Relevance of the High Seas Treaty towards Ocean Sustainability Targets in the Global South

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ABSTRACT

Oceans are endowed with myriad biotic and abiotic resources that sustain the global economy and livelihoods. Creating and operationalizing sustainable ocean governance pathways/frameworks has become more mundane today. Unfortunately, the current fragmented governance mechanisms and limted research ruin sustainable ocean management. Thus, ocean resources are under threat. This study presents a case of the High Seas Treaty (HST), as a possible conduit for repulsing unsustainable ocean indicators, thus ocean sustainability. The HST avails new bridges for breaking systemic ocean (un)sustainabiliity drivers. HST benefits could be extended to nearshore coastal zones. To operationalize the HST, a pathway that charts how sustainability pathways could be factored into global ocean co-governance has been developed. By streamlining the HST, and amalgamating it with transformative ocean governance frameworks, possibilities for identifying novel ocean sustainability pathways that promote sustainable and collaborative governance of ocean resources and equity are innumerable.

Key words : High Seas, High Seas Treaty, ocean sustainability and governance, sustainable ocean development pillars and targets, Global South.

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1. Introduction

Oceans are crucial nodal zones that have sustained livelihoods, ecosystem biodiversity, and global development, since time immemorial (IRP, 2021). The critical value of oceans is further floated by evidence that oceans cover about 71% of the earth's planetary surface; of which nearly two-thirds (64%) of the global ocean (almost half the planet's entire surface) is categorized as high seas (IUCN, 2023; WOA II, 2021). With such large swaths of planetary space, oceans have habituated several ecosystems that are key to social and economic livelihoods and also provide services that ameliorate and/or balance global environmental systems (IOC-UNESCO, 2022, 2020). In addition, as 152 counties globally are categorized as coastal states (including 39 Small Islands Developing States (SIDS) and 18 Associated Members of United Nations regional commissions), their historical interaction and reliance on oceans for sustainable development are key to the Ocean Decade and Agenda 2030 of the United Nations Sustainable Development Goals (SDGs) (IOC-UNESCO, 2020; Matovu and Raimy, 2022; World Bank, 2020). This perspective is corroborated in recent econometric studies which revealed that in 2020 alone, ocean goods and services were valued at 1.3 trillion USD. The value of ocean goods and services is further projected to scale up to over 3 trillion USD by 2030; a precursor to socioeconomic sustainability (Lubchenco and Haugan, 2023; UNCTAD, 2023).

And since the ocean is a globally shared resource, tapping such benefits and the innumerable natural capital could be a new frontier for holistic development (UNCTAD, 2022). This is especially factual, with the emergence of the Blue Economy (BE) and Ocean Sustainability (encompassing social, economic, institutional governance, and environmental sustainability) paradigm shifts at the global policy level and, for a good reason, especially among poor coastal states and in developing regions (Gerhardinger et al., 2023; Matovu et al., 2024b; Partelow et al., 2023; OECD, 2023). The urgent need for ocean sustainability has become more prominent and mundane today, especially in the Global South including Africa, Latin America, the Caribbean, and the Asia-Pacific (Patil et al., 2016; World Bank, 2020). This is partly because coastal states therein are not only endowed with a paucity of marine resources but also avail a paucity of ocean-based services and goods that sustain the global economy and livelihoods (Spalding et al., 2023; Swilling et al., 2020). For instance, marine fisheries avail over 70 percent of jobs to people in Asia alone (FAO, 2022). With an increasing focus on renewable energy, tropical seas are nodal zones for renewable energy production and research including bioprospecting. According to the 2022 European Investment Bank Group report, the economic potential of offshore wind especially in the Area and tropics is estimated at 3.5 billion Euros. Thus, tapping this economic potential could be key in scaling down the negative externalities of using non-renewable energy, including fossil fuels (UIE, 2022).

Unfortunately, since the 1990s, coastal and ocean environments have become more complex partly due to a typology of the archaic interaction between anthropogenic activities with (i) terrestrial, (ii) marine, and (iii) atmospheric processes, that are affecting the balancing of ocean system interactions to avail ocean goods and services (Adewumi et al., 2022; Bennett et al., 2021, 2022). For instance, there is increasing evidence of unregulated and exploitative practices in Exclusive Economic Zones (EEZs) of most coastal states and high seas (mainly in tropical regions). These unsustainable anthropogenic activities including seabed mining are ruining biodiversity and sustainable livelihoods, as reported in the Clarion Clipperton Zone (mainly dominated by the 100 leading corporations in the ocean economy) (Evans et al., 2023; Jones et al., 2021; Washburn et al., 2021). Furthermore, traditional livelihood sectors and biotic resources such as anadromous fish species have not been spared either as there is increasing evidence of either exploitative fishing or unsustainable exploitation (FAO, 2023). This concern is laid bare by recent reports that revealed that about 23 percent of assessed fish stocks indicate unsustainable and disenchanting biological statuses (OECD, 2023). Still, about 1,700 marine species are currently categorized as near threatened, vulnerable, endangered, or critically endangered based on the International Union for the Conservation of Nature (IUCN) Red List Database of Threatened Species (FAO, 2022, 2023; IUCN, 2023; OECD, 2023). Amidst this hullabaloo, worsening systemic gaps are still prevalent related to developing collaborative policy mechanisms to govern and manage ocean resources in the Area (IRP, 2021; World Bank, 2020). This is not meant to discredit the commendable mechanisms brought to the fore on marine governance of resources in the Area by the United Nations Convention of the Law of the Sea (UNCLOS), notably, provisions in Articles 61–73 focusing on living resources, including highly migratory species, marine mammals and sedentary species, (Articles 116–120) on living resources in the high seas (Keating-Bitonti, 2023). Other provisions include Articles 192–196 on the protection of the marine environment among others (Keating-Bitonti, 2023; Marciniak, 2017; Proelss and Houghton, 2015).

However, in most cases, several coastal powerful states have overly flouted most of these provisions, and in developing countries, bottlenecks such as in financing marine research, monitoring and reporting destructive marine activities including by Distant Water Fishing Vessels have proved futile (Harrison, 2019). This has created a mosaic of management threats in the already fragile and weak ocean governance ecosystem (Allison, 2001; Harrison, 2019; Usmawadi, 2020). The domination of powerful actors/stakeholders/companies has also led to the signing of exploitative partnership agreements (mainly led by powerful states) or perpetuation of marine space/resource user contestations that ruin sustainability and yet, holistic options to scale through these complexities have been limited (Chan, 2024; Jouffray et al., 2023; Matovu et al., 2024b; Ocean Panel, 2020). Amidst the cobweb of intricate mal-governance and ocean policy implementation gaps that have ballooned over time (Jouffray et al., 2020; Matovu et al., 2024c),

one may wonder what could be done to amalgamate different actors or users to bring to the fore a new aura of ocean governance; especially in the high seas.

Cognizant of these intricacies in ocean governance, this study presents a case for advancing the HST as a possible conduit for promoting the ocean sustainability future we want. I argue that if we delve deeper into the understanding of the historical complexities of the marine governance regulatory mechanisms in the Area and the EEZ, as well as the persistent gaps that have been emerging or cobwebbed into the UNCLOS, we can situate or identify novel governance mechanisms that could be the feasible gateway to repulsing such gaps. In addition, if we scale up or link the HST to the best governance options in the EEZ, we could help bridge emerging narratives on ocean governance and develop or implement collaborative and just frameworks for tapping ocean resources in the Area. To advance the case of the HST (also called the Biodiversity of Areas Beyond National Jurisdiction (BBNJ) Treaty) as a conduit for promoting ocean sustainability, since its promulgation in 2023 in the context of the vulnerable Global South, this research will focus on identifying, describing and synthesizing literature to answer four main questions;

a. Why oceans are important and what key ocean sectors crucially contribute towards promoting ocean sustainability across all domains; especially in the Global South?
b. What are the emerging ocean (un)sustainability concerns and how have these concerns increased ramifications that affect coastal countries and the global sustainability discourse?
c. How can the High Seas Treaty (HST) reverse these unsustainability concerns and what new narratives does the HST provide that could be key in creating ocean sustainability; especially in the Global South?
d. How well could we factor in the emerging sustainability narratives embedded in the HST to implement and foster the global Sustainability Agenda across different spatial and temporal contexts?

