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Implications for Coastal Livelihoods of the Blue Economy Agenda in Tanzania

Ronald Boniphace Ndesanjo [*]

Abstract

Tanzania is positioning itself to harness the potential of the Blue Economy (BE) for socio-economic development. However, the extent to which marine ecosystems and the livelihoods of small-scale fishing communities will be affected remains unclear. This article examines how the conservation and management of marine environments in Tanzania, within the context of the BE, align with the sustenance of coastal communities' livelihoods. The data were collected through in-depth interviews with fishers and seaweed farmers in Bagamoyo District, as well as in Unguja and Pemba. The findings reveal that, unlike their counterparts in Zanzibar, fisheries stakeholders in Bagamoyo are less aware of the BE agenda, and feel less involved in its implementation. Additionally, the findings show that coastal communities are generally actively engaged in protecting marine environments. The study also highlights the increasing involvement of the private sector in BE sectors such as coastal tourism, fish-farming, mining, and fish processing.

Keywords: *Blue Economy, coastal livelihoods, marine conservation, small-scale fisheries, Tanzania*

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1. Introduction and Background

Political decisions have prioritised the development of marine resources through the framework known as the Blue Economy (BE). The BE is defined as a sustainable ocean economy that balances economic activities with the long-term capacity of oceans to remain resilient, healthy, and capable of supporting these activities. It encompasses various economic sectors and policies aimed at ensuring the sustainable use of marine (blue) resources (Patil et al., 2016; WB & UNDESA, 2017). These resources include fisheries and aquaculture, marine-based renewable energy, coastal and marine tourism, deep-sea minerals, marine biotechnology, desalination for freshwater generation, and waste disposal management (UNEP et al., 2012; WB & UNDESA, 2017).

The BE agenda originated during the United Nations Conference on Sustainable Development (UNCSD), held in Rio de Janeiro from June 20-22, 2012 (Rio+20). The conference emphasised that poverty remains the greatest global challenge, and advocated for a 'green economy' approach. However, coastal and island nations

[*] Institute of Development Studies, University of Dar es Salaam: ndesanjo@udsm.ac.tz
ORCID: 0000-0001-5844-6943

contested this framework, arguing that it lacked relevance for economies heavily reliant on ocean resources. In response, the BE agenda was introduced to address their unique needs and priorities (UNCSD, 2012).

The core principle of BE initiatives is to promote social inclusivity, enhance wellbeing, drive economic growth, and improve livelihoods: all while ensuring the environmental sustainability of ocean and coastal ecosystems. This aligns closely with the Sustainable Development Goal (SDG) 14, which focuses on conserving and sustainably using oceans, seas, and marine resources to support sustainable development. Therefore, the BE agenda supports the creation of a low-carbon, resource-efficient, and socially inclusive society (UNCSD, 2012; UNEP, 2015; UNEP et al., 2012; WB & UNDESA, 2017). Since the initiative has been conceived in the context of Coastal and Small Island Developing States (SIDS) and the aspirations of developing countries' socio-economic development, the *equity principle* is highly emphasised for developing countries to attain several benefits.

There are indications of very strong geopolitical and economic motives behind the BE agenda, especially on the African continent. For example, the European Union (EU) has already entered partnerships with Morocco, Mauritius, Senegal, and Seychelles to reform the countries' fisheries. Similarly, the EU's target is to form coalitions on the BE sub-sectors with at least 50 African countries. The BE in Africa involves a diverse range of actors working together to sustainably harness ocean resources. For instance, the African Union (AU) and regional economic communities (e.g., SADC, ECOWAS) foster cooperation on BE issues; while international organisations—including the UN, World Bank, and Global Environment Facility (GEF)—provide funding and technical support.

Tanzania is taking steps to enhance the business and investment climate in the BE sector through various measures, including facilitating research, leveraging science and technology, developing infrastructure, engaging local communities, and strengthening regional and international cooperation (URT, 2021). The National Blue Economy Policy aims to promote strategic investments and sustainable use of BE resources (JMT, 2024). For example, the government of Tanzania is constructing the country's first fishing port in Kilwa Masoko, Lindi Region; and the project is currently 81% complete (*The Citizen*, May 07, 2025; *Daily News*, March 19, 2025). Also, Tanzania's 1,424km coastline and 223,000km² exclusive economic zone (EEZ) provide significant opportunities for BE development. Agriculture and fisheries are the primary sources of employment for coastal communities, contributing nearly half of the labour force, and a quarter of the country's GDP. Fisheries alone employ approximately 4m people (URT, 2016a). However, the overexploitation of marine resources, driven by population growth and international trade pressures, poses a growing challenge to the BE economy.

In Zanzibar, the BE sector contributes about 29% of the GDP, and employs one-third of the population (RGoZ, 2020a). Zanzibar's Vision 2050 identifies the BE as a key

driver of economic development, alongside subsistence farming and tourism (RGoZ, 2020b). Zanzibar's BE policy prioritises five areas: fisheries and aquaculture, maritime trade and infrastructure, energy, tourism, and marine governance. These sub-sectors are expected to reduce poverty, create jobs, and improve food and energy security. Fisheries directly employ 6% of Zanzibar's population; with 20% being dependent on the fisheries value chain (RGoZ, 2020a). Aquaculture, particularly seaweed farming, accounts for 21% of exports; and employs 12,903 farmers, 80% of whom are women. To maximise this potential, the government plans to commercialise deep-sea fishing and aquaculture; while supporting artisanal fishing through capacity building, technological advancements, and improved access to inputs and markets (RGoZ, 2020a).

