (2020) study the Rampal power[7] project in Bangladesh and find that in the wake of the establishment of power plants, land control shifted away from coastal marginal poor towards rich and powerful social groups, hampering rural livelihoods and usurping rights and access to resources for the coastal marginal poor. Rampal project benefited socially powerful and wealthy groups and shareholders (Mahmud et al., 2020), and poor people's access to benefits remains challenging.

Blue economy-enabling key conditions are identified as economic and inter-group equity, human rights protection, environmental regulations, and infrastructural development (Cisneros-Montemayor, 2021). Caswell et al. (2020) study 20 historical BG cases from 13 countries and identify four major trajectories of progress. Three of those trajectories show unbalanced growth because of the dominance of the economy over social equity and sustainability. The remaining trajectory shows slow but balanced growth as social equity and environmental sustainability are considered from the beginning of the project(s).

The lack of consideration of local voices in development project implementation marginalizes coastal communities (Kerr et al., 2017; Flannery et al., 2018; Vega-Muñoz et al., 2021). A systematic literature study on the two decades of scientific publication on frequently appeared stakeholders in the constructs of 'blue economy' and 'sustainable development goals', reveals that the key stakeholders are i) government agencies/policy makers, ii) NGOs, iii) Scientists/Researchers, iv) Business/Industries, and v) Local community/Society. The study states 'Local community/society' is the least included stakeholder group with their level of inclusion in the literature at only 15% of total statements (Lee et al., 2020). This indicates the low level of attention towards inclusion and other aspects of social equity in BE and SDG initiatives. Bennett (2018) finds that while exclusion in decision-making and societal injustice are prevalent, little consideration has been given to social justice and inclusion in ocean research and management.

[7] It is a 1320-megawatt coal-fired power station at Rampal Upazila of Bagerhat District in Khulna, Bangladesh

3.3 Social Equity in international BE policy documents, multilateral reports, and conference proceedings

Voyer et al. (2022) state that high-level BE objectives prioritize aspects of economic growth and environmental sustainability with rare inclusion of equity (e.g., food security and gender equality). The recent development of global frameworks and guidelines to mobilize interested countries to develop BE initiatives calls for a more critical assessment of the inclusiveness of equity and blue justice (Cohen et al., 2019; Schutter et al., 2021). In the following (Table 2), I reviewed sixteen international policy documents, reports, and proceedings of international conferences on BE and BG.

The first high-level Pacific Blue Economy conference in 2017 addressed equity issues (Pacific Blue Economy Conference, 2017). Participants and presenters agree that BE should be connected with communities and regeneration of livelihoods, benefit locals with an equitable share to ensure the sustainability of BE. Regarding inclusiveness, they ask for a shared definition of BE that involves all sectors. They further urge for better governance and principles of BE which should be connected with community-based definitions of coastal and ocean resource management.

United Nations Conference on Trade and Development (UNCTAD) report in 2014 entitled 'The Ocean Economy: Opportunities and Challenges for Small Island Developing States' considers "*the improvement of human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities*" as their central agenda and shapes further thoughts and directions based on this (UNCTAD, 2014, p.2). Their comprehensive objectives include human well-being and social equity while minimizing risks and ecological dearth. However, the Blue Economy Report 2021 by the European Commission documents BE success stories and estimated economic growth globally but does not address SSF and social equity as a challenge in progressing BE or BG. This report emphasizes social and environmental aspects to ensure the sustainable economic growth of BE.

The representatives of the seas of East Asia in the Changwon declaration (PEMSEA, 2012) address socioeconomic development obstacles due to the degradation of coastal and marine ecosystem services in the face of the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA). They develop national coastal and marine policies for nine Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) countries. Another important recommendation of the Changwon declaration was to reform ocean governance towards inclusiveness, collaborating with stakeholders, and provisioning livelihoods for the coastal poor. A related declaration "Dongying Declaration (PEMSEA, 2011)" from the PEMSEA network prioritizes Integrated Coastal Management (ICM) to adopt BE, while ICM has been considered as an integrated effective management framework in coastal context, globally, and yet, remains a challenge to implement in effectively in different coastal states of the world (Warnken and Mosadeghi, 2018).

Table 2. Summary of the selected international BE policy documents

BE Policy-documents	Key issues	Addressing equity
Pacific Blue Economy Conference proceedings, 2017	Assisting the Pacific region in defining BE and implementing it	Deepening cultural and social tie to the ocean
Sustainability criteria for the blue economy, EC, 2021	Assessing BE contribution, Developing blueprint for Blue Economy Sustainable Framework (BESF)	Recommends refining BE sustainable frameworks to ensure economic, environmental, social, and governance impacts of investments
Africa blue economy strategy, AU-IBAR, 2019	Towards a prosperous Africa based on inclusive growth and sustainable development within the context of the Africa Union Agenda 2063	Policies, institutional and governance, employment, job creation, and poverty eradication
Towards a blue economy: A promise for sustainable growth in the Caribbean, 2016	Sustainable development of oceans and seas (SDG 14) and economic growth	Guides Caribbean policy-makers toward transitioning blue economy and socially equitable blue growth
The blue economy report 2020, EU	Analysing the scope and size of the blue economy in the European Union	Accounts employment generation
Achieving Blue Growth Building vibrant fisheries and aquaculture communities, FAO, 2018	Supporting blue communities includes food security and nutrition	Empowering marginalized groups, maximizing social/community benefits
Blue growth initiative: Partnering with countries to achieve the Sustainable Development Goals, FAO, 2017	Sustainably developing fisheries and aquaculture, initiatives to maximise economic and social benefits	Aligning with SDGs 2030
Sustainable blue economy conference report, Nairobi, Kenya, 2018	the Blue Economy and the 2030 Agenda for Sustainable Development	Emphasizing accelerated economic growth, job creation and poverty alleviation, and sustainability
Changwon Declaration towards an ocean-based economy: Moving ahead with the sustainable development strategy for the Seas of East Asia, Korea, 2012	Commitment toward sustainable ocean management	Recommendation to shift coastal and ocean governance from government-centred to a more inclusive approach, ensuring food security and livelihoods
Dongying Declaration on building a "Blue Economy" through Integrated Coastal Management, China, 2011	Commitment towards embracing blue economy for the region by taking an active role in Integrated Coastal Management (ICM)	ICM and sustainable coastal and marine development
PROBLUE annual report, World Bank, 2021	Building back better: considered BE as key to an inclusive recovery after COVID – 19	Gender equality
The Oceans Economy: Opportunities and Challenges for Small Island Developing States, UNCTAD, 2014	Guiding small island developing states for a sustainable ocean economy	Improve human well-being and social equity
The EU Blue Economy report 2021	Aims to support policymakers and stakeholders in the way of sustainable ocean resource development, estimation of global blue economic growth	Defines BE and emphasized social and environmental aspects and sustainability central to sustaining economic activities
The Ocean Economy in 2030, OECD, 2016	Blue growth agenda to maximise revenue from the ocean	Considering the risk of BG, address employment generation, innovation, and inclusiveness
Oceans 2030: Financing the blue economy for sustainable development, World Bank, 2016	Addressing the blue economy development framework	Rising the blue economy to fight poverty and enhance prosperity
Principles for a sustainable blue economy, WWF Baltic Ecoregion Programme, 2015	Developing a set of principles for a sustainable blue economy	Social and economic benefits for current and future generations

The PROBLUE[8] annual report of the World Bank, names gender equality in their specific agenda for BE-related ocean development initiatives. Moreover, PROBLUE Blue Economy Development Framework (BEDF) focuses on *knowledge management, policy, institutional, and fiscal reforms, and on fostering investment in the blue economy*. These components proceed with tools like blue public expenditure reviews, National Ocean Accounting, and Marine Spatial Planning (MSP). The Organization for Economic Co-operation and Development (OECD) advances "The Ocean Economy in 2030" policy document that addresses multiple BG agendas and plans to increase revenue from the ocean. They also identify a complex variety of risks and integrated ocean management plans and guides to include stakeholders from multiple levels to ensure inclusiveness in ocean management (OECD, 2016).

Commonwealth (2016) Blue Economy series, No. 1 prioritize fundamental changes in ocean governance at national, regional, and global levels that recognize the full portfolio across and within the blue economy. Baltic Ecoregion Programme (2015) develops principles to guide the blue economy and prioritizes social and economic benefits for current and future generations. The Food and Agriculture Organisation of the United Nations (FAO) report on 'Achieving Blue Growth' in 2017 is a strategy with three components; *Blue production*, *Blue trade,* and *Blue communities*. Blue communities specify empowerment of communities, their livelihoods, food security and nutrition, and resilience to shocks. These objectives facilitate the consideration of equity issues relating to the ocean and coast (FAO, 2017, 2018). The Sustainable Blue Economy Conference (SBEC, 2018) report from Nairobi emphasizes the deployment of the BE concept in a people-centred initiative that ensures addressing inequality gaps.

The World Bank report on the Caribbean Blue Economy pathways aims *to guide Caribbean policy-makers towards the transition to a blue economy, and socially equitable 'blue growth'.* Among the ten principles of the Caribbean blue economy pathways, one specifically addresses the 'sharing of BE benefits' (Patil et al., 2016). The World Bank's (2016) BE development framework also identifies some challenges undermining the BE. One of those is 'Ad hoc development'. It happens due to unplanned and unregulated development initiatives in the coastal region that cause externalities, overlapping, and conflicts. This report specifies that the outcome of BE must benefit the poor (World Bank, 2016).

The European Commission (EC) BE reports describe sectoral growth with the competitiveness of driving economic forces and employment generation (EC, 2020, 2021). After a decade of BE conceptualization, the EC (2021) report analyses the BE frameworks based on four sustainability dimensions (economic, environmental, governance, and social). Among fifteen Blue Economy Strategic Frameworks (BESF) studied by EC (2021) finds these BESFs lack governance in most cases and recommends integrating the governance dimension to reflect all aspects of sustainable BE management. This report also provides common criteria and indicators for the consideration of social dimensions such

[8] PROBLUE is a Multi-Donor Trust Fund, held at the World Bank that provides support to the development of integrated, sustainable and healthy marine and coastal resources. It contributes to the enactment of Sustainable Development Goal 14 (SDG 14) with the BE action plan and is fully allied with the World Bank's goals of extreme poverty eradication and enhancing the sustainable income and welfare of the poor.

as employment conditions, health and safety management, inclusiveness, fairness in remuneration, and level of acceptance by stakeholders.

3.4 Social equity and justice in national-level BE policy documents, frameworks, and research articles

International policies, guidelines, and agendas may influence the development of national policies and implementation frameworks. Adopting BE at the national-level needs diversification of current policies, priorities, and attention at the country level. This review also explores national-level BE policy frameworks, drafts, scoping reports, and intervention plans proposed by researchers. These documents do not mention any specific plan for ensuring social equity and justice (one exception is Grenada[9], they specify equity in the guiding principles of their master plan as *Equity as manifested by transparency and fairness in decision-making and provision of access to public coastal spaces including all beaches*). Bennett (2019a) examines a connection between social inequity and non-compliance with regulations. National BE implementation frameworks and working drafts promote policies that boost the national economy by enhancing coastal sectoral investment. I did not find any national BE framework that keeps social equity central among the eighteen countries and one continent BE documents I studied in my review.

Although national-level policy documents envision sustainable development objectives, they often lack a clear statement on what social equity does mean and how it can be integrated into BE and BG policies and frames. The lives and livelihoods of individuals, different groups, and communities dependent on marine and coastal resources are often overlooked, while economic growth is given importance. For instance, the BE framework of Bangladesh suggests exploring untapped potentials and expanding coastal and marine sectors. The Government of Bangladesh proposed twelve BE action plans (Patil et al., 2018). Most of these plans and interventions are part of BG and they do not clearly define equity and justice or suggest that these issues be addressed. Moreover, countries like Cambodia, China, India, Indonesia, Japan, Malaysia, Maldives, Mauritius, Myanmar, Philippines, Seychelles, Singapore, Sri Lanka, Thailand, Timor-Leste and Vietnam, along with other African countries have also initiated BE for their national economic growth. Their policies, frameworks, and plans are mostly addressing the exploration of potential sectors, expand the coastal and marine business, introduce intensified technologies, and invite private sectors and international investors to enhance the productivity of maritime sectors. Concerns about ocean health and the well-being of coastal marginal poor are not central and/or these initiatives lack intervention tools to ensure equity and justice in the coasts and oceans.

[9] Blue Growth Coastal Master Plan (2016), Grenada

4. Discussions

4.1 Equity implications in the BE/BG literature

BE advances mainly with the objective of economic growth. Perceptions towards BE vary widely. BE is a model which moves towards an abundant state of society from a scarcity based on existing realities, considering environmental protection as well as a management tool that relies on ecosystem management to manage BG on coasts (Kathijotes, 2013; Mulazzani et al., 2016). A collaborative and inclusive BE on a basis of mutual trust has also been identified as the key to holistically sustainable blue growth management (Soma et al., 2018). The understanding is that BE delivers sustainable development in terms of economy, livelihoods, food and nutrition security, and protection of the oceans. Moreover, Liang et al. (2022) find a lack of institutional collaboration in BE sustainable research. Its connection with SDGs reinforces the necessity for it. Yet, the challenge is embracing BE or BG in different ways by different countries. 'Blind spots' are needed to be addressed while pursuing BE research (Farmery et al., 2021).