In this research, the benchmark envisioned is that by answering these key questions, we could (i) unravel new systemic risks experienced among the coastal states in the developing world by capturing both contextual and qualitative indicators of risks that have perpetuated in the Area (ii) situating the identified risks to different contexts or regions in the Global South by using empirical evidence from recent literature and (iii) using such information to develop novel pathways that could be key in charting sustainable or inclusive governance pathways for threatened resources and livelihoods such as in SIDS (both in the Area and in the EEZ). This is key because, since the HST is a new legal discourse in ocean governance, little research has been conducted to document how the key tenets of the HST that could be factored into the ocean sustainability targets such as on ocean equity in vulnerable countries and in the Area Beyond National Jurisdiction (ABNJ). Over

time, a complete disregard for this has led to a mosaic of illegal, unreported, and unregulated activities that threaten the high seas, as well as coastal ocean-dependent communities, and fraughted the ethos of the common heritage of humankind principle (Chan et al., 2024; Jarvis and Young, 2023; Jouffray et al., 2020; Tiller and Mendenhall, 2023). And since most studies have revealed that coastal states in developing regions have less capacity with regards to ensuring or implementing defined global marine governance regulations or guidelines, the envisioned targets of the HST might come in handy in bridging this. Part of the HST target is not only ensuring Global South-led leadership but also participation in decision-making and research on the governance of resources in the Area. And this is a novel perspective in ocean governance that needs further scholarly emphasis. The guidelines and targets embedded under the HST emphasize holistic ocean resources and ocean resource governance, and this is key in ensuring better governance in adjacent waters including the territorial seas, EEZs, or continental shelves. Subsequent sections delve deeper into discussing this interesting scholarly discourse to unpack the relevance of the HST in the emerging ABNJ discourse.

2. Method and Materials Used in the Study

This study used a Systematic Literature Review (SLR) method (Neuman, 2014); to coherently extract secondary data related to the high seas, ocean governance, and ocean sustainability. To achieve this, a phased approach hinged on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) procedure was used and this involved (i) the selection of keywords to search and identify documents to use, (ii) data extraction/screening of the extracted documents, (iii) synthesis, and (iv) reporting (Ferrari, 2015).

2.1 Digital Document Sourcing and Search Strategy

In this study, a digital online search for literature to be used began using basic keywords for specific terms in the Science Direct online database. The keywords used were (i) '*ocean sustainability and ocean governance*' and (ii) '*high seas treaty and ocean governance*.' These keywords were prioritized as they contained the specific terms/key constructs embedded in the research topic or issues being explored to align findings with the research question's scope. To further filter the documents, in the initial keywords search, the documents were only limited to (i) research articles and (ii) years; that is, 2012, 2018, 2023, and 2024. This generated 2,757 documents. For the second set of keywords, years were limited to 2023 and 2024, and consideration was given to only research and review articles, this generated 188 documents.

2.2 Document Screening Process

At this stage, I used the PRISMA protocol adopted by Page et al. (2021) which involves a two-stage process including (i) record identification and (ii) screening; as summarized in the PRISMA diagram (Figure 1). The combined recorded documents from Science Direct were (2.945) of which 280 were duplicates and thus removed. The screening of the 2,665 documents was then based on the following inclusion criteria (a) studies explicitly focused on ocean governance, ocean sustainability, and high seas (b) studies mainly focused on complex governance issues in the high seas and EEZs of tropical zones or developing coastal states (c) studies included at least two or more ocean sustainability outcomes/dimensions envisioned under the Ocean Decade and ocean sustainability discourse described by the Ocean Panel (2020) and (d) studies that embedded components of the HST or ABNJ, notably since 2023 when the HST was agreed upon.

To generate comparable and coherent documents, two stages of screening were performed using the Covidence tool; (i) title and abstract screening; where 2,095 documents were excluded and 570 documents were included at this stage. The second stage involved full-text reading of the 570 documents and at this stage, 489 documents were excluded partly because they either did not fit the inclusion criteria (described in Section 2.2, Paragraph 1) or focused on other ocean topics in the EEZs and issues that are not entirely in the ABNJ. Thus, at this stage, 81 documents were considered for review in this study.

2.3 Document Data Extraction

The 81 documents were exported as a Microsoft Excel CSV file and downloaded for specific extraction of data/excerpts related to the research questions or topic. In Excel, a unique categorization approach was used where different columns for the main components of the study were created. These included, extraction of the area of research in the article, ocean zone or region or country, key ocean issues addressed/highlighted, emerging ocean sustainability or governance issues/challenges/risks, and recommended governance pathways/approaches. Emphasis was also on the extraction of some pieces of data shreds of evidence of risks or sustainability pathways.

2.4 Reporting of Extracted Findings

In this study, the emphasis was to use extracted pieces of evidence (including some numerical data from articles) to show complex risks in the ocean that affect governance. As a result, to achieve the study objective and answers to the research questions without the need for quantifying effects, which can be challenging due to measurement differences, this review chose to assess the positive or negative ocean risks to governance without considering the variation in the meas-

Figure 1. Inclusion and exclusion criteria for documents used in the SLR.
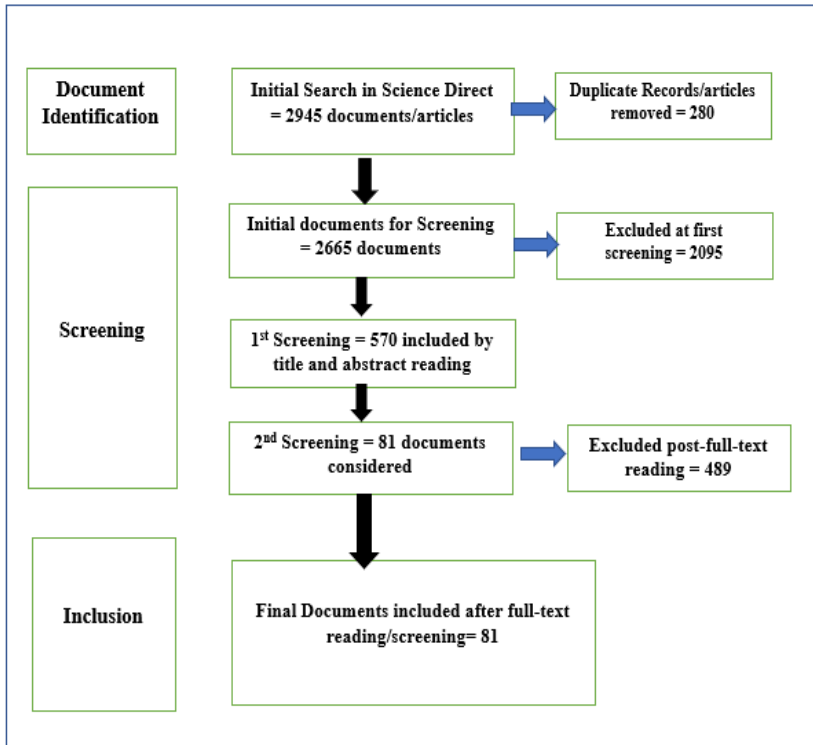
Source: author's creation.
SLR, Systematic Literature Review.

urement of effects. Thus, for easy understanding of the readers/target audience, simplified visualizations (including charts, tables, figures, and maps) were used to show where risks are prevalent or possible transformative mechanisms embedded in the BBNJ treaty. This approach allows for the easy presentation or giving of a snapshot/an overview of findings in a relatively simple manner that could be key in learning and future research (Neuman, 2014).