2. Research Problem and Objectives

With the increasing interest and exploitation of Tanzania's marine resources, the livelihoods of artisanal fishers and seaweed farmers who rely heavily on these environments are under growing threat. Programs aimed at managing and developing marine resources have, in some cases, displaced artisanal fishers, undermining their traditional ways of living (Kitunda, 2023). Many of these communities, including seaweed farmers, lack alternative sources of income, leaving them highly vulnerable (Ali et al., 2023a). In addition, climate-related impacts such as rising temperatures and unpredictable rainfall have led to declining fish catches, further intensifying livelihood risks (Kapapa et al., 2022). Hence, Tanzania must address these challenges to reposition itself and harness the potentials of the BE, particularly in alleviating poverty and improving the lives of vulnerable coastal communities, as Zanzibar has begun to demonstrate. However, it remains unclear whether the current legal and institutional frameworks adequately protect livelihoods dependent on fisheries and aquaculture, as well as the coastal marine environment, within the context of Tanzania's BE agenda.

This study aimed to explore how the conservation and management of marine environments align with sustainable livelihoods and poverty alleviation in coastal communities. Specifically, it addressed the following research questions:

1. How are social groups—particularly women, youth, and marginalised or underrepresented populations—included and actively participating in current BE initiatives and opportunities?
2. What are the capacity-building needs to promote community-based marine conservation and management?
3. To what extent are local communities involved in conserving and managing marine resources in their areas?
4. What is the state of private sector involvement in BE sub-sectors, such as fisheries, and its role in creating livelihood opportunities for local communities?

The study was conducted in fishing communities in Bagamoyo District (Mainland Tanzania) and in Pemba and Unguja (Zanzibar). It included in-depth interviews

with artisanal fishers in Bagamoyo and Unguja, as well as seaweed farmers (primarily women) in Pemba. Consultations were also held with key policymakers, practitioners, researchers, NGOs, and civil society organisations (CSOs) in Bagamoyo, Dar es Salaam, and Unguja.

3. Literature Review

The BE in Africa offers significant opportunities for socio-economic development and ecological conservation. While BE initiatives can drive economic growth, create jobs, and enhance food security (Karani et al., 2022), there are concerns about prioritising economic gains over environmental sustainability, and the exclusion of local communities (Okafor-Yarwood et al., 2020). Achieving successful BE interventions requires balancing ecological, economic, socio-cultural, and institutional objectives (ibid.). The African Union has recognised the BE as vital for the continent's future, integrating it into Agenda 2063, and adopting the 2050 Africa Integrated Maritime Strategy (Spamer, 2015). Key sectors for BE development include coastal and marine tourism, climate resilience, and ecosystem services (Karani & Failler, 2020). Sustainable BE growth in Africa depends on collaborative frameworks that combine top-down and bottom-up approaches to ensure environmental sustainability, social inclusion, and economic benefits (Okafor-Yarwood et al., 2020).

Despite its potential globally, the BE raises concerns about inclusivity and equity, particularly for marginalised groups like small-scale fishers (SSF) (Cohen et al., 2019). Women and youth face barriers such as limited education, lack of access to credit, and patriarchal norms (Sikhunyana & Mishi, 2023). Many BE initiatives overlook diversity and social equity, often leading to the appropriation of ocean resources by large corporations (Issifu et al., 2023). When high-level decisions prioritise national or international economic goals without considering local contexts, local communities risk being excluded from accessing resources (Cavallo et al., 2023). To promote inclusiveness, governments and industries must recognise non-economic benefits, support initiatives that meet local needs, and collaborate with local stakeholders (Cavallo et al., 2023). Similarly, research institutions and funders should adopt assessment methods that integrate qualitative data and traditional knowledge to ensure a more equitable and inclusive BE (ibid.).

Community-based marine conservation in Africa faces challenges such as capacity gaps and environmental pressures. Coastal degradation—driven by population growth, tourism, and resource exploitation—threatens marine ecosystems (Odada, 2010). Addressing these issues requires capacity-building efforts focused on protected area management, community engagement, leadership, and e-learning (O'Connell et al., 2017). Successful conservation initiatives depend on empowering communities, with women's involvement and transparent governance structures playing key roles in improving management effectiveness (Fidler et al., 2024). However, the gap between rhetoric and practice is evident, as seen in Tanzania's Menai Bay Conservation Area (Shinn, 2015). Sustainable coastal and marine

resource management in Africa urgently requires human resource development, public awareness campaigns, policy workshops, and integrated coastal zone management programs tailored to local contexts (Odada, 2010).

The BE has emerged as a key framework for harnessing marine and coastal resources to drive sustainable economic growth in Tanzania. While marine ecosystems—such as fisheries, mangroves, and coastal habitats—generate significant socioeconomic value and contribute to national GDP, there are substantial gaps between policy intent and implementation; particularly in sustainable fisheries, tourism, and maritime transport (Thoya et al., 2022; Maskaeva et al., 2024). Without targeted interventions, benefits from these sectors may bypass vulnerable groups, especially artisanal fishers, whose livelihoods are increasingly threatened by ecosystem degradation, rapid population growth, climate change, and uncontrolled tourism (Zakayo & Mbilinyi, 2023; Mussa et al., 2019). For example, in Zanzibar, seaweed farming—a vital source of household income—remains precarious due to fluctuating market prices and environmental stressors, underscoring the need for policies that stabilise and diversify income streams (Pike et al., 2024). Similarly, while mariculture offers opportunities to reduce pressure on wild fisheries and boost economic returns, its growth is constrained by regulatory gaps and weak infrastructure (Lukwambe & Bwathondi, 2024). Addressing these challenges requires coherent and inclusive strategies that ensure equitable participation of artisanal fishers and other coastal communities in the BE, while balancing economic development with environmental protection (Ali et al., 2023b).

Moreover, climate change poses profound challenges to Tanzania's BE as it threatens key sectors such as fisheries, aquaculture, and coastal tourism. Rising sea surface temperatures, erratic rainfall, and shifting wind patterns are disrupting fish migration and breeding cycles, thereby leading to declines in small pelagic fish catches, and consequently undermining the food security and incomes of artisanal fishing communities (Kapapa et al., 2022). Similar vulnerabilities are observed among seaweed farmers, who face disease outbreaks and declining productivity driven by climate-induced environmental pressures. Although farmers employ coping mechanisms, these are largely insufficient for long-term adaptation; highlighting the need for targeted policies that promote equitable and climate-resilient mariculture (Matoju et al., 2022). Sea level rise and increased coastal flooding further compound risks by threatening rice cultivation, seaweed farming, and fishing livelihoods, particularly among impoverished households with limited adaptive capacity. While localised measures, such as seawalls, provide some relief, broader and integrated strategies—including nature-based solutions and livelihood diversification—are urgently needed to enhance resilience (Makame & Mwevura, 2019).