Consideration of ocean equity or social equity or social justice or environmental justice in ocean-centric policy formation is crucial from instrumental and ethical aspects (Alexander, 2019; Ganseforth, 2021; Bennett, 2021). Figure 2 shows the dominancy of economic expansion in the coasts and oceans while advancing BE and BG initiatives. A debate revolves around the question: 'do BE development frameworks consider 'social equity' or not (Cisneros-Montemayor, 2019)? Because BE also creates social risks and those can lead to inequalities and injustice. Procedural fairness and distributional impacts of actions in marine and coastal realms are important to consider social equity (Hanich et al., 2015; Bennett 2018). Although BE holds the promise of a 'triple win' on the ecological, social, and economic fronts, the social and ecological impacts of these changes are poorly addressed in BE policy papers (Brent et al., 2018). Access to benefits and resources from the ocean is inequitably distributed which is vastly evidenced (Österblom et al., 2020). Nevertheless, economic benefits due to ocean industries advantage society or lead to marginalization – remain unexplored. Building upon SSF research that sheds light on resiliency, researchers increasingly argue that 'life above water' needs more concern for access rights, inclusion, and equitable distribution of resources.

Despite having 'triple bottom line objectives' of ensuring a sustainable environment, economic expansion, and social equity, in several definitions (World Bank, 2017, P.4; Voyer et al., 2018), it is not reflected in BE practices. Bueger (2015) states aspects of BE '*represent a general agreement in the abstract, but they generate endless (and irresolvable) disagreements about what they might mean in practice*' (Bueger, 2015, p. 160). Global evidence of ocean and coastal grabbing, control grabbing, dispossession, displacement, inequitable distribution of benefits, conflicts, etc. are common (Figure 3). This study finds that national-level BE initiatives also clearly lack equity and justice directives. Developing countries, where poverty is entwined with coastal marginal communities, are excessively experiencing negative impacts of privatization and coastal industrial growth. Dominance in economic expansion hinders social sustainability. Moreover, environmental sustainability is also vital to sustaining coastal societal systems due to people's dependence on nature.

The economic frontier – the ocean signifies a dimension of opportunity. The pressing question regarding this is, of course, the creation of opportunity for whom? A demand for systematic studies of coastal development and poverty status remains imperative. Though BE appeals to stable development and protection simultaneously, it is complicated by overlapping and multiple uses of coasts and oceans (Winder and Le Heron, 2017). Now, focusing on policies needs to be considered for the social and economic well-being of natives at the national level. Choi (2017) criticizes BE as a state-driven complex initiative as it turns ecologically productive contexts into eco-cities and wipes out local fishers. Sometimes it is difficult for the locals to assess the monetary value of nature and its longstanding value (Howard, 2018). The coastal poor receive the excessive pressures of coastal investment in terms of grabbing. Hearing local users' voices in national-level BE policy formulation and implementation is necessary based on the global evidence that is also documented in this study.

The necessity of defining 'blue' (or 'green') sectors remains vital to justifying BE and its connected activities (Voyer et al., 2018). From a country's perspective, it is important to expand economic sectoral growth, but investing in proper sectors needs careful investigation. Even, in higher-income countries, the growing value of coasts creates less accessibility to it for less well-off groups (Depledge et al., 2017). In such cases, BE hampers the livelihood of the coastal poor, particularly, small-scale fishers due to competition and marginalization. From a justice point of view, SSF and other marginal coastal communities suffer from sectoral growth on the coasts and oceans. Further privatizations and industrializations on the coasts are likely to hamper poor peoples' access to common resources and undermine social cohesion leading to generating grievances and conflicts.

BG or power grabs have been considered purportedly in global policies in terms of positioning poor people's interests and climate change (Barbesgaard, 2018). My review also finds that international policy documents address social equity in terms of social sustainability, however, national-level BE frameworks, approaches, and implementation plans lack a clear consideration of social equities and justice. This missing link hampers equities and justice in the coasts and oceans while advancing BE. I argue most of the BE or ocean economy sector expansion generated ample incidents to violate six types of ocean equity stated by Bennett (2022a). BE experiences so far tend to focus on income-generating aspects, these approaches along with investment plans need to do better, incorporating factors such as tenure rights and access, distributive justice, supporting livelihoods, and food and nutrition security for the local communities. Local communities' well-being is closely connected with sustainability, productivity, and health of the ecosystem and nature's contributions to humans (Díaz et al., 2018).

Universal notions of fairness are challenged by inequalities, which are 'normative arguments and sustainability objectives must be aligned with equity, known as instrumental argument' (Bennett, 2018; Österblom et al., 2020). Blue economic growth or investing in coastal mega-projects need to hear local communities' voices. Otherwise, it hinders the sustainability of the growth. Farmery et al. (2020) argue there are 'blind spots' in BE vision, such as production growth without equitable distribution of the benefit. Ehlers (2016) argues regulations alone are not enough rather than their proper implementation

and enforcement. The legitimacy of ocean-based economic growth needs to consider social equity, which is committed to SDGs and other globally existing legal frameworks.

4.2 Blue economy reforms governance

BE, as a framework, can facilitate achieving multiple SDGs, yet there is a lack of clarity and consistency in finding the most appropriate and practical governance mechanisms of BE (Voyer et al., 2018; 2022). The ocean is the focus of extensive worldwide attention and various demands for transformation, recently (Blythe et al., 2021). One of the way forward initiatives is reforming ocean governance. The necessity of a holistic governance approach addressing the connection between terrestrial activities and coastal resources seems central (IRP, 2021). However, ocean governance has also been identified as a failed (Cunningham et al., 2009) and fragmented (Zalik, 2015) strategy and it calls for improvement. It is challenging in the face of its multi-dimensional and interconnected aspects, comprising justice and inequity (Bennett et al., 2019; Cohen et al., 2019; Joufrray et al., 2020). Ocean governance transformation is likewise yet to address livelihoods, social justice, and food and nutrition security comprehensively (Cohen et al., 2019; Crona et al., 2020). The most and largest marginalized ocean users, SSF, are further marginalized from ocean policy discourses. BE brings inherent conflicts as it offers two competing aspects – growth opportunity and threats to nature (Voyer et al., 2018) and is likely to affect coastal and marine ecosystems and stocks which ultimately hamper resource users (Mulazzani et al., 2016) and calls for governance responses. Hence, a reformation of maritime governance is a current demand. Concerns regarding ocean governance are increasingly included in international policy discussions by stakeholders (e.g., scientists, governments, NGOs, and private sectors) (Campbell et al., 2016). To trigger conflict resolution, globally, different contexts need new forms of social interaction and governance (Bax et al., 2021). Guerreiro (2021) also argues the BG approach needed to be bottom-up and recommends plans such as spatial planning and specialised institution setup, intersectoral coordination to resolve likely conflicts, mandating ministries specifically to deal with maritime and sea issues, and, regional and transboundary cooperation.

BE and its principles are thoroughly allied with an ecosystem-based approach (EBA) and resilience thinking, which ultimately harness achieving SDG goals (Caswell et al., 2020). Keen et al. (2018) study BE cases in Solomon Island and related BE literature and state BE discourses have a tendency of negligence towards socio-political elements which is crucial to achieving sustainable ocean governance. As BE calls for new ways of governance in the coastal and marine realm, Choi (2017) argues this could be ‘space governance’ from the government and exemplifies how the sea governance system in China displaced small-scale fisheries tactically in a certain place in the form of ‘blue grabbing’. Inhabitants living near marine resources should be prioritized while developing those resources and based on the ‘terraqueous territoriality of adjacent rights’, there is evidence that various social groups positioned themselves to privilege their access to state properties (Foley and Mather, 2019). Competition for resource access and using coastal and marine spaces are likely to lead to galvanize conflicts that call for collective actions. Collective action can reform rules, norms, and practices among different interest

groups (Basurto et al., 2016). Human rights need to be ensured in ocean governance transformation for the ocean-dependent people (Leach et al. 2012) to make a 'safe and just space' (Dearing et al., 2014). Successful governance-based fisheries management was recorded in Costa Rica, where the action was collective (Rivera et al., 2017). Pedersen et al. (2014) suggest strengthening political space for SSF in fisheries governance emphasizing social justice-driven and human right-based alternatives.

Bennett (2019b) terms oceans as 'political seas' because the ocean and coastal management and governance are mostly dominated by power and politics. Increasing attention towards global ocean governance is influenced by environmental sustainability (Campbell et al., 2016), though it should be addressed to promote social sustainability as well. Power relations among different stakeholders play a crucial role in the control and access to resources (see Tan-Mullins, 2007; Chambers et al., 2017). Examples of failure risk of external initiatives without hearing local voices lead to unsustainable ecological context (Vazquez, 2017), which generates social inequity. BE initiatives need trade-offs among economic, social, and environmental sustainability (Lillebø et al., 2017). BE is likely to produce various social and environmental injustices, and crucial changes in ocean governance are obvious (Bennett et al., 2021; Guerreiro, 2021).

However, recent capitalism-focused BE and BG embedding inequalities call for rethinking global policies. Governing ocean and coastal social-ecological systems (SES) is always challenging and complex (Neumann et al., 2017; O'Hagan et al., 2020). A few new legislative tools are on the way to direct sustainable blue acceleration (Jouffray, 2020). Conflict due to the multi-use of coastal and marine space could be a useful entry point to assess fishers' struggle (Bavinck, 2018). Global legal frameworks documented equity properly, but not in practice, and criticized the ocean policies as 'equity-blind' (Österblom et al., 2020). Cisneros-Montemayor (2019) emphasizes that BE needs to integrate 'social equity' and 'environmental sustainability' and 'economic viability' comprehensively. Thus, reforming ocean governance to ensure equity and justice in the ocean is thought-provoking.

Cisneros-Montemayor et al. (2022) argue a transformation of social equity-centric BE will be a challenge, and also suggest to follow available guidelines for emerging ocean sectors. Available international guidelines (e.g. FAO SSF guidelines[10]) are endorsed by international policy-makers to provide and promote sustainable management of ocean and coastal resources. The primary objectives of these guidelines address food security, eradicating poverty, ensuring human rights, etc. BE discourses keep ample space to embrace international policy guidelines on specific sectors. For instance, SSF is the most vulnerable sector in the face of BG and FAO SSF guidelines that address the SSF sector and its governance in a comprehensive way. A 'regulative idea' blue justice addresses SSF research and governance (Jentoft, 2022). The idea of blue justice calls for ensuring the promises of BE and BG. Jentoft (2021) argues for a 'suitable language' in the BE 'language game' which raises SSF voices and

[10] Voluntary Guidelines for Securing Sustainable Small-scale Fisheries by the Committee of Fisheries (COFI) of FAO (FAO 2015)

harmonizes BE discourses with FAO SSF guidelines. The recent book 'Small-scale fisheries in a sustainable ocean economy' by Jentoft et al. (2022) documents SSF case studies, globally, through its 35 chapters. The 12 thematic parts of this book reveal how SSF faces inequities, injustice, conflicts, governance weakness, and urge for blue justice and emphasize on the implementation of FAO SSF guidelines to the current discourses of BE. To enhance SSF sectors, TBTI recommends seven actions such as - including supporting SSF implementing the principles of SSF guidelines, illustrating SSF as a key for sustainable ocean development, the inclusion of SSF in decision-making, reforming governance, promoting coordinated policies, cross-sectoral collaboration and awareness build-up[11].

4.3 Blue degrowth

To criticize capitalism and growth driven policies, the 'blue degrowth' term has been used, which enhances societal community rights (Hadjmichael, 2018; Ertör and Hadjmichael, 2020). SSF within a blue degrowth structure could resolve most of the BG and capitalism-driven problems along with fish stock declining, fishing community displacement, social cohesion and empathy loss, and other social-ecological system struggles (Said and MacMillan, 2020). Researchers recommend a collaborative economy, including limiting or degrowth strategies wherever needed to retreat SSF communities (Pauly, 2017; Hadjmichael, 2018; Österblom et al., 2020). For instance, improving government efficiency has been considered as an important factor while securing fisheries and aquaculture income from local BG in Vietnam (Hanh and Boonstra, 2018). Again, a comprehensive policy fails if the inequitable distribution occurs (Ramenzoni, 2017). Favouring large-scale investors over small-scale in BG can generate chaos and hamper social cohesion. For example, in Bangladesh, leasing rights to better-off parties demoted poor fishers (Khan et al., 2012).