3. Key Findings and Discussion

Here, an in-depth description of the results obtained from the SLR is given with a specific emphasis on unearthing insights related to the study objectives.

3.1 Main Ocean Sectors/Activities and Their Contribution to Sustainability Targets

As already noted in Section 1, the ocean has historically availed a lively-

hood to communities and is primed as key to balancing complex global environmental interactions (Gerhardinger et al., 2023; Raymond-Yakoubian and Daniel, 2018). A review of the five major ocean zones (Pacific, Atlantic, Indian, Arctic, and Southern Ocean(s) anecdotes that oceans habituate over 80 percent of the world's biodiversity. In addition, oceans hold 97 percent of all our water, are the largest carbon sink (thus ameliorating planetary climate), and livelihood security- as ocean-based sectors/industries are projected to grow faster than the land-based economy in the next few years (e.g., in food provisioning) (Lubchenco and Haugan, 2023; UNEP-FI, 2022). Yet, these astounding and undisputed contributions to humanity have been grossly underappreciated; evidenced by the extractivist nature of anthropogenic practices and a lack of clear classification of key ocean sectors and their contributions (WOA II, 2021; World Bank, 2020). With the increasing shift to ocean equity and sustainability; more so after the coining of the BE paradigm in 2012, a focus on aligning ocean activities has gained momentum (Chen, 2024; Matovu et al. 2024a, 2024c). The 2020 Ocean Panel categorically classified ocean activities into three (3) broad categories and thirteen (13) key sectors which are key in balancing the human-ecological system in pursuit of ocean sustainability targets (Lubchenco and Haugan, 2023) (Figure 2).

A synthesis of studies indeed corroborates that amalgamating ocean activities is a precursor to social, economic, governance, and environmental sustainability. This is because ocean-based sectors can immensely boost just and fair development; if pragmatic and sustainable actions are taken across five critical areas—ocean health, ocean wealth, ocean equity, ocean knowledge, and ocean finance (Partelow et al., 2023; WOA II, 2021). When combined, ocean-based sectors,

**Figure 2.** Classification of the main ocean activities and sectors.
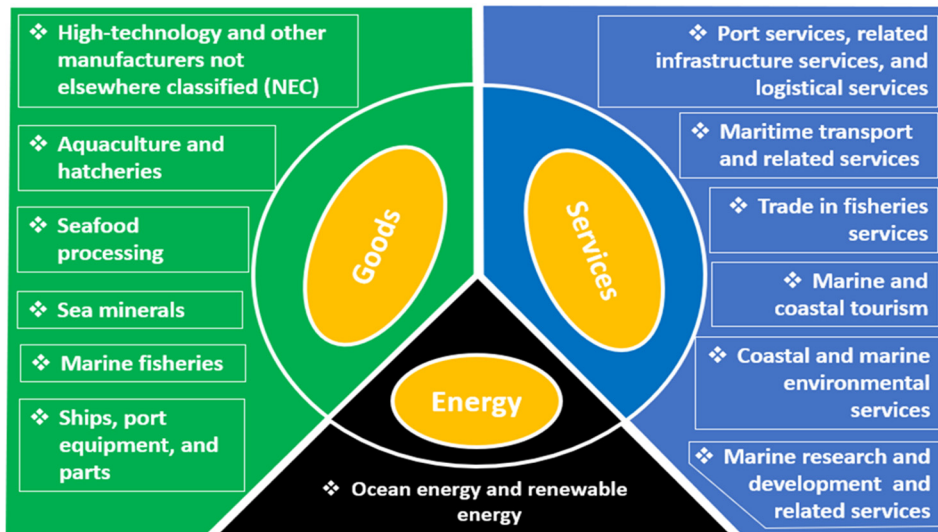
Source: author's creation.

such as fishing and activities are thought to support hundreds of millions of people and add roughly US $2.5 trillion to the world economy annually (OECD, 2023). Cumulatively, the ocean economy ranks as the world's seventh-largest economy when compared with national gross domestic products (OECD, 2023; UNCTAD, 2021, 2023). In terms of energy potential, oceans have the largest untapped sources of renewable energy; with around 80 percent of the global wind resources found in the Area or offshore ocean zones (IRENA, 2023; UNEP-FI, 2022). Harnessing marine energy (especially renewable energy could be a conduit for sustainable transitions towards carbon and climate neutrality as well as long-term sustainable development; notably in the tropics (World Ocean Review, 2024). This is partly because the combined value of ocean energy technologies is massive; ranging from 45,000 to potentially over 130,000 terawatt-hours (TWh) of electricity annually (IRENA, 2023). This implies that ocean energy generation can exceed more than twice the present global electricity demand (IRENA, 2023; Lubchenco and Haugan, 2023; UNCTAD, 2023).

A critical outlook on the potential benefactors of the grandiose ocean goods, services, and energy reveals that coastal states and regions in the Global South are comparatively well-situated to profiteer from the increased focus on ocean sustainability (UNCTAD, 2023; World Bank, 2020). A simplistic snapshot of the key socioeconomic indicators of sustainability in key and traditional ocean-based sectors, such as marine transport, and fishing, and emerging sectors such as ocean energy lays this bare. For instance, in marine fishing, regions in the Global South are not only the bumper producers of wild catch and aquaculture but also gain massively from fisheries-related employment (FAO, 2022) (Figure 3).

Figure 3. Comparative indicators of production and employment in the fisheries sector.
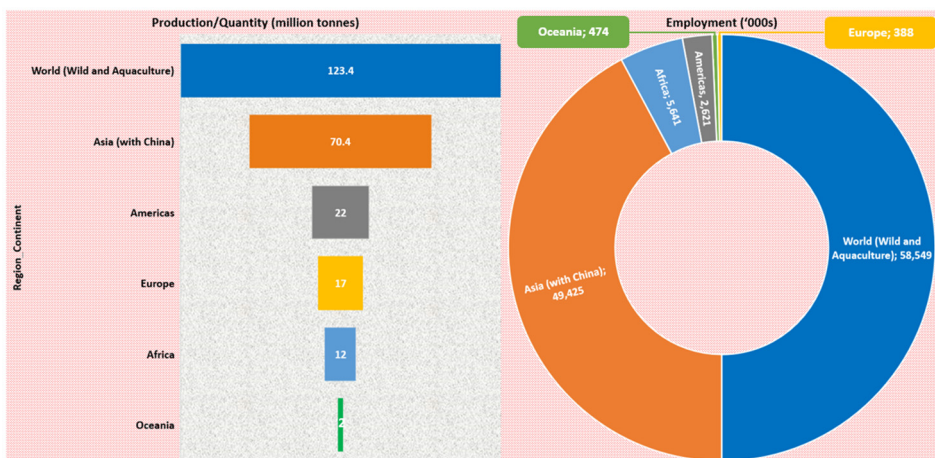
Source: author's creation.

In the maritime transport domain, it is recognized that over 80 percent of global trade hinges on marine shipping and freight, as most nodal zones cascade through interconnected ocean shipping lanes (UNCTAD, 2022, 2023). Maritime trade (mainly containerized seaborne trade) is expected to re-boom in the post-COVID-19 pandemic-induced lockdown; more so in oil and gas, as well as grains trade (UNCTAD, 2022; WEF, 2023). With this, several regions in the tropics have reaped dividends and are the stewards of this trade (Figure 4).

