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Policy gaps in the East African Blue economy: Perspectives of small-scale fishers on port development in Kenya and Tanzania

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Recently, the rights of small-scale fishers have increasingly been acknowledged in ocean governance because coastal development and various maritime activities have reduced traditional fishing grounds. More specifically, small-scale fisheries (SSF) are increasingly being threatened by ocean grabbing, pollution, and a lack of inclusiveness in decision-making processes. Although there are guidelines to resolve and reduce conflict, formal avenues to include fisher concerns, particularly in the context of ocean development and governance, remain a difficult task. Moreover, there is insufficient information on how fishers are impacted by coastal and marine development and how their concerns are included in the decision-making process. Hence, this study contributes to the SSF discourse by understanding and describing the characteristics and concerns of small-scale fishers from two coastal towns in East Africa with different levels of port development. Using data from perception surveys, focus group discussions, and participatory mapping, we discuss how fishers were involved in the decision-making processes to develop ports in Lamu, Kenya, and Bagamoyo, Tanzania. We found that fishers rely on nearshore ecosystems such as mangroves and coral reefs because of their accessibility since most fishers only use low-powered boats for fishing. Moreover, we found that the fishers' livelihoods were severely affected by port development and that they were excluded from the decision-making process concerning the port's construction and fishers' compensations. While some fishers believe that new ports in the region can increase their livelihoods by creating new markets and jobs, this is unlikely to happen since most fishers are not qualified to work in formal port-related jobs. We propose three steps that will allow fishermen to participate in port

development decision-making processes and contribute to the development of a sustainable SSF. These include improving engagement with fishers to allow meaningful participation in decision-making, developing a blue economy policy focused on SSF, and implementing maritime spatial planning.

KEYWORDS

blue economy, small-scale fisheries, ports, environmental impacts, blue justice

1. Introduction

Small-scale fisheries (SSF) contribute to food security worldwide and provide jobs to millions of people, especially in developing countries (Bevitt et al., 2021). Moreover, SSF is an economically important coastal livelihood activity in East Africa, because it has been estimated to employ approximately 50,000 fishers (GoK, 2016; Sector, 2016). SSF in East Africa is characterized by artisanal fishers that use nonmotorized boats like canoes and small sailboats, which are easy to use and maneuver in nearshore areas, to fish for subsistence and earn some income (McClanahan and Mangi, 2004; UNEP-Nairobi Convention and WIOMSA, 2015; Van der Elst et al., 2005). Despite the importance of SSFs to the socioeconomic development of coastal communities in East Africa, the interests of fishers are largely ignored by government development agendas. Moreover, small-scale fishers are increasingly experiencing reduced access to fishing areas (Thoya and Daw, 2019), low catches due to overfishing and degraded coastal and marine ecosystems (Jackson et al., 2001), a weak market for their seafood (Wamukota, 2009; Purcell et al., 2017), conflicts with large-scale fishers (Munga et al., 2014), and problems with recent blue economy development such as oil and gas exploration and port expansion (Rodden, 2014).

Many governments and civil society organizations worldwide are increasingly advocating for more meaningful engagement of small-scale fishers in decision-making processes to give them space to raise their socioeconomic rights (Bennett et al., 2021). As such, participatory processes have been promoted to reduce inequity and injustice in society while fostering a fair distribution of the costs and benefits of coastal and marine resource development (Agyeman, 2005). The need to safeguard small-scale fisheries and include fishers in stakeholder engagement processes is recognized worldwide because fishers make up the biggest group of marine resource users and significantly contribute to global food security (FAO, 2020). The Food and Agricultural Organization's "Voluntary Guidelines for Securing Small-Scale Sustainable Fisheries in the Context of Food Security and Poverty Eradication" (hereafter FAO SSF Guidelines), ratified in 2014, emphasize the importance of securing the tenurial rights of small-scale fishers, which include providing them equal access to fishery resources and fishing grounds (Kurien, 2015). However, the implementation of these guidelines has been resisted in many regions and is yet to make the desired impact on local communities (Jentoft et al., 2017).