Another major challenge of BE is it lacks any established frameworks, guidelines, or specific toolkits to guide its objectives (Voyer et al., 2018). Developing countries, which sometimes struggle to implement effective governance tools, can face challenges to embrace it. BE initiators must deliberate fisheries governance model and non-fisheries developments, as they bring risks to food, nutrition, and livelihood security (Cohen et al., 2019). Common coastal and ocean governance frameworks and management tools (e.g. Integrated Coastal Management – ICM, Marine Spatial Planning – MSP, Ecosystem-based Management – EBM, etc.) can be linked to initiating BG or BE.

4.4 MSP: poses solution or risk?

Marine Spatial Planning (MSP) is an increasingly used tool in coastal contexts. In recent decades, its popularity brought it into action to resolve conflicts and maritime jurisdictional issues (Ehler and Douvere, 2009; Ehler et al., 2019). Almost 45% of the coastal states (70 countries) adopted the MSP concept (Frazão Santos et al., 2018). Trouillet (2020) mentions that MSP is a socio-technical device and it gives freedom to 'blue growth' to perform. Such planning might hold a dichotomous role to address both economic and environmental simultaneously (Trouillet, 2020).

[11] http://toobigtoignore.net/blue-justice-for-ssf/

However, MSP differs in theory and practices as it aims mainly at blue growth and economy (Jones et al., 2016). As it is connected with adaptive management, actors' power, and balanced decision-supporting tools, MSP must avoid ocean grabbing (Queffelec et al., 2021). Kirkfeldt et al. (2021) conclude their review on MSP as a perfect tool for SDG 14 targets, but other objectives cannot be adequately addressed by MSP and may need further management strategies. I argue environmental sustainability is interconnected with social equity. Resource users' livelihoods and income are mostly based on the ecosystem and its sustainability. If MSP does not serve the coastal poor's expectations in BE contexts, it is critical to achieving sustainability. Thus, one of the MSP's objectives needs to be surfacing equity and justice in the coasts and oceans.

MSP can be misused by powerful actors and power relations can dominate the process (Tafon et al., 2019). Globally, environmental sustainability sometimes dominates over social sustainability (Boonstra et al., 2015, Bennett et al., 2019). Österblom et al. (2020) state that any ocean economy investment plan sustains if it pays attention to reducing inequality (Österblom et al., 2020). Neoliberal economic policies, worldwide, impacted reducing global poverty, yet increased inequalities (Alvaredo et al., 2018). My concern is when privatization takes place in coasts and oceans in terms of BE, there are risks to widen social inequity as the coastal poor are likely to be more marginalized. Such inequality could exacerbate economic growth in terms of pace and sustainability immediately or in the long run (Berg et al., 2018; Cisneros-Montemayor, 2021).

4.5 Way forward challenges

There is no "tragedy of the commons" in the coastal and ocean resources, but rather a "tragedy of the open access" (Visbeck et al., 2014). Given the importance of coastal and marine resources that contribute to the livelihood of these large communities, one of the major challenges to initiating BE would be to harmonize among inclusivity, natural resource conservation, and economy. Global South countries are prone to ocean-grabbing risks due to their legislation, politics, socio-economic and ecological characteristics (Bennett et al., 2015). For instance, Bangladesh prioritizes not only mariculture but also shipping, port development, and megaprojects in the coastal and marine realm (Patil et al., 2018), it is likely to generate inequitable benefits and uneven current infrastructure (Cisneros-Montemayor, 2021) in such cases. These initiatives generate pressure on the coasts and oceans for boosting the national economy. To ensure sustainable BE/BG, a transformation of the governance mechanism is recommended (Islam et al., 2020). My concern is that to avoid likely conflicts due to 'space competition' on the coasts and inequitable distribution of benefits, the policies need to keep scopes to ensure equity and justice. Because of growing anthropogenic pressures on the environment, the science-policy nexus must be informed by evidence-based knowledge to make effective decisions (Karcher et al., 2021). A perpetuation of widening inequity is assumed if there is improper consideration of social sustainability in BE/BG advancement (Bennett et al., 2022b). Hence, focus on diversity, equity, and inclusion (DEI) have been recommended in BE initiatives (Schuhbauer and Sumaila, 2016).

Despite documentation of equity in the international framework to support the fisheries sector, it remains a challenge always (Österblom, 2020). Moreover, BE and BG initiatives give the impression to overlook SSF, and not paying sufficient attention, ultimately, marginalizing them (Chuenpagdee, 2020). Much of the coasts and oceans worldwide are peopled seascapes and the human dimension receives profound impacts from the seas (Bennett, 2019a). BG legitimises social injustice and exclusion of the traditional fishers and less powerful and unrecognized coastal groups (Said and MacMillan, 2020; Engen et al., 2021). Just operation and considering human well-being by private sectors or investors (Bennett, 2022b) in BE/BG initiatives could enhance sustainability for small-scale fishers.

SSFs are subsumed under 'fisheries and aquaculture' in global literature, mostly, hence, the importance of SSFs is overseen, sometimes (Ayilu et al., 2022). From global literature, it is evident that unplanned BE poses risk to coastal communities, particularly SSF. Other factors like access to education, gender equity, social services, and socioeconomic structures are important along with the livelihoods of locals (Sowman et al., 2014; Almaden, 2016). Consideration of local realities is key to an effective BE policy formation (Carneiro and Hammar, 2021). Nine core factors for local BG, according to Göthber et al. (2022) are infrastructure, credit, local community organisation formation, legal framework, environmental regulation, well-functioning value chain, institutions, technology, and strategic planning. I argue social sustainability needs to be reflected in these factors. Otherwise, sustaining human-nature interactions in terms of BG progress remains a challenge. Because an indicator of success or failure of any factor governing a social-ecological system is social sustainability. Legislations need to comply with the due needs of the populations affected by BG. The feasibility of BG lies in the understanding of the competitive users.

Jouffray (2020) finds four challenges of BG i) improved knowledge about claims, resources, and affected stakeholders, ii) increased attention to the actors who place the claim, iii) focusing on *who* and *what* funding the BG could reveal effective leverage points, and iv) concerns about BG beneficiaries. These four challenges play a crucial role in almost every part of the world. BE governance and management strategies may accentuate equitable outcomes while producing private wealth (Béné et al., 2010). Moreover, 'power grabs' regarding coastal and marine resources is one of the poorly explored issues (Barbesgaard, 2018). Hence, developing countries face more challenges in shaping BG in their contexts. Fundamental questions for effective coastal and ocean management and governance then remain: who is the steward to control resources, access, and govern BG services to society in an equitable way? Because no clear implications of sustainability and the role of ecosystems are established related to foment BE or BG (Mulazzani and Malorgio, 2017).

4.6 The missing link between BE discourses and their implementation

After reviewing research articles, international policy documents, and national-level documents related to BE and BG, I conclude there are sufficient discussions on BE/BG and its potential among the states interested to embrace BE. International policy documents, guidelines, and policy deliberations of BE and BG address human well-being considerably in different forms. Social sustainability, equitable benefits,

achieving SDG objectives, environmental sustainability, human rights, gender equality, good governance, and justice and peace, etc. (Table 2) are documented in most of the multilateral international policy documents and BE frameworks. Furthermore, increasing attention toward SSF and equity seems emerging. Despite these indications of growing momentum, for social equity in the coastal and ocean economic policies, the proper translation of these objectives is not visible in the national-level BE and BG plans. A recent study (Voyer et al., 2022) on Commonwealth countries also finds a similar mismatch between international BE policy objectives and national-level conceptualization and implementation.

I offer some thoughts on the research gap and way forward directions in this review. The scientific literature on BE substantially emphasizes economic growth in the coastal and marine space; there has been expressly less consideration of social equity framing. Future research and policies need to focus on bringing explicit social justice to research on BE risks such as displacement, grabbing, inequitable distribution, fairness, blue justice, etc. Equally, following international policies and consideration of priorities, the national-level blue economy policy framework needs to pay more attention to the coastal communities in terms of social and distributional impacts of equity and justice in the ocean. I recommend studying global drivers and proximal causes of social injustice, including policies, political, and local responses toward the resilience of the global coastal communities.

5. Conclusions

The definition of BE is evolving and international organisations are increasingly paying attention to the consideration of social equity and SSF in shaping their policies. However, implementation at the national level seems to focus on a conventional understanding of BE and BG, which is definitely a gap. The ocean economy and its promises are attracting the attention of international funders, the private sectors, governments, and multi-faceted organisations (Cohen et al., 2019). To ensure the robustness of the ocean economy, projects and interventions must consider SSF, social equity along with environmental sustainability. This review shows that publishing on BE/BG and SSF is increasing with a focus on sector expansion, conflict, ocean grabbing and various forms of coastal and marine investment. The results of these scientific research should be leveraged by decision-makers and stakeholders involved to achieve the goals of UN-SDG and to sustain SSF in the face of the growth of BE. A literature synthesis to inform policies is missing in SSF in developing countries, mostly. I represent an initial effort to address the dimensions of the BE, BG, and SSF contexts studied in different parts of the world and encourage further research on ‘social equity’ and SSF in BE/BG contexts. SSF resilience to the SES changes needs widespread research to be fully explored. Apart from researchers and agencies responsible for implementing the BE, there are other stakeholder ideas that may represent critical gaps in the knowledge domain and need to be explored. Moreover, the promises of public-private partnerships in the implementation phases of BE/BG cannot be fulfilled if monopolization occurs (Mallin et al., 2019; Vega-Muñoz et al., 2021). Nevertheless, the research community can ask- ‘What blue economic growth strategies ensure synergies that safeguard social equity?’

BE holds ambiguity and flexibility in application and is adopted by numerous actors, which is not compatible in every case. All of the objectives of the BE/BG agenda cannot be achieved simultaneously (Caswell et al., 2020). To achieve the goals of BE/BG, all contexts must be assessed within stressors, past and present situations, factors controlling social-ecological systems, and trade-offs (Caswell et al., 2020). Although economic growth is the primary driver of the BE, social sustainability is also essential for the just use of the coasts and oceans. Three key parties; *coastal communities*, *the environment,* and *investors* (Barbesgaard, 2018), and their interest in BE/BG will play a role in achieving the goals. BE is still in its early stages, and from global 'lessons learned', further critical research has been recommended to assess the impacts of BE from a social and political economy perspective, refine strategies, and understand the complexities of BE initiatives. At this stage of growth of BE at the national level, further research is needed to be rolled up to explore coastal contexts in terms of social equity and environmental sustainability consistent with economic growth. Understanding the trends of BE and BG and recognizing the effective role of governance could provide results to advance these efforts.

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Article 2

Safe Space for Small-Scale Fisheries in Blue Economy Transformations

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Safe Space for Small-Scale Fisheries in Blue Economy Transformations

Jewel Das, Md. Ruyel Miah, Mohammad Mahmudul Islam, Prateep Kumar Nayak, and Marion Glaser

Abstract

The blue economy or ocean-based economy encompasses a wide range of activities along the coast and in the sea. It involves innovative research and large commercial investments, considering the ocean as a "development space" or new "economic frontier." Countries are adopting the blue economy concept and investing more in ocean-based sectors, putting additional pressure on both marine and terrestrial ecosystems, including local communities. The development of the blue economy raises concerns about protecting coastal and marine ecosystems, as well as the livelihoods of small-scale fishing communities. There is a noticeable disparity between international blue economy discussions and national-level planning and execution. This chapter systematizes and discusses the strategies for creating safe spaces for small-scale fisheries in the blue economy transformation to guide social-ecological systems toward sustainable pathways. As small-scale fishers are an integral part of the United Nations' Sustainable Development Goals, this analysis examines the legal and policy frameworks, centrally including the FAO Small-Scale Fisheries Guidelines, in relation to a specific national blue economy initiative. The case of Bangladesh is considered in light of the blue economy development in its coastal regions. This chapter unpacks frameworks, steps, and approaches in the transition toward sustainable human–nature interactions in blue economy development, with equity as a central objective.

Keywords

Blue transformation · Equity · Governance · Bangladesh

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Article 3

Stakeholder perceptions of blue economy governance networks and their equity implications in Bangladesh

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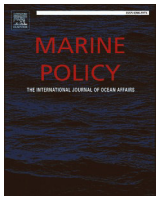

Full length article

Stakeholder perceptions of blue economy governance networks and their equity implications in Bangladesh

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ABSTRACT

The 'Ocean Decade' focuses on ocean governance and management including ocean health and human well-being in line with the Sustainable Development Goals. Here, we use participatory network mapping to investigate perceptions of Blue Economy governance networks in Bangladesh. Representatives of four Blue Economy stakeholder categories (government, researchers, private sector and civil society, and non-governmental organizations) mapped who they perceived as Blue Economy actors and the relationships between these actors. The resulting "netmaps" highlight 83 actors and diverse perceptions of the composition, structure and dynamic of Blue Economy governance. Relations between governance actors were categorized as formal command, information and support, funding, and competition or obstruction. Information and support, followed by funding were the most frequently perceived Blue Economy governance interactions. The centrality and influence of government actors at different levels, the role of international agencies, and the marginalization of coastal resource users and communities emerged as key themes. A narrow view of the Blue Economy was found; this focused on fisheries, tourism, and shipping sectors indicating a risk of non-inclusive development. We find that Bangladesh's Blue Economy governance needs to be more inclusive, collaborative, and decentralized and mainstream marginal actors, while carefully considering international actors' motivations, roles and influence. We propose 'blue equity' to guide a holistic approach to Blue Economy governance which aims for a 'Community of Practice on Blue Economy Governance'. In Bangladesh, such a policy shift requires an effective Blue Economy Cell of the Government that supports knowledge and capacity building, innovative financing, and research-guided policy.