Figure 4. International seaborne trade (imports and exports) based on container trade statistics.
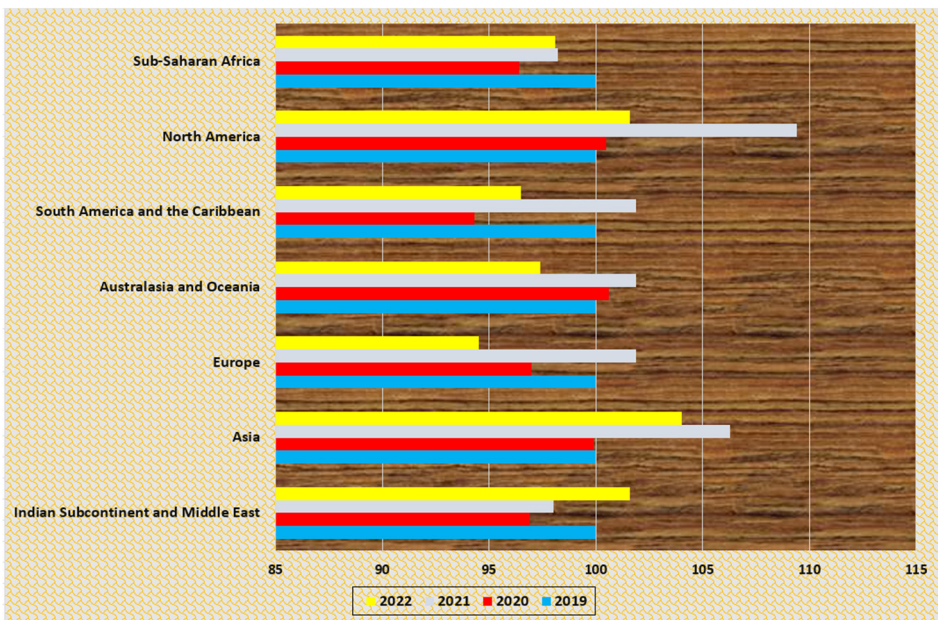
Sourced: UNCTAD (2023) and designed by the author.

Similar comparative benefits have been reported concerning the harnessing of the ocean energy potential (IRENA, 2023; Ocean Energy Europe, 2023), offshore mining, oil, and gas including sea-bed mining. This is because the three main marine mineral deposits, including polymetallic nodules (blue); polymetallic or seafloor massive sulphides (orange); and cobalt-rich ferromanganese crusts (yellow) are found in tropical zones, such as in the Clarion Clipperton Zone (Washburn et al., 2021). This means that tropic countries can play a crucial role in driving inclusive marine research (including bioprospecting, ocean engineering, and carbon dioxide sequestration) among others (Jones et al., 2021, Miller et al., 2018; UNEP-FI, 2022; Washburn et al., 2021). Unfortunately, the fervor with which oceans have been primed to be a driver of ocean sustainability, and sustainable ocean development has largely remained subjective; as emerging complexities and

unsustainability concerns have perpetuated in the use of ocean resources, goods, and services (IRP, 2021; Jouffray et al., 2020). In addition, most tropical coastal states are either subordinates in leading research, or holistically boxed out from leading discussions or policies on how research and extraction of these resources should be done. The next section expounds deeper into this by indicating complex ocean challenges that scupper ocean sustainability targets and sustainable ocean development pillars.

3.2 Emerging Ocean (un) Sustainability Complexities/Contestations and Their Ramifications towards Ocean Governance and Ocean Sustainability

A plethora of studies have documented that the ocean is at risk, mainly attributable to increasing anthropogenic and environmental (mainly climate change) threats both in the EEZ and the Area (IOC-UNESCO, 2022; Ocean Panel, 2020). A systematic profile of the risks to ocean resources, goods, and services is well reported in several studies and global ocean review reports among others (IRP, 2021; WOA II, 2021; World Ocean Review, 2024). In most of the literature, it is stipulated that the insatiable demand for ocean resources, such as fish has obliterated species diversity and to some extent, worsened the increasing fragility of ocean ecological systems (Matovu et al., 2024c). This has increased the vulnerability of coastal populations, states, and global development and yet, frameworks for collaborative governance or co-management are either pedestrian or largely lacking in implementation (Matovu and Raimy, 2022; Matovu et al., 2024a; UNEP-FI, 2022). Even though most of the studies have situated the adverse ramifications of environmental and human threats to terrestrial landscapes, coastal zones, and EEZs, recently, the devastating impacts have spilled over to the ABNJ-in high seas) (Chan et al., 2024; Shaw et al., 2019). In most high seas, governance gaps have become prevalent including in the Arctic Ocean where dramatic biophysical changes have occurred in the high sea enclaves (Vylegzhanin et al., 2020). This could compromise the unique historical agreements applied in the Arctic such as the Central Arctic Ocean Fisheries Agreements (CAOFA) notably, around the Bering Strait (Lubchenco and Haugan, 2023; Raymond-Yakoubian and Daniel, 2018; Vylegzhanin et al., 2020).

In the context of the ABNJ and ocean governance, the complex sustainability concerns are coiled around (i) environmental ocean changes (mainly due to climate change and its associated impacts on existing ocean governance regulations as embedded in the UNCLOS) and (ii) unsatiable human practices in the Area including in the deep ocean and ocean-atmosphere (IOC-UNESCO, 2022; Ocean Panel, 2020; World Ocean Review, 2024). Some of these impacts and their compromising impacts on the UNCLOS and related governance mechanisms of ocean resources and species such as on Regional Fisheries Management Agreements are well-reported in several studies (FAO, 2022, Matovu et al., 2024c; Raymond-Yakoubian and Daniel, 2018; Vylegzhanin et al., 2020; 2023). In the SIDS, for

instance, it is reported that climate change-induced effects have affected key determinants used to determine the jurisdictional rights of coastal states in the EEZ, as it has altered baselines and affected continental shelf (especially the Outer Limits of the Continental Shelf) (Matovu and Raimy, 2022; Olsen et al., 2011; Wagner et al., 2020). Sea-level rise is also threatening the existence of SIDS and populations, thereby creating conundrums related to future risk scenarios such as environmental refugees and jurisdictional rights (Hoegh-Guldberg and Northrop, 2023). The changing ocean circulation patterns, more so in the Southern Ocean have affected migratory zones of anadromous species (World Ocean Review, 2024). These changes have increased concerns for illegal fishing on the high seas as well as piracy, as policing as 'freedom of overflight in the Area' has been the status quo and yet most countries, vessels, or users have not been implementing the right of '*enquete du pavilion*' (right to approach) as required under Article 110 of the UNCLOS (Byers, 2004). Adverse environmental threats, such as ocean acidification, and increased sea surface temperatures (SST) have obliterated the high sea coral reefs that have not been fully protected (77 percent of deep-sea corals in unprotected ABNJ zones) in most governance mechanisms (partly due to limited deep-sea research) (Wagner et al., 2020). To put this into perspective, in the last four decades (since the 1980s), 30 percent of corals (both nearshore and in the Area) have been lost and this is projected to increase to over 90 percent soon; under the current increasing environmental threat concerns (Hoegh-Guldberg et al., 2018). The obliteration of such marine biodiversity hotspots by environmental changes could further affect mesophotic coral ecosystems and other unknown hotspots of productivity and biodiversity in otherwise deep-sea ocean basins such as on seamounts and submarine ridges (Wagner et al., 2020). This could lead to the decimating of feeding, resting, and spawning grounds for numerous benthic and pelagic species (Gove et al., 2016; Wagner et al., 2020).

On the other hand, the proliferation of anthropogenic activities and threats on the high seas has emerged as one of the main governance concerns in recent times (Partelow et al., 2023). Most of these activities have not only threatened traditional custodians of resources in the high seas (especially the indigenous communities sedentary in SIDS), but also spiraled into resource nexus contestations for unique deep-sea minerals (Matovu et al., 2024b). This trend has been a catalyst for several systemic ocean-resource user issues such as high sea conflicts, illegal activities, deep sea pollution, and loss of jurisdictional rights of some vulnerable communities (Gallagher et al., 2023; Jouffray et al. 2023; Matovu et al., 2024b; Olsen et al., 2011; UNCTAD, 2023). Worrying cases of negative human activities have been reported regarding the 'right of visit on the high seas' or conduct Marine Scientific Research (MSR) mainly by fishing vessels; as most of the existing governance protocols such as transparency and declaration have been flouted (Blythe et al., 2021; Papastavridis; 2014). Recently, increased cases of transnational crimes across the high seas (including piracy, smuggling, human trafficking, and marine pollution (ballast releases) have proliferated (Kojima, 2023). These contravene the

principle of non-interference, precautionary principle (Part XII of UNCLOS), and general principles of environmental law such as the Code of Conduct for Responsible Fisheries, Article 61 of UNCLOS, as well as the MARPOL guidelines on pollution among others as required in the contemporary legal order of the oceans (Kojima, 2023; UNCTAD, 2023; UNEP-FI, 2022; Wright et al., 2016). Worst cases of unsustainable human practices in the Area have been reported in several studies, such as those related to ballast pollution from marine ships/vessels (David et al., 2019). Marine pollution has increased bio-invasions across several biodiversity hotspots in the high seas, such as in the Adriatic Sea, Black Sea, and the North Sea that compromise the global standards on ballast water management (BWM) requirements as set forth by the BMW Convention (2004) (David et al., 2019; Gollasch and David, 2019; van der Meer et al., 2016).