Another important initiative advocating for SSF rights is the "blue justice" movement, led by the Global Partnership for Small-Scale Fisheries Research (TBTI, 2021). Blue justice is a critical approach to promoting sustainable ocean development by investigating how ocean-based development affects coastal communities and SSF. It arose from the recent interest of countries to expand the maritime sectors, commonly referred to as the "blue economy" (BE), which threatens the sustainability of the SSF (Bennett et al., 2019). Blue justice advocates for the historical rights of small-scale fishers and coastal communities and urges governments to reduce pressures that are likely to jeopardize the rights and well-being of fishers (Arbo et al., 2018; Bennett, 2019).

As with other countries, East Africa has adopted the blue economy concept with the United Nation's Nairobi Convention and COP 8 decision supporting the strengthening of ocean governance strategies to enhance blue economy activities in the region. The government of Kenya, for example, values the importance of the blue economy and its potential role in improving Kenya's overall economy. Hence, the Kenyan government has mandated the expansion of mariculture, shipping and transportation, tourism, and oil exploration, which have been identified by the government as key to achieving the ambitious country's economic development plan, "Vision 2030". Moreover, the government prioritized blue economy activities as part of the state department for fisheries, aquaculture, and the blue economy (GoK, 2007; Sharon, 2020). Similarly, Tanzania has put the blue economy at the center of its economic growth and has created a comprehensive roadmap for its blue economy development (Hafidh et al., 2021). Although the blue economy has enormous developmental potential for East African countries, the current trend toward ocean-based economic development raises concerns because it can conflict with the achievement of blue justice objectives (Okafor-Yarwood et al., 2020).

The effects of the promotion of the development of the East African blue economy on stakeholders, particularly those who may be adversely affected by large-scale growth linked with it, are yet to be determined. Moreover, there is currently insufficient information on how small-scale fishers are affected by port developments in East Africa and how their concerns are considered in decision-making. To help address this gap, this study aims to understand and present the perceptions of small-scale fishers in relation to port development in Kenya and Tanzania using blue justice as a broad analytical framework. We selected two coastal towns each in Kenya and Tanzania because of their similar histories and contexts, levels of resource use, and governance arrangements. However, both countries have slightly different economies, with Kenya classified as a lower middle-income country and Tanzania as the least developed country per the Organization for Economic Co-operation and Development (OECD, 2021).

2. Materials and methods

2.1 Study area

While both Kenya and Tanzania have major ports located in the cities of Mombasa and Dar es Salaam, respectively, the governments of both countries have started to enhance their maritime transportation infrastructure to support economic growth and the expansion of the ocean economy in East Africa (Kanai and Schindler, 2019; Rasowo et al., 2020) (Figure 1). Currently, the ports are being developed north of Mombasa in Lamu County in Kenya, and south of Dar es Salaam in Bagamoyo district in Tanzania. Both ports have financial support from foreign investors, particularly the Chinese government (Hönke and Cuesta-Fernandez, 2018; Were, 2019).

The Lamu port is located on Lamu Island near the Somali border in the north of Kenya (Figure 1). The port is part of the larger Lamu Port, South Sudan, Ethiopia Transport Corridor (LAPSSET). The LAPSSET corridor program is Eastern Africa's largest and most ambitious large-scale infrastructure project, linking Kenya, Ethiopia, and South Sudan to improve access and transport, and consequently economic development. When completed, the project will have highways, railway lines, and oil pipelines constructed traversing the three countries (LAPSSET, 2021). The port is still under construction and will have 32 berths upon completion (LAPSSET, 2021).

The Bagamoyo port is located 60 km from Dar es Salaam in Tanzania. It falls within the area where the government plans to create a Special Economic Zone (SEZ) to decongest the Dar es Salaam region. The port will serve as a transportation hub for processed commodities that local businesses produce (Kanai and Schindler, 2019).