Research highlights both the urgency and complexity of integrating climate change adaptation into BE strategies. A systematic review of small-scale fishing communities identifies three dominant frameworks—local knowledge,

vulnerability, and resilience understanding—of fisher responses to climate threats (de Carvalho et al., 2023). However, barriers—such as weak data systems, poor communication, and gender inequities—hinder effective adaptation; thereby underscoring the need for inclusive and evidence-based policymaking. Regionally, scaling up eco-tourism, blue carbon projects—such as mangrove and seagrass restoration and coastal protection initiatives—could generate significant economic benefits, while contributing to national climate commitments (Karani & Failler, 2020). Spatial modelling reveals that only limited 'bright spots' of climate resilience remain along Tanzania's coast, emphasising that without global CO_2 emissions reductions, even the most well-planned national efforts may falter. Prioritising these resilient zones in marine spatial planning could strengthen adaptive capacity, foster equitable employment opportunities, and safeguard the ecological foundations of Tanzania's BE (Queirós et al., 2024).

Recent studies highlight the complex and often adverse impacts of BE initiatives on coastal communities in Tanzania. Mtui (2024) shows that while marine protected areas (MPAs) are intended to conserve ecosystems and stimulate sustainable economic growth, they frequently restrict artisanal fishers' access to traditional fishing grounds, undermine household incomes, and exacerbate social and economic inequities. These effects are compounded by limited community participation in decision-making and weak/absent compensation mechanisms, with benefits such as tourism revenues and employment being largely captured by external investors and elites rather than local populations. Similarly, Mwanyoka et al. (2025) find that artisanal fishers and seaweed farmers in Zanzibar face livelihood insecurities due to unstable incomes, environmental stressors, limited market access, and exclusion from governance processes. Mwaipopo and Ndaluka (2023) further reveal that while coastal communities in Bagamoyo display adaptability by shifting livelihoods in response to environmental and policy changes, top-down approaches often disregard local knowledge and cultural connections to marine resources, with gendered disparities shaping welfare outcomes, and women's contributions being frequently overlooked. Collectively, these studies underscore that without inclusive governance, equitable benefit-sharing, and targeted support for vulnerable groups, BE policies risk reinforcing inequalities and marginalising small-scale fishers and women, rather than improving the overall coastal welfare.

It is acknowledged that the BE presents a significant potential for sustainable socio-economic development and ecological conservation in Tanzania; with sectors such as fisheries, tourism, and mariculture playing central roles in livelihoods and national growth. However, tensions persist between economic expansion and environmental sustainability, with many initiatives failing to equitably involve local communities. Vulnerable groups—including small-scale fishers, women, and youth—often face exclusion from decision-making and benefit-sharing, leaving them exposed to livelihood insecurity driven by environmental degradation, climate change, and unregulated tourism. While policies emphasise inclusivity, gaps remain between policy intent and implementation; and poorly managed

interventions have sometimes deepened inequalities rather than alleviating them. Key research gaps include limited understanding of why policies fail to translate into improved outcomes for communities, insufficient exploration of gendered and intergenerational inequities, a lack of scalable strategies for building climate-resilient livelihoods, and inadequate attention to governance structures and power dynamics. Addressing these gaps through participatory, locally informed approaches is critical to ensuring that BE initiatives truly enhance coastal livelihoods and welfare.

4. Methodology

4.1 Research Design and Methods

This study adopted a qualitative research design. The research team consisted of the author and two colleagues from the University of Dar es Salaam (UDSM) and the State University of Zanzibar (SUZA). The data collection methods included in-depth interviews and observations of fishers' activities in their work environments. Observations were documented in notebooks, while interviews were recorded through audio and photographs.

A total of 20 in-depth interviews were conducted in Bagamoyo District, involving 12 fishers, 1 fish trader, 6 fisheries officers, and 1 retired fisheries officer. In Zanzibar, 51 in-depth interviews were conducted with fishers and seaweed farmers: 32 in Unguja (22 men, and 10 women); and 19 in Pemba (12 men, and 7 women). In Unguja, the team visited six sites: Malindi (a landing site), Shamba-Paje, Unguja Ukuu, Tumbatu, Mkokotoni, and Fungurefu. In Pemba, 10 villages were covered: Kuukuu, Chokocho, Mwambe, Makoongwe, Mkia wa Ng'ombe, Kojani, Michiweni, Mjini Kiuyu, Vitongoji, and Tundauwa. The team also captured 59 photos during fieldwork.

Data collection was carried out in two phases. The first phase took place in Bagamoyo (Mainland Tanzania) in August and September, 2022; while the second phase was conducted in Unguja and Pemba (Zanzibar) between April and June, 2023. The author led data collection in Bagamoyo, and provided overall supervision for the Zanzibar fieldwork, which was carried out by the project's Co-Principal Investigator (Co-PI) from SUZA, assisted by a research assistant from the Institute of Development Studies of the UDSM. Data processing and initial analysis were conducted between August and December, 2023.

4.2 Study Areas

Bagamoyo District is one of the six districts in Tanzania's Coastal Region (Pwani). It is located between 37° and 39° East longitude, and 6° and 7° South latitude. The district headquarters, Bagamoyo Town, lies 65km north of Dar es Salaam. Bagamoyo borders Morogoro District to the west; Mvomero, Kilindi, and Handeni districts to the north; Pangani District to the northeast; Kinondoni District to the southeast; Kibaha District to the south; and the Indian Ocean to the east. Administratively, the district comprises 11 wards: Makurunge, Magomeni, Kisutu,

Nianjema, Dunda, Fukayosi, Yombo, Kiromo, Zinga, Kerege, and Mapinga (URT, 2016b). According to the 2022 National Census, Bagamoyo had a population of 205,478 people (101,827 males, and 103,561 females) (URT, 2022).