Several other studies and reports have systematically highlighted the human risks and threat factors in the high seas and how they scavenge on collaborative governance mechanisms (IRP, 2021; Ocean Panel, 2020; UNEP-FI, 2022; WOA II, 2021; World Ocean Review, 2024). In most of these reports, what remains constant and clear is; that the proliferation of these unsustainable human activities in the Area is partly a result of the lack of a comprehensive high-seas governance mechanism or gaps in existing regulations (Bennett et al., 2022; Wright et al., 2016). For instance, UNCLOS provisions mainly focused on the EEZs of coastal states (and where existent, provisions were conflicting, such as Article 76 on high seas freedoms) and emerging Agreements or treaties, such as the Discrete High Seas Stocks and Straddling Stocks including the 1995 UN Fish Stocks Agreement (UNFSA) focused on regional monitoring (Oxman, 2020). Yet, most coastal states in biodiversity hotspots have limited capacity to enforce such agreements and regulations (Blasiak and Yagi, 2016; Oxman, 2020; Takei, 2013; Wright et al., 2016). The perpetuation of these challenges has called for the designing of a new governance pathway that shapes an internationally binding agreement on the ABNJ, and also links to ocean sustainability targets such as in the EEZs (Decker Sparks and Sliva, 2019; Oxman, 2020). The next section expounds on this discourse by showing how the HST is or could be the driver to promote collaborative ocean governance; and thus, translate into ocean sustainability.

3.3 The High Seas Treaty as a Conduit to Reversing Systemic Challenges in Ocean Governance and Ocean Sustainability

In this section, an in-depth description of the HST and its relevance to ocean governance is given. To expound on this and give a systematic analysis, a preamble of the HST is given by specifically identifying the progress made. This is followed by the identification and visualization of the key elements of the HST that are envisioned to promote sustainable ocean development and progressively boost inclusive ocean governance. In explaining this, I focus on linking how the

HST tries to break systemic and historical governance injustices; especially related to equity in the high seas and the different mechanisms it brings to the fore.

The high seas include some of the most important biotic and abiotic resources that are very vital (especially in ecological balance) (Marlow, 2023). Yet, high seas are the most critically threatened zones (mainly by human activities) and, less than 1 percent of High Seas are fully or highly protected (IUCN, 2023; Marlow, 2023; Sumaila et al., 2015). Recent studies have further revealed that the high seas are experiencing the worst impacts of the triple ocean/planetary crises (namely; climate change, biodiversity loss, and marine pollution (which has increased dead zones) (Ocean Panel, 2020; Tiller and Mendenhall, 2023; UNCTAD, 2023; World Ocean Review, 2024). These crises are worsened by injustices in governance and utilization of fragile resources, such as straddling fish species (FAO, 2022; Sumaila et al., 2015). For instance, it is estimated that about 97 percent of distant water fishing vessels in the high seas are flagged by rich nations (Deasy, 2023; FAO, 2022). These challenges have indeed increased the need for a new governance framework on the high seas and, the HST has been primed to achieve this, more so if collaborative governance mechanisms are created across the ocean space and coastal regions (Marciniak, 2017).

A preamble on the HST shows that it is the world's first cohesive, international, and legally binding framework to specifically protect high seas biodiversity (Craig, 2020; WOA II, 2021). After a series of discussions among different negotiating countries and stakeholders for years, the HST was agreed upon on 4 March 2023 and formally adopted by the United Nations on 19 June 2023 (Deasy, 2023; High Seas Alliance, 2023). The treaty has been agreed upon to among others (i) establish collaborative and strong benchmarks for protecting the high seas, (ii) enhance transparent mechanisms to set the stage for further marine scientific exploration (over 80 percent of oceans and resources therein unknown), and (iii) create new sustainable practices for collaborative and effective marine resources conservation and management (Deasy, 2023; Lubchenco and Haugan, 2023; Marlow, 2023). With these benchmarks, the BBNJ treaty has been highlighted as a new governance pathway/holistic implementing agreement to fill gaps in previous ocean governance mechanisms such as under UNCLOS on the conservation and sustainable use of marine biological diversity and resources in the Area (Craig, 2020; Diederichsen et al., 2024). The positive momentum with which this treaty is primed to achieve this is seen if we look at the pace at which countries and state parties are ratifying it and committed to reversing gaps in earlier agreements (Tiller and Mendenhall, 2023). For instance, by June 2025 (UN Ocean Conference in France), the target is to have at least 60 countries that have ratified the Treaty (Deasy, 2023; High Seas Alliance, 2023). On 22 January 2024, Palau became the first country to ratify the treaty, and Chile voted to approve the agreement (High Seas Alliance, 2023). Such a trend reflects an increasing commitment to high-seas governance, never seen before (Diederichsen et al., 2024; Jarvis and Young, 2023; Tiller and Mendenhall, 2023). One may wonder why the increased interest; more

so if we consider the level/speed of acceptance of the HST. Part of this is because it links ocean sustainability targets, and creates new institutional mechanisms that critically and specifically address governance concerns that are tailored towards sustainable ocean development pillars (Deasy, 2023; UNCTAD, 2022) (Figure 5).

Figure 5. Key mechanisms in the high aeas treaty that could aid ABNJ governance.

OCEAN SUSTAINABILITY DOMAIN	KEY ELEMENT IN THE TREATY	IMPLEMENTATION MECHANISM	IMPLEMENTATION BODY/INSTITUTION	RELATED SUSTAINABLE OCEAN DEV'T PILLAR
ECONOMIC SUSTAINABILITY	FINANCIAL/ECONOMIC TRANSPARENCY, ECONOMIC GUARANTEES,	HAS OBLIGATION TO CO-SHARE MONETARY AND NON-MONETARY BENEFITS, RELIABLE INITIAL FUNDING	FINANCIAL COMMITTEE, SCIENTIFIC COMMITTEE,	ECONOMIC PILLAR
SOCIAL SUSTAINABILITY	FAIRNESS AND EQUITY IN SHARING BENEFITS	CAPACITY BUILDING AND INCLUSION OF ALL	ACCESS AND BENEFIT SHARING COMMITTEE	SOCIAL PILLAR
POLITICAL/INSTITUTIONAL GOVERNANCE	EQUAL REPRESENTATION, DECISION MAKING FOR ALL	CONSENSUS-BASED ON INCLUSION, 2/3 MAJORITY MAINLY FROM DEVELOPING STATES	BBNJ COP, AND ALL COMMITTEES	GOVERNANCE PILLAR
ENVIRONMENTAL SUSTAINABILITY	AREA-BASED MANAGEMENT TOOLS, INCLUDING MARINE PROTECTED AREAS (MPAS), EIA	CLEAR PROCESS FOR MPA SET-UP, PROPOSAL, MANAGEMENT OF OCEAN DISASTERS/EMERGENCIES	CONFERENCE OF PARTIES (BBNJ COP), SCIENTIFIC COMMITTEE	ENVIRONMENTAL &SCIENTIFIC PILLAR

Source: author's creation.
ABNJ, Area Beyond National Jurisdiction.