1. Introduction

The concept of Blue Economy, often used interchangeably with the term Blue Growth, relates to a wide range of activities on the coast and in the sea. Despite the interchangeable use of terms, there is a growing push to delineate the two concepts within the science and policy context [113]. The Blue Economy includes a broader set of social, environmental, and governance considerations aiming to promote sustainable use and conservation of marine resources. On the other hand, Blue Growth is primarily focused on the economic expansion of the ocean-based industries. The Blue Economy (hereafter BE) generates a global annual income of approximately US$ 2.5 trillion and supports the livelihoods of billions depending on the ocean [91]. While many countries have embraced BE initiatives to expand their economic growth [116], their coastal and marine ecosystems face threats such as over-exploitation, pollution, habitat destruction, and climate change [32]. Amidst these challenges, the discourses surrounding the BE are often in conflict to ensure the balance between economy and sustainable development along with social and environmental justice [14,17,42,75]. This economically driven attention toward oceans demands improved regulations [57], innovative governance [26], an understanding of actor dynamics and relationships [28], and enhanced collaborations among

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governments, civil society, epistemic community, and private sectors [64,92], all within the broader framework of blue economy governance (hereafter BE Governance) [63]. We understand 'BE Governance' as formal, informal, political and institutional processes that affect social-ecological outcomes relating to the ocean-based economy. Identifying the most appropriate and practical governance approach to support a sustainable BE, referring to its long-term viability and the health of marine ecosystems, in line with the Sustainable Development Goals (SDGs) is important but challenging in both national and global contexts [30,31,75,112]. In the context of a holistic understanding of sustainability, inclusivity and equity in the BE and related governance processes, the complexities and implications of these three aspects are often debated [113]. Inclusivity is crucial for ensuring equitable access to the benefits and decision-making processes of BE, particularly for marginalized coastal communities [117]. Equity encompasses the fair distribution of resources, opportunities, and benefits of BE [54]. Ensuring equity and inclusivity in BE involves engaging diverse stakeholders and recognizing their values, knowledge systems, and voices in BE governance [35]. In the past decade, rapid changes in BE governance marked by newly emerging economic uses, increased demand for stakeholder engagement, and implementation of new policies have been witnessed in the Global North [60]. However, it is important to highlight that the meaning of BE at the national policymaking level remains inadequately explored in a number of countries, especially in the Global South [37,99]. At a national level, the resilience and sustainability of BE often depend more on socioeconomic and governance mechanisms than on resource availability [30]. Therefore, before contemplating a global governance structure to advance BE [121], it is important to align local realities with global expectations, which necessitate national-level reforms in BE governance tailored to the regional contexts [17,37].

1.1. Why network perception matters for Blue Economy governance

Perception has been defined as "*the subjective way people experience, and think about, and understand someone or something*" ([19], p. 4). In the context of environmental conservation, [13] adds that "*perceptions are one type of information that is often dismissed as anecdotal by those arguing for evidence-based conservation*." This argument highlights the general disregard for using subjective viewpoints in the analysis of social phenomena in fields that prioritize evidence-based approaches. However, there is a growing scientific acknowledgment that perception matters and that its investigation produces evidence that is central to understanding the complexity of natural resource management [13,36,54,73]. Engaging stakeholders' perceptions supports inclusion that could lead to more effective decision-making, management, and the sustainable use of coastal and marine resources [54,65].

There is a clear link between coastal actors' social network connectivity and their ability to adapt through innovations [78]. BE governance networks may include a diverse array of stakeholders, including government, non-government, academic, research, private sector, and civil society [53,90]. While policymakers and decision-makers are directly involved in formulating and implementing the BE governance processes, other actor groups often have significant influence on the related governance processes [112]. Understanding how these stakeholders perceive the position and role of diverse governance actors and their interactions is crucial for enhanced and transformed governance planning in the future [55].

Robust knowledge of an actor's perceptions is likely to throw light on the behavior of that actor within a governance system [39,96]. Knowledge of BE actor dynamics could enable sustainable niche innovations in ocean systems including integrated multi-trophic aquaculture [41], coastal and ocean-based renewable energy [81], and maritime recycling [38] that require stakeholder alliances and co-developed solutions [25,26]. Hence, engaging the BE actors, their values, and images associated with the BE social network could broaden our view on the organization of its governance [48,52] and re-politicization of the associated decision-making processes [100].

1.2. Blue economy in Bangladesh: a case study from the Global South

The South Asian Association for Regional Cooperation (SAARC)[1] nations aim to establish and develop a comprehensive BE to drive economic progress within the region [7]. Bangladesh with its vast marine expanse of approximately 118,813 km^2, as defined in the recent resolutions governing maritime boundaries with India and Myanmar, stands as one of the front runners of BE development in the Global South [71]. Marine and coastal ecosystems play a vital role in sustaining livelihoods and generating income for approximately 36 million residents in Bangladesh [70]. As one of the most climate-vulnerable countries on earth, Bangladesh's coastal communities face threats of rising sea levels [94], natural calamities [95], local population growth, and economic pressure [89]. Moreover, Bangladesh's geopolitical position, surrounded by India [79], along with the increasing involvement of China [3] influence its development. In response to these challenges, the BE concept has gained traction in Bangladesh in the last decade as evidenced by its inclusion in the national 7th and 8th Five-Year Plans of Bangladesh [50,51].

To coordinate the BE development, the Government of Bangladesh established the Blue Economy Cell (BEC) to focus on diverse sectors including, marine fisheries, commercial shipping, coastal and marine tourism, coastal infrastructure development, offshore and renewable energy, shipbuilding and recycling industries, among many others [45,86]. Additionally, industrial growth in coastal areas is increasing, including large-scale power plants, deep sea ports, and liquefied petroleum gas (LPG) and liquefied natural gas (LNG) terminals [50,70]. However, for effective BE governance, blue diplomacy within international cooperation [69] and ocean governance strategies that involve changes in policies and associated regulatory frameworks are needed [97]. Consultations with the selected BE stakeholders have already been undertaken resulting in the development of sectoral maps to guide future initiatives in the country [66,85]. Moving forward, effective integration and collaboration among BE stakeholders is essential for the implementation of inclusive BE policies [117]. With this background, this study investigated how key BE actors in Bangladesh perceive the BE governance network and the interactions between them. By exploring stakeholder perceptions of their network dynamics, we aim to identify strategic and practical points of leverage [83] within these perceptions of BE governance to inform future policy and decision-making. Specifically, this study examined the following research questions:

1) How do different BE stakeholder groups in Bangladesh perceive the roles and influences of BE governance actors?
2) What are the perceived link-specific networks among BE actors in Bangladesh?
3) How can insights on the BE stakeholder perceptions support the development of actions for inclusive and sustainable BE governance in Bangladesh?

2. Methodology

In order to address the complexity of BE governance and to understand and drive sustainability along with social and ecological equity, innovative, interdisciplinary and transdisciplinary approaches are required [57,93,110]. This research uses the Net-Map tool, a qualitative approach that can effectively contextualize, visualize, and analyze stakeholders' perceptions of social and institutional networks [1,61,62,98]. The participatory approach facilitates discussion and deliberation among respondents to identify the roles, relationships, and power

[1] South Asian Association for Regional Cooperation (SAARC), which was established in 1985, currently with eight member countries, namely Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka

dynamics of actors who can influence decision outcomes within a governance system [54,55,78]. By linking actors and their action situations, netmapping helps to identify the strengths and gaps within a governance system from a network perspective to inform decision-making [4]. While the social network approach offers valuable insights into environmental governance [21], the application of social network analysis approaches such as Net-Map, is still rare in the Asian context [122].

2.1. Data collection, analysis, and interpretation

The participatory network mapping (Net-Map) technique allows a group of respondents to co-create visualizations of social networks based on their collective knowledge and perceptions [98]. Data collection was undertaken in October 2022 during the 5th CSD Annual Conference on Sustainable Development 2022[2] in Dhaka, Bangladesh. We proceeded in seven steps.

2.2. Step 1 – literature review and expert knowledge gathering

We conducted a literature review to identify stakeholders involved in various sectors of the BE in Bangladesh. Relying on the local knowledge of the authors and through expert consultations, the literature-derived list of stakeholders was then reviewed and complemented. A list of 48 BE governance actors was compiled through expert consultations.

2.3. Step 2 – selection and invitation of netmapping participants

Relying on this list, individuals, institutions and organizations representing government, non-government, private sector, civil society, and research and academic stakeholder groups were invited. Private sector participants included representatives of key BE sectors (fisheries, shipping, and tourism) identified in the previous literature [94,97]. The civil society respondents included environmental activists and individual consultants who work in national policy development and dialogues. Of the 48 invited parties, 38 individuals participated (response rate 79.2 %).

2.4. Step 3 – plenary briefing

At the onset of the netmapping exercise, an explanatory briefing was delivered. Participants were then grouped into four stakeholder groups (Government, NGOs, Private Sector and Civil Society, and Researcher). Each group (hereafter called "netmapping groups" or "netmappers") was assigned a separate table and accompanied by a facilitator. Facilitators were also tasked with participatory observation [18], witnessing the discussions, thoughts, and notes. They also clarified any arising questions for their group.

2.5. Step 4 – list blue economy actors

Each netmapping group table was asked to list the actors they considered to be involved in the BE of Bangladesh. The prompting question we used was: *Who has an influence or who is influenced by blue economy governance in Bangladesh?* The acronym or name that identified the actor institution was written on sticky paper (post-it note) and placed on a large sheet of paper. Post-it notes were color-coded according to actor type (yellow: government, pink: non-government, gray: research institutes, and orange: private sector and civil society).

2.6. Step 5 – identify and draw links/connections between blue economy actors

Participants were then asked to pinpoint and draw the connections between their identified actors based on the type of relationship between the stakeholders. Adopting Schiffer & Hauck's [98] suggested link types, participants then drew color-coded lines between actor labels to represent relationship type (green: formal command, blue: information and support, black: funding, and red: competition/obstruction). These lines were arrowed as one-way or both-way to signify the direction of the relationship. Netmappers were asked to rank the level of influence of each actor in the mapped network on a scale from 0 (least) to 10 (most). We defined influence in terms of how much decision-making capacity and power an actor has in the specific 'BE governance' arena in Bangladesh.

2.7. Step 6 – data processing

A short narrative on the netmapping session by the group facilitators was compiled soon after the session. In this, facilitators provided their impression on group dynamics (e.g. leadership, the most heard voices, strengths and weaknesses of the exercise) and other observations from their table. Collected netmapping data was digitalized, visualized, and rechecked with hand-drawn netmaps. The networks were plotted and visualized using Gephi (version 0.10) [10]. Stakeholder-specific netmaps were created. In line with network analysis conventions, the network visualizations consist of 'nodes' (colored circles) representing the stakeholders (or 'actors'). The nodes are connected by 'edges' (colored arrows) representing the directional relationship between the stakeholders. Network-level metrics were calculated and link-specific networks were plotted and visualized for each stakeholder group's network perspective.

2.8. Step 7 – network visualization and analysis

The digitalized Net-Map data were presented and discussed in a week-long block seminar held at the University of Bremen, Germany entitled "Ocean and coastal conflicts, their origins, trajectories, and management". The participants of this seminar were graduate students of ecology, geography, international relations, and political science. They analyzed and interpreted the perceived networks. Their 'fresh thoughts' as completely uninvolved outsiders added new interpretations and perspectives to the analysis of our Net-Map data.

2.9. Constraints and limitations

One clear limitation of this study was that we were unable to directly engage coastal communities as stakeholder representatives in the netmapping session. A variety of factors contributed to this: the character of communication in Bangladesh is generally hierarchical and, more often than not, prevents those in lower positions in the social hierarchy from giving their opinions in the presence of "seniors". That our netmapping session took place in English and at an international conference in the national capital also created additional costs, travel logistics and language barriers that worked against the inclusion of small-scale ecosystem users such as fishers, farmers or laborers. While the international conference setting was needed to attract the ministerial-level BE stakeholders we would otherwise not have had access to, it also obstructed the inclusion of local coastal and marine stakeholders. Complementary work ([58], in preparation) was therefore undertaken to investigate the BE governance perceptions of poorer and marginalized coastal and marine ecosystem users.

[2] This Conference (https://csd.ulab.edu.bd/csd-conferences/2022) is an interdisciplinary and transdisciplinary event, annually organized by the Center for Sustainable Development (CSD) - the University of Liberal Arts Bangladesh (ULAB), to take local and international experts together from across the globe to explore the most pressing and nexus issues relating to the sustainable development agenda. Our netmapping exercise was a 2.5-hour session of this conference on October 15, 2022.