Data collection was conducted in September and October 2019, in both Lamu and Bagamoyo. The field data collection

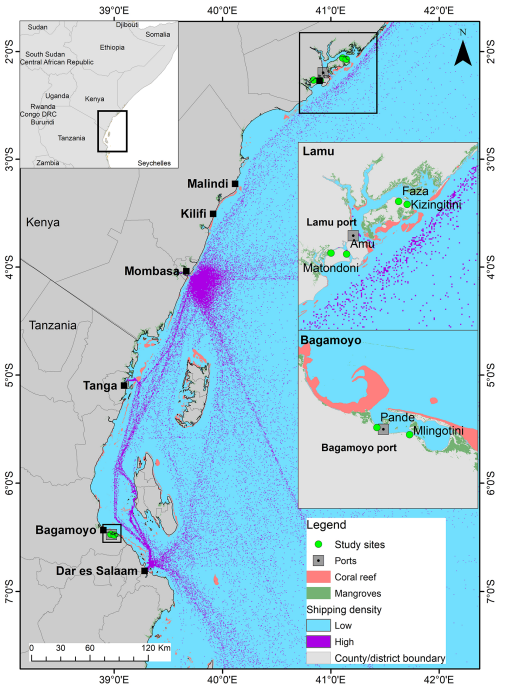

FIGURE 1
The county of Lamu is located north of Mombasa, which is a major port city in Kenya. The Bagamoyo district is located north of Dar es Salaam, which is the capital and a major port city of Tanzania.

included participatory mapping exercises with invited fishers and community perception surveys. During fieldwork in Lamu, the construction of the first three berths of the port was about 80% complete. Currently, there are four berths that are operational. At Bagamoyo, initial plans for the development of the port had already been undertaken, including land compensation.

2.2 Participatory mapping

We used the participatory mapping approach described by Daw et al. (2011) to locate and characterize high-value fishing grounds for small-scale fishers. Generally, participatory mapping elicits fishers' spatial knowledge of their fishing areas through group discussion and visual aids such as maps (Kafas et al., 2017; O. Nyumba et al., 2018; Silvano and Hallwass, 2020). The computer-based maps, which were produced using the Google Earth Engine©, depict locations in nearshore areas with easily recognized habitats such as coral reefs and mangroves. We conducted a total of four participatory mapping sessions from September 2019 to October 2019, two in Lamu and two in Bagamoyo. The sessions were held in Faza and Amu locations in Lamu, and Mlingotini and Pande in

Bagamoyo. Each session took about 2 h to complete for each study area. The lead author (PT) led and ran the participatory mapping sessions, which included 25 fishers in each location (n = 50 fishers in Lamu, n = 50 fishers in Bagamoyo). The participants that were invited represented artisanal fishers that used the four most commonly used fishing gears (i.e., spear, net, trap, and line). According to Krueger and Casey (2000), a group of six to eight people is adequate for a focus group discussion, but a larger group of fishers attended the discussions due to the encouragement of fishing group leaders. Working with fishing group leaders, they identified and recommended fishers that have had a long history of fishing (i.e., at least 10 years). More experienced fishers were invited because they are known to have greater precision in identifying a fishing ground's exact location. The sessions were all conducted using Swahili, the official language in both the study areas and countries, to ensure the effectiveness of communication and proper documentation of the data.

The first step in the participatory mapping process asked fishers to identify key land-based and nearshore geographic and bathymetric features such as houses, coral reefs, and islands on Google Earth©. Second, using the markers and features as a basis, fishers were asked to delineate the extent of the fishing grounds. As the participants identify the fishing grounds, discussions also involved fishers' local ecological knowledge and fisheries, particularly the key fishing grounds and spawning areas, biophysical qualities such as depth and habitat types, and their preferred fishing gears. By characterizing the SSF into subgroups, we can understand which fishing grounds areas are essential and accessible to fishers and how port developments can affect their livelihoods. The fishing grounds identified on Google Maps were saved in Google Earth Pro and analyzed in ArcMap (ESRI®).