The district has a tropical, humid climate; with average temperatures ranging from 13°C to 30°C. The annual rainfall varies between 800mm and 1,200mm; with a short rainy season from September to November, and a long rainy season from February to June. The Wami and Ruvu rivers are the vital water sources for drinking, livestock, and irrigation (URT, 2016b). Economically, Bagamoyo relies on both formal and informal sectors. Over 90% of the coastal residents depend on fishing as their primary source of income. The district's 100km coastline features a broad continental shelf, with ecosystems such as sandy/muddy tidal flats, mangroves, coral reefs, rocky intertidal platforms, seagrass beds, lagoons, and estuaries: all of which support diverse fishery resources. Marine fishing remains predominantly artisanal. Approximately 80% of the population engages in subsistence farming; cultivating crops like maize, rice, millet, cassava, sweet potatoes, legumes, sesame, cashew nuts, pineapples, oranges, mangoes, and sunflowers (URT, 2016b).

Unguja and Pemba, along with 53 smaller islets, form Zanzibar; a semi-autonomous part of Tanzania. The two islands are located at 6.1357° S, 39.3621° E; and 5.0319° S, 39.7756° E, respectively. Zanzibar covers a total area of 2,654km², with Unguja spanning 1,666km² and Pemba covering 988km². The islands are located about 40km off the coast of Mainland Tanzania. Unguja has a population of 1,346,332, while Pemba has 543,441 people; with women making up 51.6% of the total population (URT, 2022a).

Ecologically, Unguja and Pemba are marine biodiversity hotspots, hosting 39 ecologically significant marine areas (EBSAs) identified by the Convention on Biological Diversity in the Western Indian Ocean (WIO) region (RGoZ, 2023). Key economic sectors include tourism, fishing, trade, transport, coastal mining, agriculture (including mariculture), and construction. The islands have a warm, humid climate year-round, except during the strong south monsoon from June to August. The average maximum temperatures range from 30°C to 33°C, while the minimum temperatures range from 21°C to 24°C. Wind direction, strength, temperature, and rainfall are heavily influenced by the Indian Ocean monsoons (RGoZ, 2023).

The livelihoods of most residents in Unguja and Pemba depend on coastal and marine resources. The islands are home to African, Arab, and South Asian communities; reflecting their rich history of trade and cultural exchange with the Middle East, the Indian subcontinent, and Asia (RGoZ, 2023). The ocean profoundly influences local culture, including religious and spiritual practices; which in turn play a vital role in regulating resource use, and preventing behaviours that could harm marine ecosystems (RGoZ, 2023).

5. Significance of the Sea to Local Community Livelihoods and Welfare

The significance of the sea to local livelihoods was explored through respondents' perceptions, revealing three key aspects: (a) the sea as a source of fisheries-based income, including casual labourers (*papasi*) who assist with boat repairs and offloading fish; (b) as a direct source of protein, providing essential nutrition; and (c) as a hub for recreation, education, and socio-cultural practices, which are deeply embedded in the life of the community. This highlights the sea's multifaceted role in sustaining and enriching coastal livelihoods. Communities heavily depend on the sea for food, building materials like coral limestone and mangrove poles (also used medicinally), and employment in activities such as trade, salt extraction, and small businesses, e.g., fish vending or selling goods to fishers.

Although still in its early stages, aquaculture—particularly sea cucumber farming—is becoming part of livelihood strategies in both Bagamoyo and Zanzibar (Unguja Island). Respondents also mentioned oil extraction—with rumours of oil exploration in the Bagamoyo area—as an emerging economic activity tied to the sea. This suggests the growing role of extractive industries, such as oil extraction, within the broader BE initiatives.

The involvement of women in sea-based livelihoods is significant. Seaweed farming is predominantly led by women in both Bagamoyo (Mlingotini village in Dunda ward) and Zanzibar (particularly Pemba). Additionally, women play a vital role in the fishing value- and supply-chains as fish vendors, serving as a crucial link between fishers (who are mostly men) and consumers. While women dominate these areas, a small number of men are also involved in sea cucumber farming and fish trading, primarily as auctioneers.

The sea also serves as a source of recreation; shaping people's connection to the ocean. For instance, individuals travel from various parts of the islands to enjoy the sea for leisure. Beyond recreation, the sea plays a key role in education, particularly in marine sciences and weather and climate studies. Additionally, cultural and social practices—such as rituals and the creation of decorative ornaments from coral skeletons—further define the deep relationship between coastal communities and the sea. Alluding to the significance of the sea for cultural practices, one respondent noted:

> *Sometimes when you have personal problems, you are told: Sir, please bring some seawater. Then someone takes the water and does something with it. So just like that, with faith, your problems go away.* ***(Male seaweed farmer, Mlingotini, Bagamoyo, August 2022).***

However, respondents also highlighted challenges they face in relying on the sea for their livelihoods. For example, fishers in Unguja and Pemba reported that low fish prices discourage them from fishing; however, the lack of alternative income sources forces them to endure these difficult conditions. Seaweed farmers also face challenges, such as the slow growth rate of seaweed—which requires a long time

from planting to harvest—limiting productivity. Additionally, interference from fishers—such as the use of illegal fishing nets—further hampers seaweed cultivation. One respondent noted thus:

> *If you cultivate seaweed, you must wait for a long time. […] seaweed takes a long time until it is harvested. What else does one depend on to be able to eat? I mean, how is one going to live during the waiting period? Also, people who fish using illegal nets (*kokoro*) are the ones who destroy the growth of seaweed.* ***(Female fish processor and vendor, Mlingotini, Bagamoyo, August 2022).***

A similar sentiment was shared by another respondent in Pemba who lamented:

> *Even these fishers who use fish nets destroy our seaweed a lot. When they lower their nets, they destroy the seaweed. At the end of the day, we don't see any seaweed. So, our seaweed is destroyed a lot.* ***(Female seaweed farmer, Pemba, June 2023).***

Respondents' reports about the hardships of relying on sea fish low prices, lack of alternative income, slow seaweed growth and diseases, and damages to seaweed farms by fishers using illegal gear: all these are supported by empirical studies in Zanzibar and Tanzania that document weak market systems, heavy household dependence on marine income, seaweed diseases, slow growth rate of seaweed, and recurrent conflicts over gear and space that damage aquaculture installations (Ali et al., 2023b; Ali et al., 2024; Matoju et al., 2022; Burra & Usha Devi, 2022; Gustavsson et al., 2014). The next section shifts attention to strategies that local communities devise to address these livelihood challenges.