Our approach, described above, faced challenges. Conflicting interests and cognitive biases among netmapping participants, operating at different levels of BE governance, might have affected the data [19,23,27]. According to the facilitators, hierarchical structures and power differences also played a role in decision-making at the netmapping tables. At times, but not always, participants seemed hesitant to pinpoint conflicts or competition in the link-specific networks. Moreover, as not uncommon in netmapping exercises [54], participants sometimes struggled and argued to establish their network perception as 'correct' [61]. Our approach, however, was not to reveal an 'objective reality' but to identify the diversity of perceptions of the BE governance realm in order to investigate how the diversity of their governance perception drives governance-relevant behavior(s).

One of the netmapping groups (private sector and civil society) was composed of a mixed membership with possibly varying perceptions between the two components of its membership. This netmapping group was composed as it was due to the availability of few representatives of either group as well as to the availability of only four facilitators.

3. Results

Our results are visualized in 20 netmaps. Figs. 1–5 highlight the different perceptions held by some major governance actors, of Bangladesh's BE networks. A total of 83 actors representing government, NGOs, donors, private sector and civil society, and research actors were identified by the participants during the four stakeholder-specific netmapping exercises conducted. Table 1 lists the numbers of identified actors by stakeholder group, most frequently mentioned actors, high and low influence actors, actors with a bridging role, actors who contribute to information sharing and support, and isolated actors.

3.1. Government representatives' perceptions (Fig. 1a)

Representatives of ministries dealing with foreign affairs, fisheries and livestock, power, energy, and mineral resources, the Department of Fisheries, and the Bangladesh Navy worked at this table. Government netmappers saw a centralized network between government actors with links to some but not all identified actors from other (i.e., NGO, research, and private sector/civil society) groups. National government netmappers identified government actors from the national level (ministries), while provincial/district or regional level government actors did not appear in their network perception. In line with the views of the top-ranking member of the government netmapping group, this netmap presented the Blue Economy Cell (BEC) within the Prime Minister's Office as the apex governing body of BE matters with official authority over all other government bodies. This is further supported by the allocation of the highest influence to BEC among all government actors. They self-reported a high level of exchange of information and support between government actors, while they saw little such exchange between government actors and other actor types. Government netmappers considered universities as critical for mediating the transfer of research knowledge to decision-makers. This netmap portrays external funding from external (non-national) donors as focused on the fisheries sector of Bangladesh and it does not portray conflictive relations among BE governance actors. Despite appearing as isolated actors in the government netmap, government netmappers considered private sector actors as highly influential in BE governance and decision-making.

3.2. Researchers' perceptions (Fig. 1b)

This stakeholder table had researchers from public and private universities and research institutions. The group generated a decentralized network with stakeholders from local to national levels. The government was well represented, with other actor types, such as research institutes and non-government organizations, also well integrated into the overall network. Researchers saw the Bangladesh Space Research and Remote Sensing Organization (SPARSSO) as the most influential stakeholder in BE governance. Multiple stakeholders including various other government actors and foreign donor agencies were seen to have a high level of influence. The researchers regarded the Ministry of Shipping (MS) as the main governing body of the BE, and international development agencies as important funders. The researchers also considered fishing communities to have a high influence, interpreted as receiving knowledge for BE-related research. The shipping and maritime transport sectors and the related actors are important in this network. Competitive/obstructive links between a few national-level governing bodies were perceived. A link between the Bangladesh Tourism Board (BTB) and the country's ship-breaking industries (SBI) indicates a conflict between the tourism and ship recycling sectors. The researchers' BE netmap also shows four completely unconnected government actors.

3.3. Private sector and civil society's perceptions (Fig. 1c)

The participants in this netmapping group included BE entrepreneurs and environmental and social activists. Their view of the BE governance network of Bangladesh is characterized by a few distinct polycentric networks with specific link types controlled by critical brokers. They perceived a decentralized flow of information and support between actors with Blue Economy Cell (BEC) and Bangabandhu Sheikh Mujibur Rahman Maritime University (BSMRMU) portrayed as important brokers for knowledge exchange. A dense funding network between international donors and the government is perceived. This international funding is seen to support research, environmental activism, and tourism in the BE in Bangladesh. The Ministry of Power, Energy, and Mineral Resources (MPEMR), Ministry of Fisheries and Livestock (MoFL), and Ministry of Foreign Affairs (MoFA) are considered the most influential BE stakeholders. This netmapping group saw themselves as isolated or/and marginalized from the core BE governance network and less influential than government stakeholders. The private sector netmapping group identified a role for community-level actors (e.g. fishermen) in knowledge exchange but considered them least influential in governance and decision-making. This group also saw several conflicts and obstructive relationships between environmental activists on one side and the ministry responsible for power and energy management in Bangladesh, ship-breaking industries (SBI) and the tourism sector (TS), on the other side.

3.4. Non-government organizations' perceptions (Fig. 1d)

This netmapping table had participants representing national and international NGOs. They saw a bifurcated, but centralized network with a high number of actors without links to the well-connected main network. They self-reported non-government organizations to be the dominant actors followed by government actors and they considered the World Bank as the most influential actor in the BE of Bangladesh. Research actors are considered influential despite being isolated from the main network. NGO netmappers saw the very clear gap between government agencies and non-government organizations highlighted by the absence of support and knowledge exchange links between them. However, they consider the Ministry of Environment, Forest, and Climate Change (MEFCC) to be a very important gatekeeper between government and non-government actor communities. They also perceived NGO actors, such as the Centre for Policy Dialogue (CPD), private sector and civil society actors, such as the International Centre for Climate Change and Development (ICCCAD), and Bangladesh Environmental Lawyers Association (BELA) as the major sources of knowledge generation for the BE in Bangladesh. This netmap contains a high number of perceived obstructive or competitive links between international actors, NGOs, and private sector actors, and no supportive links between the national government and national NGOs were pointed out. Private companies related to tourism, banking, fisheries, and shipping were seen to be isolated and least influential.

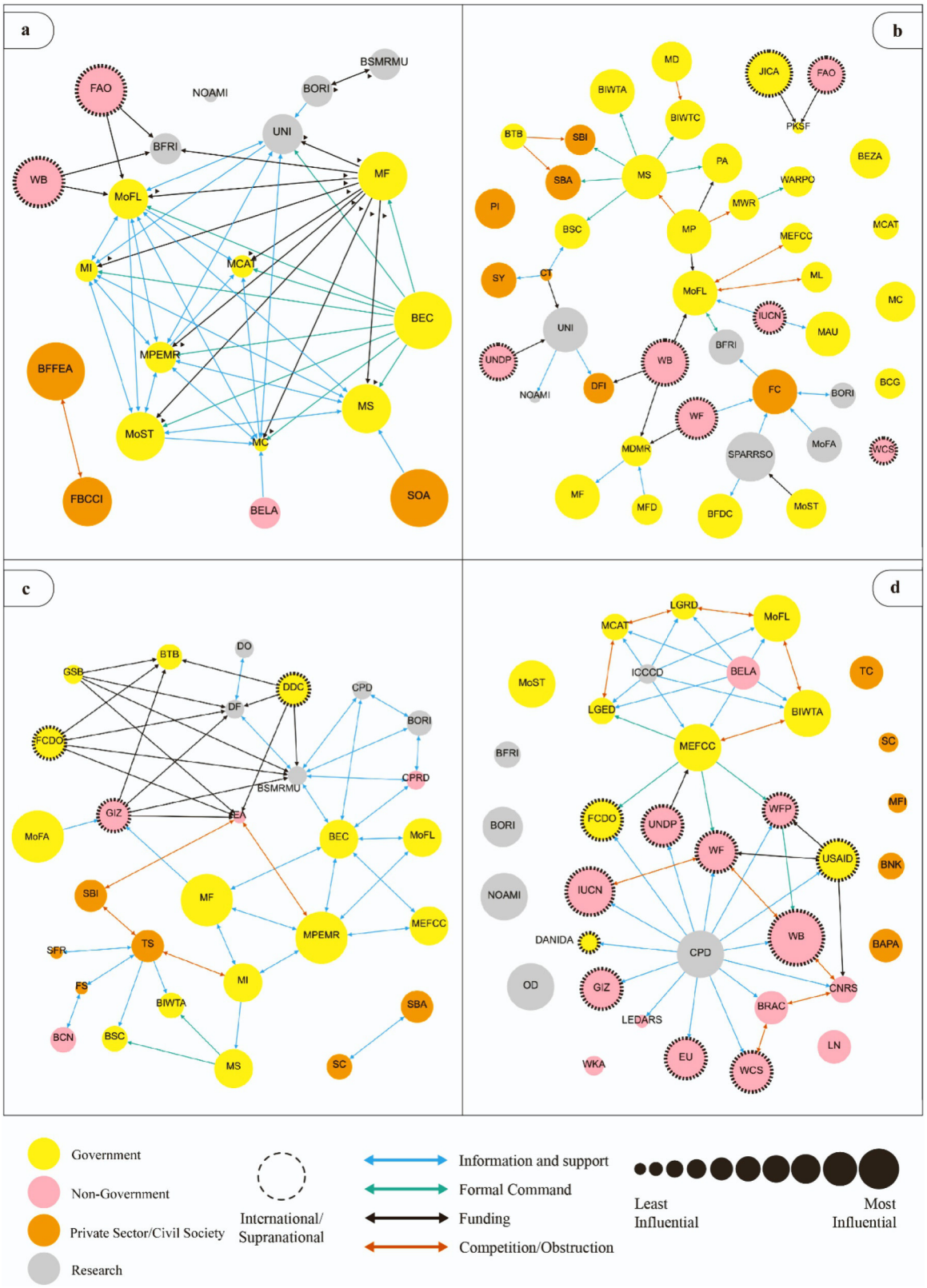

Fig. 1. Blue economy governance networks in Bangladesh as perceived by different stakeholder groups. (a) Government representatives' perception, (b) Researchers' perception, (c) Private sector and civil society's perceptions, and (d) Non-government organizations' perception. An acronym explanation is provided in Supplementary Information.

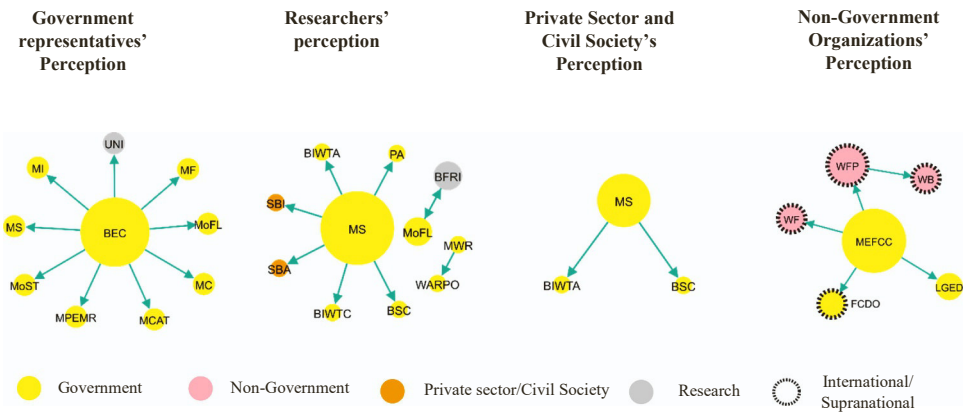

Fig. 2. Formal command relationship perceived by the different stakeholder groups.

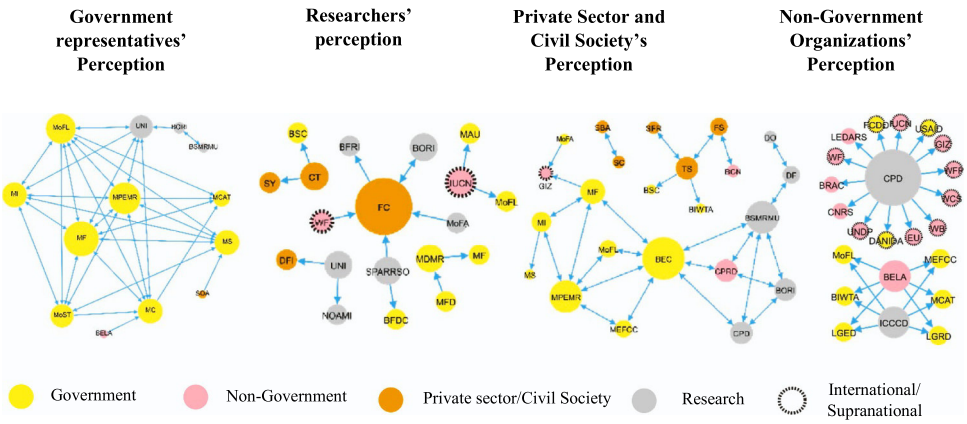

Fig. 3. Information and support relationships perceived by the different stakeholder groups.