From the onset, the BBNJ Treaty sets forth four (4) clear targets that are geared towards collaborative governance and designing protective measures for at-risk ocean resources (High Seas Alliance, 2023). They include (i) a clear legal framework and collaborative process for creating networks of marine protected areas (MPAs) and Other Area-Based Management Tools (ABMTs) that are aligned with the Kunming-Montreal Global Biodiversity Framework (30×30 by 2030), (ii) transparency mechanisms and increased vulnerable states empowerment in decision-making on activities in the Area that harm biodiversity; as guided by new provisions on Environmental Impact Assessments (EIAs) in the area, (iii) equity and justice in the sharing of benefits accruing from high sea resources (Marine Genetic Resources (MGRs) including from the seabed and (iii) promoting of capacity building among the vulnerable coastal communities and states to boost research, technology transfer and set up support mechanisms (both monetary and non-monetary) that help states. These targets are crucial for the developing regions to lead research, monitoring, and evaluation, and reduce cases of unfair agreements in high sea resource extraction and utilization (Deasy, 2023; Marlow, 2023; Ocean Panel, 2020). A synthesis of these key components reveals that they bridge some

of the critical governance challenges that have historically ruined avenues for the implementation of the UNCLOS provisions on the high seas and they crucially align with the ocean sustainability targets such as on inclusive and collaborative governance (Marciniak, 2017; Partelow et al., 2023; UNEP-FI, 2022).

The possibilities of the HST in reversing injustices are further well reported in several studies related to uncovering impediments to the ocean sustainability agenda (UNEP-FI, 2022; Wright et al., 2016). According to a study conducted by the Institute for Sustainable Development and International Relations (IDDRI), eight key governance gaps have been prevalent in the ABNJ which required a new comprehensive governance treaty on the high seas (https://www.iddri.org). These are (i) the absence of a comprehensive set of overarching governance principles, (ii) a fragmented institutional framework that covers all areas in the high sea, (iii) the absence of a global framework to establish MPAs in ABNJ to among others protect vulnerable marine ecosystems located on the seabed (according to relevant UNGA resolutions regarding non-tuna Regional Fisheries Management Organizations-RFMOs), (iv) legal uncertainty surrounding the status of MGRs in ABNJ including bioprospecting that were not succinctly addressed under UNCLOS, (v) lack of global rules for EIAs and Strategic Environmental Assessments (SEAs) in ABNJ, notably on identifying or addressing threats/risks, their effects and consequences on development options and proposals, (vi) limited capacity building and technology transfer; i.e., even though Article 268 of UNCLOS and the IOC Criteria and Guidelines on the Transfer of Marine Technology (2003) (CGTMT) provide chapters and descriptions to this, its implementation is rather limited, (vii) uneven and ineffective governance of high seas fisheries (mainly commanded by flag states or vessels from rich nations with financial and technological capacities and who influence cooperation in RFMOs) thus increasing IUU fishing and (viii) Flag State responsibility and the "genuine link" issue as UNCLOS does not precisely stipulate what such a "genuine link" entails. A lack of clarity on the 'genuine link' has reportedly increased the manipulation of such a gap through the flags of convenience systems (especially in conducting ocean bio-engineering research). It has also increased fears related to international environmental and safety standards, monitoring, control, and surveillance (MCS) of high sea activities including trafficking, piracy, and pollution release in the Area by the flag state or vessel (IOC-UNESCO, 2022; Keating-Bitonti; 2023; Lubchenco and Haugan, 2023; Ocean Panel, 2020; Wright et al., 2016).

In addressing these ocean unsustainability concerns, the HST proponents have crafted several mechanisms that cut across the five (5) ocean sustainable development pillars (IRP, 2021; Ocean Panel, 2020; UNEP-FI, 2022; WOA II, 2021). Firstly, the HST amalgamates key sustainability aspects including, (i) addressing fairness and equity (social), (ii) sustainable conservation and management of high sea resources, (iii) diversity and inclusion of all states and communities; including SIDS and indigenous peoples, (iv) transparency and evidence-based regulations and collaborative mechanisms including related to economic benefits sharing

(Deasy, 2023; Diederichsen et al., 2024; Raymond-Yakoubian and Daniel, 2018). To increase momentum in achieving these targets, institutional mechanisms have been proposed, and some are already in effect. To create strong institutional and governance mechanisms to enhance the implementation of the sustainability targets, eight (8) Establishing HST Institutions with clear practical mechanisms required to oversee and implement the HST have been identified. identified with a top/primary decision-making body as the BBNJ Conference of the Parties (BBNJ COP) which will be convening annually to review progress (High Seas Alliance, 2023).

Below the BBNJ COP, other institutions include, (i) Secretariat to aid in administrative support and liaison with other global bodies focusing on ocean sustainability, among other functions, (ii) Clearing House Mechanism which will serve as a knowledge portal and platform for dissemination of information (free to access) for all parties covering all guidelines for governance of marine resources and activities in the area, (iii) Scientific and Technical Body encompassing all experts from different coastal regions and states and across all disciplines (including indigenous knowledge stakeholders) to guide and provide expert advise to the COP, (iv) Implementing and Compliance Committee to serve in a transparent manner based on collaborative engagements and facilitation, (v) Access and Benefit-Sharing Committee to ensure fairness, equity in access to resources and sharing of monetary and non-monetary benefits among all users and countries across geographies and (vi) Finance Committee that sets forth clear and transparent mechanisms for equitable budgeting, financing and refinancing and voluntary trust fund to support research, monitoring and evaluation in the Area; especially led by developing states. This is further supported by the established Global Environment Facility Trust fund with few conditionalities for financial support; especially for RFMOs (Craig, 2020; Deasy, 2023; High Seas Alliance, 2023).

Through these committees, key elements envisioned to promote ocean sustainability and governance on the high seas and reverse systemic gaps/or challenges have been developed. For instance, to boost collaborative conservation and management of marine threatened and critical ecosystems, Area-based management tools, including MPAs have been developed to aid in collaborative and holistic protection against exploitative human activities such as seabed mining and provide emergency responses to disasters arising out of threats like climate change (Washburn et al., 2021; WOA II, 2021; Wright et al., 2016). Through this, for the first time, eight (8) critical and key high seas MPAs have been mapped out mainly in the tropical ocean zones including, (a) Salas y Gomez and Nazca Ridges in the waters of the southeast Pacific, (b) The Thermal Dome in the Eastern Pacific, (c) Emperor Seamounts in the North Pacific, (d) Walvis Ridge that runs from the coast of Namibia to the mid-Atlantic Ridge, (e) Sargasso Sea in the Atlantic Ocean, (f) South Tasman Sea/Lord Howe Rise between Australia and New Zealand, (g) The Lost City in the mid-Atlantic ridge and (h) Saya de Malha Bank in the Indian Ocean (High Seas Alliance, 2023; IUCN, 2023). These MPAs are not only primed

to strengthen the global commitment to the protection of at least 30% of the high seas but also aid in the strengthening of capacities for the assessment and management of industrial activities outside protected areas through SEAs and EIAs (Deasy, 2023; Marlow, 2023; Techera, 2019). The assessments will also use a systems approach with a focus on cumulative human and environmental impacts in the ocean rather than focusing on specific exploitative activities to develop sound resilience mechanisms that reduce vulnerability to shocks (Matovu et al., 2024a; Wright et al., 2016).