6. Relation to the Sea and Social Sustainability

As mentioned in the previous section, respondents expressed concerns that the income they derive from the sea is insufficient to meet their livelihood needs. Before asking respondents to share their strategies for addressing these challenges, an attempt was made to assess the extent of this issue. The key question was whether income from the sea was enough for subsistence; and if not, what is lacking, when, and why.

It was generally reported that the income is somewhat sufficient, but it was also noted that people no longer earn as much from the sea as they once did. Several factors were identified as contributing to this decline. First, there has been an increase in the number of people relying on sea resources, leading to greater competition for these resources. Second, unsustainable fishing practices, particularly the use of illegal fishing gear, have depleted fish stocks and damaged aquatic ecosystems, including important fish breeding grounds. Lastly, the seasonality of fishing activities limits the availability of fish to certain times of the year, particularly during the northeast monsoon season (*Kaskazi*) from November to March, when strong winds reduce fish catches and, in turn, income from fishing.

In response to the challenges facing fisheries-based livelihoods, local communities have turned to livelihood diversification as a key strategy to improve their situation.

Engagement in small businesses—such as restaurants selling food, soft and hard drinks, kiosks, and small-scale farming-particularly growing vegetables and cassava—were identified as the primary alternatives. Additional income-generating activities include making and repairing fishing nets, carpentry, masonry, and livestock farming. Notably, fish-farming—especially sea cucumber farming—has emerged as a promising livelihood alternative for some community members who were previously solely reliant on fishing.

Respondents also provided several recommendations to improve their welfare. One suggestion was to provide education and training on sustainable fisheries resource use and protection. They recommended that this should be paired with advancements in fishing technologies and quality assurance for fisheries products to help attract reliable markets. Additionally, respondents expressed a desire for support in acquiring skills and access to financing—e.g., getting low-interest loans —to start and sustain alternative income-generating projects. These projects could range from small businesses to market gardening, and livestock farming.

7. Sustainability of the Sea in a Changing Environment

This section focuses on respondents' experiences and perspectives regarding the sustainability of the sea. Specifically, the study aimed to highlight four key areas: (a) respondents' perceptions of the sea in relation to environmental (including climate) change, (b) factors driving these changes, (c) expected future trends for the sea, and (d) actions that can be taken to ensure its sustainability.

Respondents primarily expressed concerns about environmental degradation and climate change impacts on the sea, particularly the depletion of mangrove ecosystems, and changes in weather patterns. The degradation of mangroves was seen as a major factor contributing to the decline in fish catches and diversity, as mangroves serve as important breeding grounds for fish. This issue is further exacerbated by unsustainable fishing practices, such as the use of dynamite, poison, and illegal fishing nets (*kokoro*).

> *The challenge now is illegal fishing by unauthorised nets (*kokoro*) and dynamite, but these have been controlled to some extent. For example, last year, the Bagamoyo District Commissioner burned illegal nets and led an operation to arrest fishermen involved in dynamite fishing. As a matter of fact, these fishermen you see are part of our good guards because we always tell them to inform us whenever they hear dynamite going off anywhere.* ***(Secretary, Seaweed Farmers Group, Mlingotini, Bagamoyo, August 2022).***

Similarly, a respondent in Unguja made the same observation, implying that the problem exists on both sides in the United Republic:

> *You will find people using mosquito nets, which we normally use at home, for fishing. These catch very small fish that end up being thrown away. This means environmental destruction. So, what we want is for the government people or environmental custodians to come and see for themselves. Do you think that if you kill a small fish like that, you will be able to get a big one?* ***(Fisherman, Unguja, April 2023).***

As a result of these changes, certain shark species and other marine life have reportedly become rarer. Other fish species that have also become less abundant include kingfish (*nguru*), longfin yellowtail (*kolekole*), blubberlip snapper (*changu*), and sea catfish (*hongwe*). Additionally, the sustainability of the sea is further threatened by the destruction of marine ecosystems caused by human activities. For instance, during fieldwork in Kaole-Bagamoyo, we observed that fishers were using mangrove poles to build their houses (temporary fishing camps), despite existing laws prohibiting any form of mangrove harvesting.

The increase in temperatures was frequently mentioned as a key aspect of weather and climate change. Other changes reported included rising sea levels, which are linked to increased coastal erosion. Beach erosion was notably severe during the northeast monsoon winds (*Kaskazi*) season, likely due to stronger and more intense sea waves. Another aspect of climate variability highlighted was extreme temperature fluctuations; with very low temperatures during the cold season, and very high temperatures during the hot season. Thus, climate variability was reported as disruptive to fishing activities. For example, in Zanzibar (both Unguja and Pemba), it was noted that fishermen often moved to Mainland Tanzania—particularly to Bagamoyo, Lindi, and Mtwara regions—in response to these changes. When asked if they have experienced any events associated with climate change, one respondent answered:

> *Yes, there have been noticeable changes due to climate change. I recall a period of heavy rainfall, likely between 2018 and 2019, which caused significant sand deposition in certain areas of the ocean. These areas once had rocky formations that served as habitats for octopuses. Additionally, some of the fishing spots we relied on have now been completely covered by sand.* ***(Chairman, Fishing Committee, Kikuu-Kinyasini, Unguja, April 2023).***