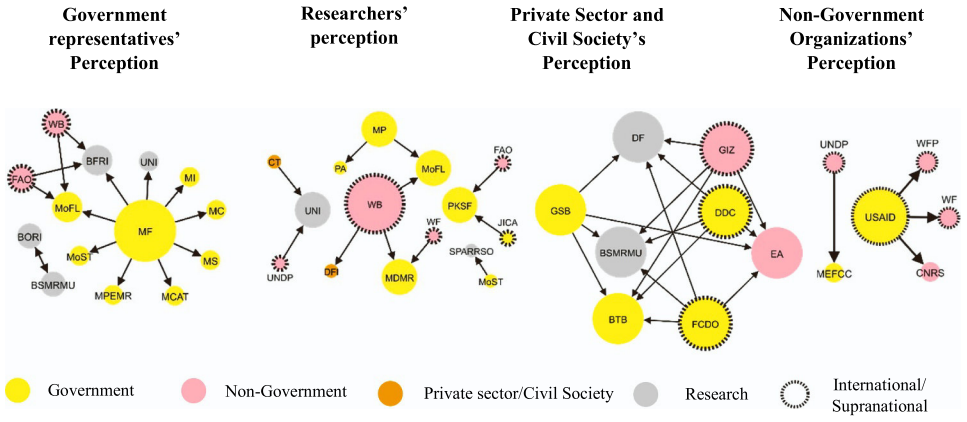

Fig. 4. Funding relationships perceived by the different stakeholder groups.

3.5. *Link-specific network perceptions*

Here we present the stakeholder-specific views of different link types in Bangladesh's BE governance.

3.5.1. *Formal command*

The formal command link (Fig. 2) represents the authoritative or administrative power of an actor over another in BE-related governance and development. Government actors from the national level were seen to be the major commanding authorities of the BE of Bangladesh by all netmapping groups. But strikingly, the national government is both the major source and recipient of formal command links, while national NGOs were not portrayed as subject to any formal command link by any of the netmapping groups. Government stakeholders perceived BEC as the main source of formal command over both ministries and universities. Researchers and private/civil society stakeholders highlighted the importance of the MS authority over public and private actors in maritime sectors, such as ship manufacturing/recycling, shipping, and transportation. NGO netmappers perceived the MEFCC to be guiding international donors and Local Government and Rural Development (LGRD) through formal command.

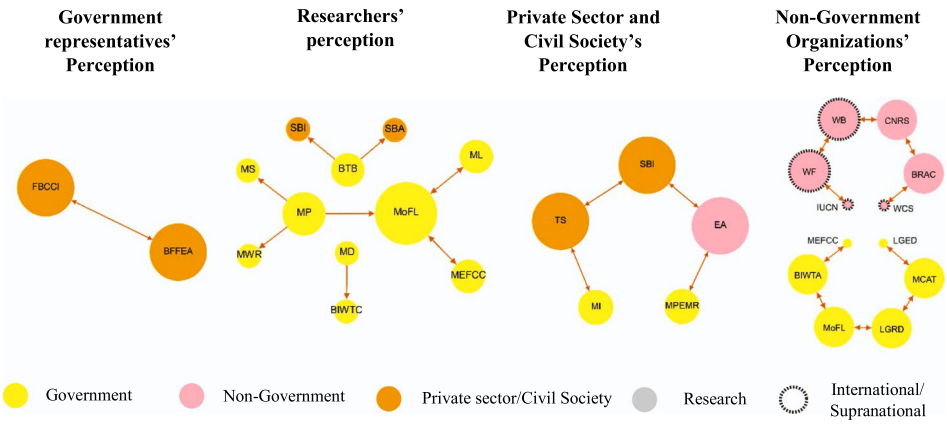

Fig. 5. Competition and obstruction relationships perceived by the different stakeholder groups.

3.5.2. *Information and support*

The information and support link (Fig. 3) expresses the knowledge sharing and service provision concerning BE-related endeavors. The members of the government netmapping table perceived a fairly dense network of knowledge and service exchange between government bodies but minimally extending to and from researchers, private sector and civil society, and NGOs. Although all reported information and support relations between government agencies, the remaining three stakeholder groups do not share the government group's perception of a strong information and support link network between government actors. Researchers, the private sector and civil society, and NGOs perceive information and support networks as fragmented into smaller isolated parts with a few actors each. Moreover, the four netmaps of support and information links highlight multiple different actors as critical information providers and mediators. The government stakeholders reported that energy and fisheries-related ministries are critical actors for knowledge and service exchange within the Government realm. The researchers felt that the local fishing communities play a central role in receiving and exchanging knowledge. Private sector stakeholders saw BEC as holding a very important bridging position between government and researchers. The non-government netmapping group saw CPD, BELA, and ICCCAD as the only providers of information and support for multiple government and non-government actors.

3.5.3. *Funding*

The funding link (Fig. 4) represents the financial support between actors for BE-related purposes. All four netmaps of funding links highlighted a key role of international/supranational actors in funding the BE actors of Bangladesh. In the government netmap, the Ministry of Finance is a critical distributor of public money to various ministries for BE development in diverse sectors. The researchers considered the World Bank as a central donor along with a few other slightly less central international funders and investors, such as JICA, UNDP, and FAO. Funding is seen to be mostly directed toward fisheries-related actors, universities, port authorities, and rural-based developmental programs/entities (e.g., PKSF). The private sector and civil society stakeholders saw a well-connected funding network formed by a few international donors supporting research institutes, tourism board, and environmental activists, but did not mention any funding sources for their stakeholder group. USAID and UNDP are considered important funders by non-government groups of netmappers. Overall, the different perceptions on funding suggest that most financial support is focused on diverse actors of the fisheries sector followed by the funding directed towards research institutes for BE development. Funding of private sector BE ventures did not appear in the netmaps.

3.5.4. *Obstruction/Competition*

Perceptions of competition and conflict (Fig. 5) varied greatly between netmapping groups. Government netmappers reported a negative relationship between two trade and business-related private associations. The other three netmaps highlighted numerous conflictive links between diverse BE governance actors. The perceptions of research and non-government stakeholders challenge the government's viewpoint by highlighting multiple competition and obstructive links between government actors. The presence of competition and obstruction between the tourism and shipping sectors is indicated in the researchers' and private sector/civil society points of view. The latter also mapped competing interests between environmental activists and government actors related to power/energy and private ship recycling industries. Finally, the NGO netmappers perceived conflicting and competitive relationships within separate government and non-government actor communities.

3.6. *Shared perceptions*

The perceptions of the BE network of Bangladesh by different stakeholder groups exhibit similarities and differences in terms of composition (actors and links), structure, and dynamics (Fig. 1). The total number of actors identified in each perceived network ranges between 20 and 44 (Fig. 6). Although government actors are highly represented in all netmaps, government is seen to act at different governance system levels. In the government representatives' netmap, government actors are identified only at the national level while other three netmapping groups see government actors at regional, national, and international levels. Their shared opinion was that government and international actors have more influence in BE governance and decision-making in Bangladesh than actors from non-government, civil society, private sector, and research. International NGOs were seen as critical donors by all netmapping groups while private sector/civil society actors related to tourism, shipping, and fish trade industries were seen as marginal and not well integrated in all four netmaps. Local communities and resource users are least represented or absent in all mapped networks. Two collective actors, the fishing communities (FC) and fishermen (FS), both representing small-scale and industrial fishers and the associated communities, are part of researchers' and private sectors' and civil society's perceived BE governance realms. Government and non-government netmaps, however, did not include any community actors in their perceptions of BE governance networks. Competing interests and conflicting opinions were identified by all participants within the government realms, with the exception of the government netmappers themselves. Furthermore, similar links were also observed between actors in the tourism and shipping sectors by the private sector and civil society netmappers. The participant groups perceived 'information and support' as the most frequent link (Fig. 7) among BE governance stakeholders in Bangladesh. The funding link is considered to be the second most frequent link by all netmapping groups except the non-government netmappers.

Table 1
Blue Economy governance actors in Bangladesh identified by four specific stakeholder groups.

Criteria	Government representatives' perception	Researchers' perception	Private sector and civil society's perception	Non-government organizations' perception
Total	**20**	**44**	**29**	**35**
Government actors	9	26	14	10
Researcher actors	5	5	5	6
Private sector and civil society actors	3	7	6	4
NGO actors	3	6	4	15
Frequently mentioned actors	Ministry of Fisheries and Livestock (MoFL, 4), World Bank (WB, 3)			
High influence actors	Blue Economy Cell (BEC, 10), Bangladesh Frozen Foods Exporters Association (BFFEA, 10), Ship Owners Association (SOA, 10)	Bangladesh Space Research and Remote Sensing Organization (SPARRSO, 10)	Ministry of Power, Energy, and Mineral Resources (MPEMR, 9), Ministry of Foreign Affairs (MoFA, 9), Ministry of Finance (MF, 9)	World Bank (WB, 9)
Low influence actors	National Oceanographic and Maritime Institute (NOAMI, 5), Ministry of Commerce (MC, 5)	Celestial Technology Ltd. (CT, 2), National Oceanographic and Maritime Institute (NOAMI, 2), Palli Karma Sahayak Foundation (PKSF, 2)	Environmental Activists (EA, 3), Sea Food Restaurants (SFR, 3), Fishermen (FS, 3)	Local Environment Development and Agricultural Research Society (LEDARS, 3)
Bridging actors	Ministry of Fisheries and Livestock (MoFL), Universities (Uni)	Ministry of Fisheries and Livestock (MoFL), Fishing Communities (FC), Bangladesh Fisheries Research Institute (BFRI)	Blue Economy Cell (BEC), Tourism Sector (TS), Ministry of Industries (MI), Ministry of Power, Energy, and Mineral Resources (MPEMR)	Ministry of Environment, Forest, and Climate Change (MEFCC)
Information and support hub	Blue Economy Cell (BEC), Ministry of Power, Energy, and Mineral Resources (MPEMR), Ministry of Fisheries and Livestock (MoFL)	Ministry of Shipping (MS), Fishing Communities (FC)	Blue Economy Cell (BEC), Bangabandhu Sheikh Mujibur Rahman Maritime University (BSMRMU)	Centre for Policy Dialogue (CPD), International Centre for Climate Change and Development (ICCCAD)
Isolated actors	National Oceanographic and Maritime Institute (NOAMI)	Wildlife Conservation Society (WCS), Bangladesh Coast Guard (BCG), Ministry of Commerce (MC), Ministry of Civil Aviation and Tourism (MCAT), Bangladesh Economic Zones Authority (BEZA)		Tourism Company (TC), Shipping Company (SC), Microfinance Institutes (MFI), Bank (BNK), Bangladesh Poribesh Andolon (BAPA), Local NGOs (LN), WaterKeeper Alliance (WKA), Oceanographic Departments (OD), National Oceanographic and Maritime Institute (NOAMI), Bangladesh Oceanographic Research Institute (BORI), Bangladesh Fisheries Research Institute (BFRI), Ministry of Science and Technology (MoST)

Note: Influence was assigned on a scale of 0–10 (low to high)

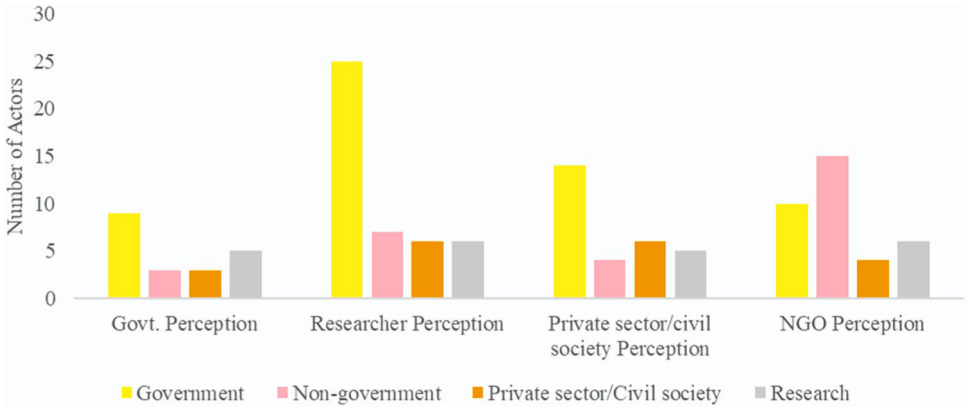

Fig. 6. Number of blue economy actors perceived by different stakeholder groups.