In alignment with the Deep Ocean Stewardship Initiative focusing on fairness and equity; notably on the empowerment of SIDS and vulnerable communities or states in the Global South, a clear capacity-building mechanism has been set out (Deasy, 2023; UNEP-FI, 2022). These further include the provision of supportive funding pathways to aid developing states in increasing their marine scientific and technological capacity, as well as the transfer of marine technology on fair terms so that they can achieve the objectives of the HST (Lubchenco and Haugan, 2023; Matovu and Raimy, 2022). The aim is to increase country-led practices (led by the Nationally created Capacity Building and Transfer of Marine Technology Committee) to bridge data gaps from local jurisdictions and promote collaborative research, and institutional capacities relevant to indigenous communities and knowledge. This will create avenues for the development of clear and feasible national regulatory frameworks or tools for monitoring and compliance (Ocean Panel, 2020). The developed frameworks could be factored into the global repository for increasing awareness, safeguarding social-cultural goods and resources, and developing and strengthening relevant infrastructure, including equipment and personnel. Area-specific or based tools can bring in effective MCS of activities relevant to the biological diversity of the ABNJ (Ocean Panel, 2020; Usmawadi, 2020; WOA II, 2021).

To increase benefits and stakeholders' interest in the continuous management of resources, through the Access and Benefit-sharing Committee, safeguards for fair and equitable sharing of benefits from MGRs have been created (High Seas Alliance, 2023). These safeguards could reverse equity concerns and injustices that have been historically evident in the ocean space (Partelow et al., 2023; Spalding et al., 2023; Wright et al., 2016). This is envisioned to be realized through balancing the state freedom of marine scientific research with fair and equitable sharing of benefits of MGRs (including biotic and abiotic resources with potential for bioprospecting or research as well as their Digital Sequence Information (DSI) or their derivatives used in several experimental studies or research) found in areas beyond national jurisdiction (Deasy, 2023; Gerhardinger et al., 2023; Proelss and Houghton, 2015). To implement this, all parties and countries are obliged to share monetary and non-monetary benefits (especially at state-level and secretariat) including access to samples and increased scientific cooperation in high-sea expeditions through requirements for prompt and prior notifications before collecting, using, and commercializing data or research findings on genetic resources and minerals

such as in the Pacific (Jones et al., 2021; Washburn et al., 2021). To reduce the financial challenges that most developing countries face, a financial mechanism for monetary support with guaranteed funding streams has been established (High Seas Alliance, 2023). In addition, alternative funding mechanisms have been established among parties; devoid of private monopolistic agreements (especially by corporations from the Global North) including, (i) a voluntary trust fund with collaborative participation of developing countries, (ii) a special fund to account for monetary revenue streams and benefits from MGRs and DSI or organizations focusing on collaborative governance of resources in the High Seas and, (iii) a trust fund; led by the GEF to finance micro or vulnerable-peoples or communities who are developing feasible or collaborative efforts in vulnerable ocean zones for capacity building, monitoring and implementation of the targets embedded in the HST (Deasy, 2023; High Seas Alliance, 2023; Marlow, 2023).

As the HST aims to address historical gaps in ocean governance and create collaborative safety nets that amalgamate all the ocean sustainability targets and pillars, it is indeed a new paradigm that the planet is set to benefit from immensely; as it tackles key ocean sustainability issues from the perspective of the most vulnerable (Deasy, 2023). This thus implies that coastal states and countries need to quickly and swiftly ratify the BBNJ Treaty to leverage the potential it offers in the context of ocean ecosystem governance and sustainable livelihoods (Kojima, 2023; Oxman, 2020). And, since most countries have not ratified the treaty yet, I argue that this creates an opportunity to develop novel pathways; more so from the Global South perspective that could guide on how, when, where, or who needs to do what to aid a new narrative of ocean governance situated in sustainable ocean development pillars or principles (UNEP-FI, 2022). In the next section, I present a novel pathway that could guide how this could be done based on the synthesis of literature related to impediments to sustainable ocean governance; especially from the Global South as highlighted in several studies (IRP, 2021; Decker Sparks and Sliva, 2019; Ocean Panel, 2020; WOA II, 2021; Wright et al., 2016).

3.4 Using Existing Knowledge to Chart a Pathway for Implementing the High Seas Treaty; Especially in the Global South

One key contribution that this study adds to the literature is the analysis of different studies on ocean governance to develop a simplified pathway that could be key in the implementation of the HST. This could act as a starting point for the comprehensive understanding of the key dynamics embedded in the HST, more so among poor and developing coastal states including SIDS. In the pathway, six (6) key elements/steps are identified and these inter-relate to each other (Figure 6).

The relevance of the developed pathway (especially in highlighting the concept of continuous evaluation and assessment of ocean resources) is critical. This is more evident if we factor in key literature findings documenting key bot-

Figure 6. Proposed mechanism/process pathway to increase implementation of the HST; notably in the Global South.

Source: author's creation.
HST, High Seas Treaty.

tlenecks that have historically stagnated high seas policy, governance, and equity and limited the implementation of the UNCLOS in the ABNJ (Decker Sparks and Sliva, 2019; IRP, 2021; Matovu and Raimy, 2022; Ocean Panel, 2020; WOA II, 2021; Wright et al., 2016). Recent studies have further recommended a policy shift with more focus on inclusion, equity, and the development of collaborative mechanisms to increase data and information mining that could be used and disseminated to make evidence-based governance decisions, such as in the biodiversity hotspots that are increasingly threatened by human and environmental threats (OECD, 2023; Techera, 2019; Wright et al., 2016).

Firstly, since there has been limited stocktake data in most developing coastal states; partly due to financial challenges to conducting MSR, the initial leverage point could be conducting baseline data profiles for different regions by tapping into the financial commitments provided for under the HST (Deasy, 2023; High Seas Alliance, 2023; Matovu et al., 2024b). This could cover aspects like, (i) available resources, (ii) users as well as their interactions in ocean systems in a given zone (Wright et al., 2016). Due to advancements in technology, such data could be either visualized or mapped and shared among different actors (including at the local level), to create a situational understanding and inventory of ocean resources in the area (UNEP-FI, 2022). Such data could be incorporated into global and regional reports such as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the United Nations Framework Convention for Climate Change (UNFCCC) COP among others. This can help developing coastal states to process and negotiate on issues such as mitigation, adaptation, loss and damage, indigenous people's knowledge and engagement, finance,

science, technology mechanism, capacity building, and transparency, and the global stocktake for collaborative governance (Adewumi et al., 2022; Lubchenco and Haugan, 2023; World Ocean Review, 2024). In areas where this is progressively being applied, the results have been impressive. For instance, in Sri Lanka and the South Indian Ocean region, baseline data has been key in identifying emerging anthropogenic risks in the high seas including 'ghost fishing' by Abandoned, Lost, and otherwise Discarded Fishing Gear (ALDFG) and End-of-Life (EOL) fishing gear that account for about 5–30 percent mortality of global harvestable fish stocks such as in South Asia (Gallagher et al., 2023). In some complex natural resource-rich ocean zones, baseline/situational data could help in identifying systemic risks as well as actors that proliferate contestations such as on deep sea mining (Matovu et al., 2024c). These data could be mapped to foster and usher in new trust-based relationships, foundational and cooperative multinational, ocean resource management pathways (Matovu et al., 2024b, 2024c; Muir et al., 2023).

To further boost new avenues for governance, mapping all actors in the ocean system or using ocean resources more so in the Area is key. This can include traditional or indigenous communities sedentary in coastal zones or the SIDS. Other actors who can be mapped include state actors or parties such as those from other jurisdictions but utilizing the resources in the ABNJ such as the distant fishing or mining nations or companies (Gallagher et al., 2023; UNCTAD, 2022, 2023). Mapping of the stakeholders including their roles has gained traction in several regions as key to charting strategies for collaborative governance such as in MPAs including apportionment of responsibility related to threat drivers and management (Techera, 2019). It also helps in identifying organizations for collaborative partnerships in governance, ocean resource management, and conservation as well as fundraising or fund acquisition. Generated finances or monetary commitments could be channeled to the High Seas Voluntary Trust Fund and opportunities for collaborative action in addressing urgent threats such as climate change (Deasy, 2023; Hoegh-Guldberg and Northrop, 2023; Marlow, 2023; World Bank, 2020).