The problem of sea pollution, particularly from the dumping of garbage and other waste materials, was also identified as a serious environmental concern. Additionally, it was noted that environmental degradation in the sea, especially in Bagamoyo, has a long history. Many of the old buildings in Bagamoyo town, for example, were constructed using materials sourced from the sea, such as mangrove poles and coral reefs, which have significantly depleted these resources. A remark made during interviews on the pollution of the marine environment, reflected this ongoing issue:

> *The sea is sometimes misused. For example, our brothers, especially in developed countries, use the sea as a place to dump chemicals. Also, you will find they use it as a place for cooling chemicals.* ***(Secretary, seaweed farmers group, Mlingotini, Bagamoyo, August 2022).***

During a stakeholders' consultation workshop in Bagamoyo in December 2022—which brought together fishers, civil servants from the district fisheries department, and civil society organisations working on fisheries—concerns were raised about the future if the current challenges are not addressed. Two main outcomes were highlighted: the further disappearance of fish species, and the flooding of people's

land due to rising sea levels. In response to these concerns, the study gathered recommendations on what should be done to ensure the sustainability of the sea. Four key suggestions were made.

1. *Raising awareness and education:*
It was recommended that the government and other stakeholders strengthen efforts to raise awareness, and provide education on marine environment protection. It was suggested that this education be provided in schools, especially targeting young children, so that they grow up understanding the importance of conserving the marine environment.

2. *Strengthening marine environment protection:*
Effective law enforcement and local community participation were emphasised as essential for safeguarding the sea and its environment. It was suggested that the Tanzania Forest Services Agency (TFS)—which oversees national forests, including mangroves—should invest more in involving local communities in mangrove restoration and protection. This could include conducting regular joint patrols. For example, the Bagamoyo District fisheries officer mentioned that they are working with the environment department, and other organisations like TFS and the Tanzania Social Action Fund (TASAF), to restore 3,000 mangrove trees. Similar efforts were underway in Tumbatu Village (Unguja), although mangrove destruction remains a significant issue there. In addition, promoting alternative clean energy sources, such as gas and charcoal, instead of wood for fish processing, was suggested. The new fish market in Bagamoyo, which is now fully operational, has seen fish processors shift to using liquefied petroleum gas (LPG). However, men have been more resistant to adopting gas and charcoal for processing. In Micheweni village (Unguja), strategies are also in place to protect beaches from sea erosion.

3. *Strengthening beach management units (BMUs):*
Financial support for beach management units (BMUs) was highlighted as a critical step. BMUs are the formal mechanism for involving local communities in marine conservation. One area where BMUs can play a key role is in harmonising fishing and seaweed farming. In Mlingotini, Bagamoyo, it was reported that male fishers often encroach on seaweed farms (primarily managed by women) with their vessels and gear, which damages the farms. It was urged that conflict resolution between the two groups be included in intervention efforts.

4. *Promoting sustainable fishing practices:*
Respondents stressed the importance of promoting sustainable fishing methods alongside marine environment protection. This includes the need for increased regular patrols by the government to combat illegal fishing, as villagers alone cannot contain these practices. Additionally, there was a call for investment in fish-drying infrastructure, particularly for sardines and seaweed. Currently, these products are sun-dried on the bare ground, which reduces their quality due to contamination. In Pemba, for instance, women seaweed farmers expressed frustration over the lack of proper drying facilities.

8. The Blue Economy Initiative and Local Community Inclusion

The BE agenda is currently the primary framework for the extraction and management of marine resources in the United Republic of Tanzania, particularly in Zanzibar where it was formally integrated into governance through the establishment of the Ministry of Blue Economy and Fisheries in 2020. This study aimed to explore several aspects related to the BE, including: (a) local communities' perceptions of the BE, and any existing initiatives under it; (b) the impact of these initiatives on local livelihoods; (c) potential strategies for better inclusion of local communities in BE activities; and (d) the capacity needs for these communities to benefit from it.

When asked about their knowledge of the BE, the respondents generally described it as encompassing all ocean-related activities, focusing on the conservation and sustainable use of ocean resources to improve people's lives and expand opportunities. One respondent shared the following view on the BE:

> *All activities related to the sea, whether it is fishing, whether it is a hotel, whether it is water transportation, whether it is mangrove planting or even the cultivation of seaweeds and sea cucumber farming too: all these involve the Blue Economy.* ***(Male Fisher, Dunda, Bagamoyo, August 2022).***

Most respondents, however, could not provide a detailed information about their involvement in the BE. They mentioned hearing about it in the media, but lacked a clear understanding of what it entails, or how it functions. They noted that most information on the BE comes from Zanzibar, with no leaders on Mainland Tanzania discussing it.

As a result, due to the lack of knowledge on the BE, local communities' motivation to engage in it remains low. However, there have been some private investments in the BE, such as in hotels and small-scale ventures in sea cucumber farming. While respondents acknowledged that the BE is a good government initiative, they felt it has not yet been as effective or beneficial as advertised. They expressed support for the initiative, recognising its potential to promote industry, port development, and create employment opportunities and markets for their fish and other marine products. However, these benefits have not yet materialised, and the overall impression was that people were mainly repeating government rhetoric about the BE, regardless of its actual impact on them. One respondent, when discussing the low participation of local communities in the BE, shared several concerns:

> *Let's take the fishing boats provided through the Blue Economy. At a very low price, they are sold at around TZS9m. Therefore, it means that every month you must pay TZS300,000. But there are those boats which cost TZS25m. To get one, you must pay about TZS700,000 every month. If you consider the number of days one fishes, it is five months, due to the weather. In the sixth month, you just stay at home. In the seventh month, there are very strong winds until the ninth month. In the tenth month, the short (vuli) rains start. So, this situation contributes to hurting the fisherman. It affects him during the time of monthly loan repayment to the bank. And often, these bank people don't know the situation. So, it becomes difficult for a fisherman to make a monthly loan repayment. And if you force them to, you simply hurt them.* ***(Fisherman, Unguja, April 2023).***

Regarding the government's plan to build ports and industries, the respondents—particularly in Pemba—stated they had not heard of such developments. However, they agreed that if implemented, it would help improve and stimulate the fishing industry. In Bagamoyo, the respondents emphasised that the BE is well-known in Zanzibar, citing the establishment of the Ministry of Fisheries and Blue Economy by the RGoZ. They also mentioned the Tanzanian government's large-scale plan to build a new port in Bagamoyo.