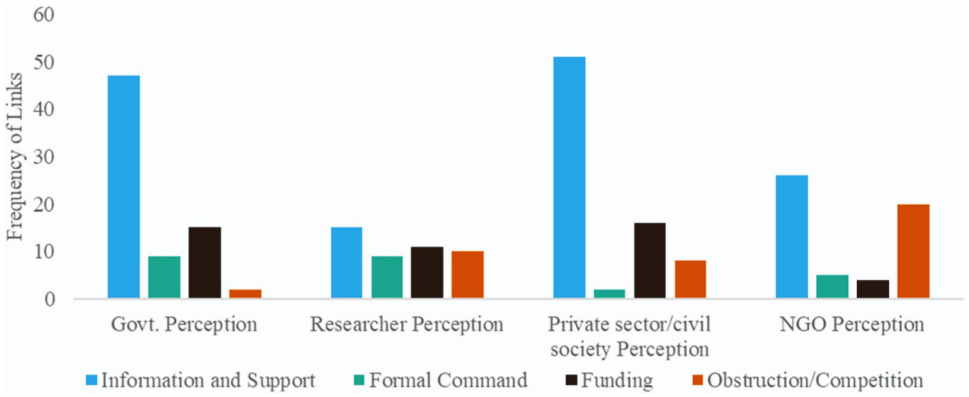

Fig. 7. Frequency of link types perceived by different stakeholder groups.

4. Discussion

4.1. Narrow and dysfunctional view of Blue Economy in Bangladesh

In Bangladesh, major BE actors conceptualize oceans and seas as 'Development Spaces' where spatial planning integrates conservation, sustainable use of living resources, oil and mineral wealth extraction, bio-prospecting, sustainable energy production, and marine transport [94]. This BE approach is founded upon the assessment and incorporation of an unweighted monetary value of the natural (blue) capital related to all economic activity. The BE requires a balanced approach between conservation, development, and utilization of marine and coastal ecosystems, all ocean resources and services to generate employment, secure a productive marine economy, and healthy marine ecosystems [50,51,94]. The recent Blue Economy Development Work Plan by the Ministry of Foreign Affairs in Bangladesh (*Sunil Orthoniti Unnayan Porikolpona* in Bengali) focuses on nine sectors (marine fisheries, mariculture, commercial shipping, marine tourism, offshore energy, renewable energy, blue biotechnologies, ecosystem services of mangroves, ship-building, and recycling industries, marine pollution and marine spatial planning) [86]. In contrast, based on the frequency of actor profiles associated with different sectors in our netmaps, this research finds that major BE stakeholders see fisheries, tourism, and shipping as the most important sectors in Bangladesh's BE (see Table 1 above). This could be because coastal tourism and recreation, marine fisheries and aquaculture, and maritime transport are well established and contribute to the national economy of Bangladesh and are reflected in the Bangladesh government's recent focus on investing in coastal industries [94]. For instance, in southeastern Bangladesh, the government along with international and national alliances is investing in megaprojects like coal-based energy production and deep-sea port terminals in Maheshkhali Island. To ensure the triple bottom-line objectives of the BE, which include economic development, social equity, and environmental conservation [24,113,119], reconsideration of such investments in view of other critical sectors is crucial for sustainable development. For instance, food security is often overlooked or inadequately considered in BE discourses [46]. The BE network perceived by our researcher netmapping group included the Ministry of Food as well as a few national and international NGOs working on food security. This acknowledgment of governmental and non-governmental actors related to food systems is a gateway for transformative change toward attaining food security as a key part of economic development in Bangladesh. The identified actors could play a significant role in stakeholder consultation to assess the links and possible trade-offs between food security and different forms of economic growth. In addition to food production, another critical sector to promote an equitable and sustainable BE is the renewable energy sector [81]. Actors of the renewable energy sector were completely absent in our netmappers' perceptions. This might have been partly caused by the eventual composition of the netmapping groups (which, despite our invitations, did not contain representation of the energy sector) but it also clearly indicates a narrow vision of the BE. This could undermine needed future shifts from conventional energy to renewable energy in the BE in Bangladesh.

Transboundary stakeholders play a crucial role in comprehensive management for an integrated cross-sectoral approach to the BE [47]. Notably, the participants of the netmapping exercise in this research did not perceive any BE stakeholders beyond national boundaries. Possible candidates would have been, for example, the South Asian Association for Regional Cooperation (SAARC) and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) and

their links. Spanning multiple national jurisdictions and the establishment of appropriate legal frameworks is vital to agree on and enforce decisions and standards [102]. For instance, to manage the Hilsa shad (*Tenualosa ilisha*) fishery in Bangladesh, collaborative efforts between neighboring countries have been recommended [88]. BE management needs to promote cross-boundary collaboration, as maritime spatial management often has implications for multiple countries [43,109,121]. Moreover, transboundary partnerships facilitate data sharing and alignment that could generate a collaborative response to the regional challenges in marine area management [120]. With a broader sectoral and explicitly transboundary perception of the BE that is shared both nationally and internationally, social equity, and coastal and marine conservation could be more effectively pursued as part of an inclusive BE development approach.

4.2. Towards inclusive, collaborative, and decentralized Blue Economy governance

Effective collaboration and harmonization between states and other stakeholders within marine regions is needed for these entities to effectively shape and implement ocean policies and governance [115]. Government actors were seen as central in the BE of Bangladesh by all four stakeholder-specific netmap groups. Moreover, there is a broad consensus that national-level governmental actors are the key governing entities with high formal command over other actors. Researchers, NGOs as well as actors from civil society and the private sector perceived themselves as part of BE governance, but only in knowledge sharing and funding capacities. BE governance must consider inclusivity, capacity, and roles of diverse stakeholders through a governance structure that is legitimate, connected, nested, and polycentric [16]. To bridge the gap between worldwide expectations and local needs, a decentralized governance structure that acknowledges culture, scale, and, capacity is crucial [17]. Research, private sector, civil society, and NGO stakeholder representatives perceived Bangladesh's BE governance networks as polycentric (Fig. 1b, c, and d) and also well-connected to key governmental actors. Unlike the centralization perceived by the government netmappers, the polycentricity highlighted by the other three netmapping groups may prevent institutional collapse under adverse conditions [87]. This perceived polycentricity should be recognized by government and decision-makers to promote institutional diversity that could contribute to a larger social resilience.

Intersectoral conflict, a key obstacle to sustainable coastal economic development, was identified by a few BE actors representing diverse sectors in the perceived netmaps. Links of competition and obstruction were highlighted between the tourism and shipbreaking sectors, within a few entities of the fisheries sector, and between some international NGOs. Although such perceived conflicts among stakeholders could be seen as a challenge for BE development, such constructive tensions could be used as a gateway to drive collective dialogue, strategy building, and the development of favorable governance structures [76]. In the context of Bangladesh BE, strategically addressing these intersectoral conflicts could be a crucial step towards building the synergies required for collective action. Our findings indicate that 'information and support' was the link most frequently perceived by our BE netmappers. We suggest that the identified information and support networks could be the 'point of departure' for facilitating conflict resolution processes and synergy development among the BE actors in Bangladesh. By further enhancing these knowledge-sharing and collaboration linkages, governance actors may able to identify shared interests and opportunities that could drive sustainable outcomes [9]. Conflicts between and within different actor groups are already affecting resource management in the fisheries [103] and aquaculture [56] sectors of Bangladesh. Resolving such actor-actor conflicts is important for Bangladesh's BE to collectively tackle bigger challenges and growing threats such as rising sea levels, coastal erosion, and pollution from land-based sources [97]. Building synergies among stakeholders by enhancing the knowledge and support network identified in our study can promote inclusive BE development and governance that could set the scene for compatibility, opportunities, and sustainability [105]. Such strategic conflict resolution within a polycentric governance system could reduce risks, such as displacement, dispossession, grabbing, environmental degradation, and loss of resource access rights associated with BE implementation [14,114].

4.3. Navigating international actors and their influence on the Blue Economy

In the quest for economic development to provide a better standard of living to their citizens, the underdeveloped nations of the Global South strongly rely on international aid and investments. While still burdened by extreme poverty, Bangladesh has the ambitious target to reach the developed nation status (according to IBRD[3] definition) by 2041. Over the last decade, international investors have been welcomed for rapid economic development through the diversification of industries in specific economic zones [6]. Our findings suggest that despite the failure of the main BE stakeholders to develop a transboundary vision, the BE of Bangladesh is perceived to include many international actors. These include international NGOs, banks, foreign government agencies, inter-governmental organizations, and international organizations that have been predominantly net-mapped as critical funders. Considering that BE initiatives in Bangladesh are still at an early stage, the well-established position of international actors in the BE governance space is an important observation. On the background of extensive international engagement and a record of influential "donor consortia" in the now 50-year-old state of Bangladesh that started in a difficult context of poverty, this raises questions about the objectives, interests, and agendas of such investors. For instance, it is argued that international entities are interested in investment in Bangladesh because of the untapped natural gas sources in the country's coastal regions [101]. Our netmapping groups saw most of the funding from international actors as directed towards two main entity types, the Ministry of Fisheries and Livestock and some scientific institutions. Hence, funding for the BE in Bangladesh is seen to be focused on the fisheries sector and marine and ocean-related research and education. These international actors have a potential role in restoring and enhancing ocean health through their funding capacities [108]. This is likely to allow them to gain major influence on ocean health and transformation processes.

As one of the top climate-vulnerable countries, Bangladesh needs to invest in climate adaptation strategies and technologies [29]. International banks play an important role in supporting Bangladesh in these realms but their financial support often comes with vested interests. Foreign agencies, such as the Japan International Cooperation Agency (JICA) and the National Thermal Power Sector (India), from more powerful countries, are investing in coastal mega projects, such as thermal power plants in Bangladesh. Notably, the same countries that are investing in such fossil fuel projects in Bangladesh have put a stop to the establishment of similar destructive developments in their territories in order to progress towards environmental and human health and climate safety [84]. This highlights the environmental and climate injustice faced by Bangladesh in the face of economic growth supported by powerful international and mainly private sector actors [106]. Such complex and large-scale projects executed through collaborations between national and international entities, frequently overshoot projected costs, fail to adhere to timelines, and rarely achieve desired results or public acceptance [111]. This reinforces the economic disadvantage for the poorer nations as increasing interests and service payments push them into a vicious circle of debt trap [67]. The international actors identified in our BE netmaps are seen to be more central in the funding network than the information and support network. This suggests that

[3] International Bank for Reconstruction and Development (IBRD) is a development cooperative, globally, owned by 189 member countries.

foreign investments in the BE of Bangladesh are focused more on financial and infrastructural-based rather than knowledge-based investments. This could lead to a neglect of local capacity building, prolonging the host country's dependence on external expertise and technologies, often enforced through disadvantageous contracts between the host country and investors. Such contracts have been found to sideline local knowledge and initiatives and constrain opportunities for local entrepreneurship [82]. To address these issues, BE policies in Bangladesh should create regulatory frameworks [33] to establish and support the role of international actors in transferring knowledge, enhancing skills, and building capacity. A balanced approach that includes financial, technological, and knowledge-based investment is crucial for the sustainable and inclusive development of the BE in countries of the Global South. International investors, acting as 'development partners' should take the responsibility of enabling an appropriate space for inclusive BE, while their appropriation of local spaces should be monitored.

4.4. Unveiling marginalization and exclusion among Blue Economy actors

Coastal and ocean economies build upon established businesses and industrial sectors, novel technologies, and new sectors with diverse emerging actors. In such rapidly changing political economies, power comes to be more unequally distributed over time, and this influences development and transformation paths [20]. Action groups, at local and higher system levels, could act as a driver of change [77], but skewed power dynamics are strong in the Global South as gender, caste, class, and religion segregate people already. The netmaps produced during our research show how important sections of public and private institutional actors view diverse actors' positions, influence, and power dynamics in Bangladesh's BE governance. We have found that powerful actors are almost entirely overlooking the role and influence of coastal communities and resource users in the BE of Bangladesh. In addition to excluding local resource users, most perceptions of BE governance also see no government actors below the national level as part of BE governance. The influence-based actor network as perceived by our national government netmappers only includes national-level stakeholders. This raises the question of where exactly any of the local stakeholders are placed in BE development-related decision-making, planning, and implementation in Bangladesh and the associated equity implications [35]. From the perspective of procedural equity, this perceived and most likely actual lack of representation of local actors perpetuates power imbalances and limits the local voices in influencing policies and practices that might impact their lives and livelihoods. It also raises concerns about distributional equity of the cost and benefits of BE development in which communities are often bearing the environmental and social burdens without a share in the economic gains.

Sustainability along with equity in a BE context requires a collaborative approach involving resource users, local communities, and Indigenous populations [44,80], and including the often-marginalized female members of these and other groups [22]. To safeguard natural assets and foster sustainable development, local communities need to be enabled to embrace ocean-related endeavors through inclusive planning and implementation, ensuring equal consideration for their priorities and knowledge [12]. Those responsible for ocean governance have a significant influence in transitioning towards a more inclusive economic paradigm, potentially fueling substantial, and more fairly distributed economic development [8]. Keeping local communities in the center of the BE, while co-creating an easily understood language for them, as well as for collaborators, practitioners, and policymakers, is widely recognized as an essential step toward a sustainable BE [44,74].