The benefits of Steps I and II help in the creation of possibilities that align different stakeholder roles to baseline indicators which can be mapped into regional and global indicators. These are important and needed to achieve a sustainable ocean economy and the key elements of the HST; more so concerning the BBNJ COP and different committees (Deasy, 2023; Hoegh-Guldberg and Northrop, 2023). This can help create new models for collaborative governance by looking at national or regional-level shares of costs and benefits as well as financial gains from the use or access to high-sea resources. This aligns with key elements of high-seas equity such as prevention of harm to resources, respecting rights (states, groups, individuals), and supporting avenues that enable all stakeholders to benefit and flourish (Croft et al., 2024; IOC-UNESCO, 2022). Other indicators could include economic benefits indicators, institutional inclusion, and leadership inclusion; especially of stakeholders from the SIDS or vulnerable peoples among

others (IRP, 2021; UNEP-FI, 2022).

Depending on the level of contextualization or identification or alignment of the different indicators to the elements of high seas governance, possibilities for localizing targeted and measurable indicators could be birthed. These could include indicators on fish stock sustainability, more so in migratory zones of the tropics (Gallagher et al., 2023; Muir et al., 2023), pollution control measures in major shipping zones (UNCTAD, 2023), and social inclusion indicators for at-risk communities in the Area including women and tribal communities in SIDS (Matovu et al., 2022; Techera, 2019). The benefits of this approach of localizing governance indicators, especially in areas with MPAs include increased potential ecological and socio-economic outcomes through enhancement of locally feasible collaborative governance strategies, local development (livelihood enhancement), and inclusive management (including voluntary monitoring actions) especially in No-Take Zones (NTZs) (Bennett and Dearden; 2014). This could further help in co-developing locally feasible and effective frameworks and indices for assessing the progress of integrated Area-Based management practices and initiatives using different tools (Adewumi et al., 2022; Deasy, 2023; Matovu et al., 2024c; Olsen, 2003). For instance, in the Pacific Coral Triangle, this approach has been used to develop First Order (Local Level) outcomes including the development of local action plans to identify enabling conditions for voluntary and collaborative governance; which have been scaled up to Second (National), Third (Regional) and Four Order (Global) outcomes to provide evidence-base for sustainable governance (Olsen, 2003).

Attainment of such coherent outcomes further requires the use of specific and feasible tools to measure such indicators (WOA II, 2021). Recently, several tools and methods have been advanced to help in highlighting or streamlining assessment criteria depending on a targeted sustainability domain (High Seas Alliance, 2023; Marlow et al., 2023; Wright et al., 2016). To systematically develop tools, the primary focus could be on using tested methods (especially those that analyze or indicate key threat drivers; notably climate change, pollution, and biodiversity loss) in the ABNJ that have been utilized with success in the EEZ (Ocean Panel, 2020; World Ocean Review, 2024). In the domain of climate change mitigation and adaptation, methods and tools that comprehensively help reduce greenhouse gas emissions, climate risk financing, coastal communities' risk insurance, and contribute to global efforts to reach the goals of the Paris Agreement on climate change could be key (Hoegh-Guldberg and Northrop, 2023; IOC-UNESCO, 2022). These could include, climate change modeling using different tools and methods such as the stochastic climate models, and Empirical Statistical Downscaling Models (ESDMs) among others to identify SST anomalies and thermocline variability in the high seas and help in the development of Shared Socioeconomic Pathways (SSP)–Representative Concentration Pathway (RCP) frameworks to identify risk, and how it affects biodiversity or human activities in the High Seas (Frankignoul and Hasselmann, 1977; O'Neill et al. 2020; Winkler et al., 2011).

For species such as migratory stocks and fishing activities by vessels, technologies such as satellites and drones could be used to monitor activities and fish migrations and these could be factored into local, regional, and global fish assessment reports (Christiani et al., 2019; FAO, 2022). Advances in research have also unlocked methods and criteria to understand marine pollution of (all sources/types) such as the use of molecular biomarkers, genomics, and satellite remote sensing and novel non-invasive methods such as the advanced DNA (Deoxyribonucleic Acid) sequencing method (based on the extraction of bacterial DNA found in the fish skin mucus) (Bourlat et al., 2013; Clark, 1993; Montenegro et al., 2020; Sarkar et al., 2006). These methods could further be aligned to established marine pollution control guidelines (especially from ships); for instance, established under the MARPOL Protocols mainly MARPOL Annex VI and MARPOL 73/78 (Čampara et al., 2018; Julian, 2000; UNCTAD, 2023).

To further align the HST elements with changing spatial-temporal dynamics, a key element in the proposed implementation pathway is the conducting of continuous monitoring and evaluation in different ABNJ. A review of several studies and critiques on the UNCLOS relates to the fact that some of the UNCLOS provisions (such as Article 192 and Part XII of UNCLOS) are either outdated or outpaced by the changes in time and complexity of threat drivers and actions across ocean zones by strong and powerful coastal states (Wright et al., 2016). This is evident in several maritime legal cases; more so by SIDS related to MSR and protection of biodiversity in the Area such as in the South China Sea Arbitration case, sinking SIDS cases to the United Nations Security Council (UNSC) and the injustices meted out to the Bahamas in the face of climate change (Bruner, 2019; Harrison, 2019; Manes, 2022; Matovu and Raimy, 2022). Thus, to bridge these gaps, continuous evaluations on the state of resources and activities in the ABNJ by the established committees and institutions could help in either refining some guidelines or help the BBNJ COP in addressing emerging issues that could be detrimental to the implementation of the key governance mechanisms embedded in the HST. To reinforce collaborative governance, such monitoring, evaluations, and assessments can be extended to the EEZs since ocean resources cut across the legally established maritime boundaries.

4. Conclusions and Key Takeaways

This study critically presents the case for advancing the HST as a panacea to bridging historical governance gaps in the ABNJ in particular, and the ocean in general that have hampered the attainment of sustainable ocean development pillars as targets as reported in several studies (IOC-UNESCO, 2022; UNEP-FI, 2022; Wright et al., 2016). From literature, there is growing evidence that indeed, ocean sustainability and governance have been dotted with dysfunctional and unjust gov-

ernance mechanisms and these have affected collaborative governance pathways including avenues for trust building, transparency, fair discussions, negotiations, and decision-making; all of which have affected ocean resources and equity (Allison, 2001; Čampara et al., 2018; Hoegh-Gulberg and Northrop, 2023; Julian, 2000; WOA II, 2021). From this perspective, it is critical to acknowledge that the HST has inherited daunting ocean governance and complex problems that will collaboratively necessitate continuous collaborative efforts (including political will and commitment) to succeed. These further need to encompass the governance needs in the EEZs; to minimize spillover externalities that could be pushed to high seas. Indeed, based on the baseline progress indicators since its promulgation in 2023, the future for global ocean governance is bright (Croft et al., 2024; Deasy, 2023). In addition, since the HST focuses on merging the Global South/global north coastal state and actors in fair discussions and implementation pathways related to governance in the ABNJ (notably through clear institutional mechanisms with specific key indicators and elements) (High Seas Alliance, 2023), the treaty presents a novel enabling start point to bridge human-ecological systems and actions and thus ocean governance (Swilling et al., 2020). To effectively boost transdisciplinary inclusion and development of inclusive bottom-up governance approaches, the developed pathway could further be a positive reinforcing mechanism; especially in historically marginalized or vulnerable ABNJ. To create strong resilient or actionable practices that might compromise future governance targets, the HST should not merely emphasize Area-based governance. Rather, positive and enabling causal governance mechanisms that progressively extend to the EEZs of coastal states should be thought about (and these should be based on inclusiveness and participatory co-designing of preferred governance scenarios). To build on this momentum, since this study used a generalized scope (Global South), future studies could use specific case study shreds of evidence in highly vulnerable ABNJ to increase evidence for collaborative partnerships/engagements in ocean governance. The use of evidence-based narratives from coastal communities, ocean users, or specific coastal states can help generate novel perspectives on how sustainable high-sea governance can be achieved and supplement provisions embedded under the HST.

Acknowledgments

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