Overall, the BE was viewed as encompassing all sea-related activities; including fishing, seaweed cultivation, navigation, salt extraction, and fish-farming, especially sea cucumber farming. In essence, it was seen as a way to ensure that everyone involved in sea-based work benefits, while also conserving and protecting the environment.

> *We often hear about the issue of the blue economy, especially through the Revolutionary Government of Zanzibar. Mostly, the blue economy issue is not given much attention here. But just the other day, I heard Mama [President Samia] talking about the blue economy in Lake Victoria. So, the blue economy is not only aimed at the sea, but also at lakes, ponds and other places that involve fishing. Therefore, we get information about the blue economy from the media, or learn more about it when we do interviews like this. But personally, I don't have sufficient information about the blue economy.* ***(Male seaweed farmer, Mlingotini, Bagamoyo, August 2022).***

Aside from the provision of motorised (fibre) boats by the RGoZ, especially to seaweed farmers, the artisanal fishers we interviewed were unable to identify specific activities related to the BE agenda, particularly those involving the government. Even the motorised boats were seen as unhelpful, as their high operational costs—especially for fuel and maintenance—pose significant challenges, further compounding the financial difficulties already faced by the fishers. The respondents emphasised that little has changed since the introduction of the BE; and that conditions are largely the same as before. For instance, when one respondent was asked about his involvement in the BE, he said:

> *We have never been engaged in, or involved with, the blue economy as of now. The only exception is a few small groups that are involved in seaweed cultivation. These groups were the ones provided with some equipment.* ***(A male fisher, Unguja, April 2023).***

To promote greater participation and benefits from the BE, the respondents proposed several measures, including the importance of financial support, such as issuing interest-free loans for fishers and aquatic farmers, as a critical step. Additionally, they stressed the need for effective implementation of existing laws and policies to foster full engagement. These support mechanisms were seen as essential for empowering local communities to actively participate in the conservation and sustainable use of marine ecosystems through activities like sustainable fishing, fish-farming, salt extraction, and marine transportation.

The study also examined the inclusion of women, youth, and marginalised groups in the BE agenda, as these populations are often excluded from accessing resources. Ideally, the policy should ensure that every fishing community is involved by establishing Beach Management Units (BMUs) to help manage ocean resources and environments. These units include both fishers and non-fishers. Furthermore, communities should have a voice in decision-making through local meetings. While women are regularly involved in sea-based activities-such as fish vending, seaweed farming, and sea cucumber farming-the study found no specific mechanisms to actively include them in the BE. Commenting on the inclusion of local communities in the BE through BMUs, one respondent noted:

> *Community efforts exist, although in other ways they are not very effective. But even these BMU groups are part of the conservation of the sea and its beaches. Therefore, BMU members are part of the society, and their cooperation contributes substantially to the conservation of marine resources and beaches, especially when it comes to providing information about the conservation of marine resources.* ***(Secretary, Bagamoyo Fishers Association, August 2022).***

In Pemba and Unguja, the situation was somewhat different, as respondents acknowledged their involvement in the BE through government initiatives. It was noted that women in both regions have been encouraged to organise themselves into groups so as to easily seize opportunities as they arise. One respondent in Pemba confirmed this, explaining that they became involved in seaweed farming through this very approach:

> *We were told to stay in groups, and there were many of us. Fortunately, once we formed groups, we were given equipment and things like that for seaweed farming. We were also given ropes.* ***(Female seaweed farmer, Pemba, June 2023).***

However, it was found that most women involved in fishing were members of the BMUs. As for the youth, no specific initiatives were noted, although they represent a significant portion of those working in the fishing industry, particularly as fishers and casual labourers in fish-related activities.

In terms of areas needing capacity building for communities to fully benefit from the BE, tourism was highlighted as a promising sector. Capacity building is necessary to enable people to contribute effectively and gain from this sub-sector. Additionally, small businesses serving tourists—such as sellers of artefacts and ornaments—were identified as an area with potential for further development. Expanding investments in fishing and fish-processing technologies—such as motorised boats and storage facilities—was also seen as a key opportunity for growth.

In summary, the Blue Economy (BE) is Tanzania's primary framework for marine resource management; and it was institutionalised in Zanzibar through the Ministry of Blue Economy and Fisheries in 2020 (Mwanyoka et al., 2025). While communities generally view the BE as encompassing fishing, seaweed farming, aquaculture, tourism, and marine transport, most lack a detailed knowledge and meaningful engagement, with awareness largely being driven by the media.

Government initiatives—such as providing motorised boats and supporting seaweed and sea cucumber farming—have had limited impact, as high operational costs and loan repayments strain fishers' finances; sometimes worsening vulnerability (Mtui, 2024). Women and youth, though central to coastal livelihoods, face barriers to participation; with few targeted inclusion mechanisms. Respondents emphasised the need for financial support (in the form of interest-free loans); participatory governance through BMUs; and capacity building in tourism, small businesses, and fishing technologies. Overall, while the BE has the potential to improve livelihoods and stimulate economic growth, its current top-down implementation offers few tangible benefits for local communities, highlighting the need for more inclusive and equitable approaches (Mwanyoka et al., 2025; Mtui, 2024).

9. Private Sector Involvement and Development Projects in the BE Sub-sectors

Private sector involvement in marine-based economies is a key component of the BE. This study aimed to explore the current role of the private sector in the BE, identifying three main areas of focus: (i) hospitality, (ii) fishing, and (iii) extractives.

In hospitality, most investments are in the hotel industry, primarily catering to the tourism sector, with a focus on Zanzibar and—to a lesser extent—Bagamoyo. The majority of these investors are Tanzanian, with a few foreigners being involved. For local communities, this has resulted in the creation of markets for their marine products (primarily fish), as well as employment opportunities.