Another group of marginalized actors, while not explicitly excluded, remain concealed within a few 'umbrella nodes' of the netmaps produced during this research. These umbrella nodes generically represent stakeholders involved in specific BE sectors or industries. For instance, actors like 'shipbreaking industries', 'shipyards', and 'shipping companies' encompass a range of actors involved within each of the respective industries. It is important to note that the powerful actors within these domains, such as 'ship owners associations' and 'shipbuilders associations' were identified and mapped. In contrast to this, no nodes appear that highlight the role and influence of the labor force that is the backbone of, for instance, the shipping industries in Bangladesh. Such lack of information on the position, role, and power of the workforce indicates that BE development may pay limited attention and priority to the wellbeing of these marginalized actors. Considering the existing infringements of human rights in BE sectors, such as shipbreaking [5], aquaculture [40], and fisheries [11], this is an important point to note. This perception gap identified in our netmaps is especially pronounced in government and NGO representatives' viewpoints, although their roles include the promotion of social well-being and equitable development. This indicates that BE in Bangladesh might be malfunctioning in terms of integrating community-level values, needs, and opinions into the processes of development, rulemaking, and governance. This reinforces the finding that equity is missing from national-level BE goals [37]. In sum, our findings and supporting literature indicate that strategies for more inclusive and equity-oriented BE planning and implementation are needed.

4.5. Outlook: Blue Equity and the way forward

The initial BE concept accentuated human well-being, fairness, and justice, but business strategies that concentrate solely on ocean-related economic expansion have come to prevail [14,15,72]. The work presented here suggests that considering equity (or 'blue equity') as central to Bangladesh's BE governance is now needed. Blue equity, we assert, is the equitable BE that ensures social justice through representation, recognition, and distribution of access and benefits, in a context of clear and realizable legal rights. It involves a holistic approach ensuring that all segments of society, particularly local communities, and vulnerable populations, can access, participate in, and benefit from BE activities. We suggest that to enhance the consideration of blue equity, national-level BE policies and governance should focus on three specific realms: knowledge, policy, and action.

4.5.1. Knowledge

To tackle the identified exclusion of labor and small-scale producers and to ensure that the views and voices of all stakeholders are documented and shared, a 'Community of Practice on Blue Economy Governance' (CoP-BG) could be established. For instance, the project "Emerging Ecosystem-based Maritime Spatial Planning Topics in the North and Baltic Sea Regions" (eMSP NSBR[4]) explicitly works on developing a strong community around BE development. The CoP-BG we are suggesting here would create a space for all BE stakeholders to share successes and failures, and track progress in different BE sectors, guided by an agreed code of conduct. This would increase transparency, allow harmonization among stakeholders, and reduce inter-agency or intersectoral conflict. The CoP-BG could act as the regional bridge to disseminate international and national knowledge to facilitate capacity building among local stakeholders. This would allow CoP-BG to take evidence, and recommendations from dialogues to decision-makers, such as Bangladesh's Blue Economy Cell (BEC). Such a platform would enable a transformation towards recognizing the interests, needs and challenges of transnational, regional, and local BE stakeholders and thus likely fill the identified knowledge gaps in the BE network and overall BE governance. By creating enabling conditions for co-creation of, access to, and exchange of knowledge, the CoP-BG could actively support the just and informed representation of stakeholders. This in turn would enable all stakeholders including those that are currently excluded and

[4] https://www.emspproject.eu/project-activities/

marginalized to actively participate in and influence BE decision-making.

4.5.2. Policy

A comprehensive, and knowledge-driven strategy for governing the oceans that is shared by BE stakeholders is needed [118]. For this, influential BE decision-makers need to better understand requirements in diverse sectors. In Bangladesh, the leadership of the BE is seen to lie with the national government, as highlighted by all stakeholder groups in this study. There is an urgent need for coordinated and collaborative efforts in the BE to translate policies into action-based plans. As was the Access to Information (a2i) program in the context of Digital Bangladesh [107], the BEC and its initiatives could be relocated to the Prime Minister's Office for an effective coordinating role. Key aspects of policy development and appraisal include decentralizing BE governance, including coastal communities as BE actors, enhancement of knowledge systems and knowledge-based investments, developing food security through BE, and enhancing ocean and coastal-based renewable energy sectors. Our netmap findings can act as a baseline to understand the existing BE network in Bangladesh and support better planning of BE policies and governance. While effective overall coordination of the BE requires the BEC to be positioned centrally, the sectoral strategies and action plans (CoP-BG) need the active involvement of diverse stakeholders. Bangladesh has set a positive example of inclusive participation by engaging around 5000 people in consultations at different levels while formulating its National Adaptation Plan (2023–2050) [59]. Such inclusive participatory practices should continue beyond policy planning and extend to the tracking of implementation progress. BE stakeholders including the marginalized groups must be enabled to monitor policy execution and provide feedback. This will ensure transparency, accountability, and more equitable outcomes in BE governance.

4.5.3. Action

In light of BE opportunities and risks for the resource users [14], the idea of "Real World labs" or Living Labs [49] holds the potential for a reality check on what is achievable through evidence-based actions for a transformative change supported by knowledge and policy enhancement. In Bangladesh, BEC and CoP-BG can collaborate to initiate a "Real World Lab" program. This could enable the government and non-government actors to work together to expedite a crucial and complex economic system, like the BE, which is currently lagging due to multiple challenges. As the key element of the Community of Practice outlined above, this entity could be guided by three major paradigm-shifting pathways: i) ***Transforming stakeholders' mindsets:*** Shifting concerned stakeholders' conventional solely growth centered image of BE to a wider, diversified, and inclusive vision that considers BE as integral part of a larger social-ecological system. This could be pursued through formal education, training sessions, and awareness campaigns, as well as in mentorship programs for government officials and other stakeholders. ii) ***Resourcing enabling environment:*** Government and international development partners need to finance the CoP-BG activities through multifaceted funding and investments. Additionally, the Government should also allocate sufficient resources to run the BEC (for instance, the climate-relevant budget, see [68]). iii) ***Facilitating evidence-informed policy and practice change:*** As noted above, the evidence gathered by the CoP-BG should help the BEC to coordinate BE-related policy and practice change. Drawing insights from programs, such as climate action [2] and the SDGs [104], a small grants program could be launched to showcase research-to-policy actions in the BE governance space of Bangladesh. It needs to be noted that co-managed governance approach in itself does not automatically address preexisting asymmetries in power and thus runs the risk of perpetuating them [34]. Therefore, CoP-BG must be carefully designed and implemented by positioning equity as a core principle to ensure the creation of a transformative space for inclusive BE governance.

5. Conclusion

This research outlines how perception-based network analysis that features diverse actor groups' viewpoints can help to understand complex systems of social-ecological change. Our analysis of BE stakeholders' perceptions in Bangladesh has highlighted important gaps, challenges, and some strengths in BE governance. The gaps we identify in existing governance and knowledge systems, in the distribution of power and influence, and in the context of marginalization and exclusion showcase a very narrow, growth-centered lens of the BE and associated stakeholders. This sets the scene for future strategies and interventions, with a focus on BE stakeholders. Further studies would need to investigate the views and knowledge, as well as the network perceptions of those hitherto excluded, and review BE policies and legislative complexities in this light. We recommend this multi-stakeholder perception-based approach to identify, map, and understand the nuances and complexities of larger social, economic, technological, and political systems. Considering some of the outlined limitations in our approach (Section 2.9), we recommend an in-depth analysis of BE governance strategies at different governance levels for an enhanced understanding of such systems. In the context of Bangladesh's BE governance, we see the need for a more active Blue Economy Cell (BEC), which strengthens BE governance networks, allows for decentralized authority, and for more responsible investment by foreign entities, and just consideration of local resource-users. Initiatives such as the CoP-BG that we propose could provide evidence for transformative policies. A functional BE governance network in Bangladesh that goes beyond the current tendencies toward indiscriminate growth orientation could enhance a credible and legitimate BE in Bangladesh that mobilizes sustainable development.

CRediT authorship contribution statement

Jewel Das: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Validation, Writing – original draft, Writing – review & editing. **Maheshwaran Govender:** Methodology, Data curation, Formal analysis, Visualization, Writing – original draft, Writing – review & editing. **Haseeb Md. Irfanullah:** Project administration, Investigation, Validation, Writing – review & editing. **Samiya Ahmed Selim:** Supervision, Project administration, Investigation, Writing – review & editing. **Marion Glaser:** Conceptualization, Funding acquisition, Supervision, Methodology, Validation, Writing – review & editing.

Data availability

Data will be made available on request.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.marpol.2024.106359.

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Article 4

Navigating development dilemma: An empirical case study of a coastal megaproject through the lens of political ecology

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Navigating development dilemma: An empirical case study of a coastal megaproject through the lens of political ecology

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Abstract

The strategic location of Maheshkhali Island in southeastern Bangladesh has attracted energy infrastructure projects, thereby establishing it as a focal point of national blue economy initiatives. These coastal industrialization processes raise tensions among stakeholders, with marginal coastal communities disproportionately bearing the social-ecological costs. This study explores the development discourse surrounding a coal-fired power plant in Maheshkhali Island through the lens of political ecology. The 4E framework (Economic Enclosure, Political Exclusion, Ecological Encroachment, and Social Entrenchment) serves as a conceptual tool to analyze the impacts of coastal megaprojects on local resource users. Using an empirical case study approach, this research investigates the intersections of social-ecological system change and large-scale development projects. Drawing on primary and secondary data, the findings reveal that megaproject development leads to injustices and inequities experienced by the local resource users. These findings underscore the need to critically rethink existing policies and governance. This research also contributes to the broader development debate by highlighting the necessity for understanding global investment strategies and local sustainability. This article suggests that equity and justice need to be the central focus of coastal industrialization.

Keywords: Megaproject; Coastal Island; Blue economy; Equity and justice; Conflicts

Article 5

Engaging stakeholder perspectives in blue growth: Revealing resource user discourses of coastal mega projects in Bangladesh

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Engaging stakeholder perspectives in blue growth: Revealing resource user discourses of coastal megaprojects in Bangladesh

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Abstract

Recent blue growth has included various megaprojects in the coastal regions of many countries. Amidst such rapid developments, insights into the values, perceptions, and objectives of coastal communities, particularly in the Global South, are often overlooked. Bangladesh has shown a growing interest in blue growth after the maritime dispute settlement with neighbouring countries in the last decade. Maheshkhali Island, situated on the eastern coast of Bangladesh is a key blue growth hub, hosting various coastal megaprojects related to energy, trade, and tourism. Our study aims to understand the subjective viewpoints of a frequently underrepresented stakeholder group in blue economy development; small-scale resource users on the mega-development on this small island. Using Q methodology, we delineate three distinct discourses among the resource users: *1. Injustice in growth: Discontent over the development that overlooks local concerns*, *2. Development within bounds: Need for development that safeguards local interests*, and *3. Just compensation and safety: Advocating for equity amidst change*. These discourses highlight risks including displacement, livelihood damage, human health, environmental degradation, and unjust compensation. We trace elements of concern about recognitional, procedural, and distributive justice within these perspectives, and offer insights for achieving blue justice in the context of coastal megaprojects. This study contributes to the broader understanding and development of equitable blue growth planning and implementation, particularly in the South Asian context. We emphasize the need for policymakers and practitioners to engage meaningfully with local discourses to ensure more just and sustainable blue growth outcomes in Bangladesh and similar coastal regions worldwide.

Keywords: Coastal Industrialisation; Blue Economy; Blue Justice; Maheshkhali Island; Q methodology

Article 6

Megaprojects on coastal small islands: How to shape just transformation across governance orders

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Megaprojects on small islands: How to shape just transformation across governance orders

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Abstract

The recent blue economy and blue growth initiatives have included the planning and implementation of a variety of coastal mega projects such as ports, power plants, and military bases. Many of these projects are located on strategically important small islands in the Global South. Small islands are complex systems of closely interlinked dynamics that are highly responsive and vulnerable to change. Externally induced interventions, such as coastal megaprojects can "overwhelm" island systems' key functions, and with this raise justice and equity concerns relating to local actors, particularly to small-scale fishers. Where influential external and national-level decision-makers can overlook or ignore local priorities, values, visions and modes of living, important sustainable development goals such as SDG 1 (no poverty), SDG 15 (life on land), and SDG 16 (peace, justice and institutions) are missed. This chapter explores how the theory of interactive governance (IG) with a focus on the interactions between the governing system and the system-to-be-governed, can support just transformation paths associated with coastal mega projects in small islands where people draw their livelihoods from small-scale fisheries. Drawing on a case study from the Southeast coast of Bangladesh, we examine how blue (in)justice expresses itself in three interactive governance orders, and how the principles of justice and equity can foster just transformation in the context of small-island industrialization. Improving governance in the context of small islands carries specific challenges such as limited institutional capacity, resource constraints, and deeply rooted power imbalances. We suggest that by embedding a commitment to justice and equity in the institutions and processes between the governing system and actors at multiple orders of governance, just transformation comes within reach. We demonstrate how the systematic implementation of three critical types of justice (recognitional, procedural and distributional) across orders of governance can support the development of resilient and sustainable development pathways on small islands. This approach will ensure that the norms, values, and interests of coastal communities and their environment are at the center of the blue economy-related governance and transformation processes.

Keywords: Small coastal island; Governance; Small-scale fisheries