Fishing is another sector attracting private sector investment. Fish-farming, particularly of sea cucumbers, is growing in both Bagamoyo and Zanzibar (Unguja and Pemba), with local communities being heavily involved. One respondent shared the following thoughts on the role of investors in fishing:

> *Don't you see that there are big fishing boats that pass by these same places? […] those are big fishermen who fish out there themselves.* ***(A female food vendor in Kaole, Bagamoyo, August 2022).***

Overall, most respondents' knowledge of investments in the BE was limited to fishing and maritime activities. For example, it was reported that people from Zanzibar, particularly from Pemba (commonly known as *Wapemba*), are making significant investments in the fishing and marine transport sectors, dominating the ownership of fishing vessels and transportation dhows. One respondent shared the following in this regard:

> […] *But you know, for these fellow Wapemba, the sea has become the source of their economy. That is why, even if you trace the ownership, you will find that even in their fishing vessels, perhaps the boat has a certain name, but the owner will turn out to be an Mpemba. For example, perhaps the boat is named 'Konde Boy'; but upon tracing, you will find that the owner of that vessel is a Mpemba. Let's take an example: perhaps the owner is named Hamadi Kisuna. If you ask the fishermen about this person, they will tell you that Hamadi Kisuna is a Mpemba.* ***(Fisheries officer, Dunda, Bagamoyo, August 2022).***

During our consultations with the Bagamoyo Fisheries Office, we learned that the Fisheries Master Plan, developed by the Ministry of Livestock and Fisheries, is currently being implemented. The plan's strategy, which took effect in 2022, aims to achieve "… sustainable fisheries resource management that supports fisheries sector development, BE growth, and improved livelihoods, nutrition, and food security." One of its key objectives is to "… increase job creation, food security, and production capacity, while building a competitive fisheries sector that contributes to the Blue Economy" (URT, 2022).

At present, there are three mariculture demonstration farms in Bagamoyo (Lukwambe & Bwathondi, 2024). In addition to fishing, salt extraction is another major extractive activity identified in the study area. This is particularly common in Bagamoyo's Kerege and Mapinga wards, where private actors are involved, and local communities mostly participate as labourers.

It is also important to highlight the government's efforts to create a conducive environment for implementing the BE. Infrastructure development is a key area where the government plays a significant role, particularly in promoting strategic and integrative investments in the sector (JMT, 2024). This includes the construction of processing and marketing facilities, such as the modern fish-landing site and market in Stone Town, Unguja, which is being built by the RGoZ as part of its BE initiatives. On the Mainland, there are plans to construct a port in Zinga Ward, Bagamoyo, covering the villages of Kondo, Mlingotini, and Pande. Additionally, the Bagamoyo District government has reported plans to install solar-powered fish driers in the newly built fish market, as discussed during consultations with the district's fisheries office.

The study also aimed to assess potential challenges arising from the entry of private sector actors into fishing and other 'blue sectors'. One major concern raised by respondents is environmental degradation caused by private sector activities. Potential negative impacts include damage to marine ecosystems from construction (e.g., ports, landing sites), pollution from oil spills, and mangrove clearance. Interviews with fishers in Bagamoyo (Dunda, Kerege, Mapinga, and Zinga wards) revealed additional socio-cultural challenges linked to large-scale investments. These include cultural interference, forced relocations, moral decline, rising land prices that make it unaffordable for locals, increased spread of diseases like HIV/AIDS and other STDs, higher crime rates, shifts in social relations, increased prostitution, and changes in lifestyles. However, some respondents viewed the entry of the private sector positively, citing its potential to stimulate the local economy through job-creation and the growth of small businesses.

10. Conclusions and Recommendations

The primary goal of this study was to explore how the conservation and management of marine environments align with sustainable livelihoods and poverty alleviation in coastal communities. It aimed to address four key questions: (a) How are social

groups—particularly women, youth, and marginalised or underrepresented populations—included and actively participating in current BE initiatives and opportunities? (b) What are the current capacity-building needs to promote community-based marine environment conservation and management? (c) To what extent are local communities involved in conserving and managing marine resources in their areas? (d) What is the state of private sector involvement in the BE sub-sectors, especially fisheries, and its role in creating livelihood opportunities for local communities? Based on the study findings, the following conclusions can be drawn:

1. The sea plays a vital role in supporting local communities by providing fisheries-based livelihoods, and serving as a critical source of protein. Additionally, it holds a significant socio-cultural value, offering spaces for leisure, traditional rituals, and scientific marine research.
2. Regarding environmental sustainability, the study found that the marine environment has deteriorated, particularly due to the destruction of mangrove forests. This issue is further exacerbated by weather variability and climate change, which have contributed to rising sea levels and intensified beach erosion.
3. The inclusion of local communities in the BE remains limited. On the Mainland, most people are only aware of the BE through media coverage, and cannot determine whether their livelihoods are integrated into it. In Zanzibar, communities acknowledge some benefits from the BE agenda, but these are said to be minimal.
4. Private sector involvement in the BE is primarily observed in three sectors: hospitality (tourism), extractives (especially salt mining), and fishing.

Based on its findings, the study offers the following recommendations:

1. *Harmonised policy implementation:* There is a need to coordinate policies and regulations that focus on the conservation of marine resources and their utilisation. This will ensure that local communities and other stakeholders benefit equitably from the BE, while promoting the sustainable use of marine resources.
2. *Intensified research:* Continued efforts are required to study the extent of marine environment destruction, such as the resurgence of dynamite fishing, other illegal fishing practices, and mangrove harvesting. This research will inform effective solutions and redress mechanisms.
3. *Community involvement:* Effective consultation and involvement of local communities in all stages of marine and BE policy planning and implementation are crucial. This will help minimise legal and economic conflicts between local communities, authorities, and private sector actors.
4. *Capacity Building:* To maximise the benefits of the BE, local communities need to be empowered to diversify their fisheries-based livelihoods. This includes expanding beyond fishing to activities such as processing and engaging in other segments of the fisheries value-chain.

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