2.3 Perception surveys

We conducted semistructured in-person perception surveys with a total of 189 fishers from October to September 2019. In Lamu, we surveyed 97 fishers from beach management units (BMUs) surrounding the port, which included Amu, Matondoni, Shella, Kizingiti, Pate, and Faza, where the impacts of the port development will most likely be felt (Figure 1). For Bagamoyo, we interviewed 92 fishers from Pande and Mlingotini, the closest SSF landing areas to the port area. The BMUs consist of individuals who traditionally depend on fisheries activities for their livelihoods (e.g., fishers, fish traders, boat owners, and fish processors) (Oluoch and Obura, 2008). Moreover, BMUs are also informal governance units that are typically responsible for coastal management and named after villages, which are recognized as part of the co-management system of ocean governance in Kenya and Tanzania.

The in-person perception surveys were done because it was a good approach for extracting meaningful information about fisheries to help understand problems experienced by fishers, which include reduced access to marine space (Daw et al., 2011; Silvano and Hallwass, 2020). The number of fishers that participated in the survey represents 20% of the total fishing population in the study sites, which was regarded as an adequate representation of the collective experiences in the BMUs (Dzoga et al., 2018). Only fishers who agreed to participate in the survey were chosen because conversations about fishers' fishing grounds are considered private (Daw et al., 2011). The survey participants included all fishers that attended the participatory mapping sessions and other fishers that were chosen at random by the BMU leaders. The lead author (PT) and two research assistants conducted all the surveys in all of the BMUs using the same questionnaire. Each survey lasted about an hour and was conducted in Swahili, the official language of all the study locations.

The survey was structured into two parts. The first part was designed to obtain demographic data about the fishers (e.g., age and number of years fishing) and information about fishing practices (e.g., number of days fishing per week, fishing gears and boats used, and targeted fish families). Fishers were also asked to identify their preferred fishing grounds from the list of locations generated from the participatory mapping exercise. The second part aimed to understand fishers' perspectives on port development and their perception of the impacts of port development on SSF. Some questions included: (i) if the fishers used to fish at the port area; (ii) if the fishers were engaged in decision-making; and, (iii) how the port has affected their livelihoods, the environment, and ecosystems. A follow-up inquiry was asked on the specific impacts each fisher had experienced, whenever needed. The responses were recorded in English and then transferred to an excel spreadsheet for further analysis.

2.4 Data analysis and synthesis

The results of the participatory mapping and perception surveys were analyzed by: (i) defining fisheries attributes and the importance of key habitats to the SSF in each of the study areas; (ii) describing the impacts of port development and its implications on SSF; and, (iii) evaluating and identifying blue economy policy gaps in each of the countries to mitigate the impact of port development on SSF.

To evaluate the importance of the different ecosystems to SSF, we estimated the fishing intensity in the three primary habitats, which are coral reefs, mangroves, and pelagic habitats. The fishing intensity was calculated by getting the sum frequency of fishers that identified their preferred fishing grounds during the surveys. We then identified the most important habitats for the fishers by measuring the distance

between the identified fishing grounds to the nearest coral reefs and mangroves. Using the coral reef and mangroves map shapefiles from the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) (Giri et al., 2011; UNEP-WCMC,W.C. and WRI, 2021), we calculated the distance of the fishing locations to the habitats different habitats. A fishing location within a 1-km radius of coral reefs was categorized as a coral reef fishing ground, whereas, those within a 1-km radius of mangroves were categorized as the mangrove fishing ground. Fishing grounds within a 1-km radius of both mangroves and coral reefs were categorized as coral-mangrove fishing grounds. As coral reefs and mangroves occupy the shallow area in the study area, the fishing locations outside the 1-km radius of coral reefs and mangroves were deemed to be in offshore areas and were categorized as pelagic fishing grounds.

The fisher characteristics and perception of port development impacts were analyzed using descriptive statistics, including central tendencies such as means, medians, and percentages. The fisher characteristics for both study areas were presented and analyzed to allow for quantitative comparisons. Additionally, the targeted fish families described in the survey were also aggregated according to ocean zones, which were also used to validate the described preferred fishing grounds.

For the blue economy policy gaps, we used the review by Benett et al. (2021) as a broad analytical framework. Benett et al. (2021) posited that there are 10 main domains that may hinder the achievement of a sustainable blue economy and blue justice. These include: *(i) dispossession, displacement and ocean grabbing; (ii) environmental justice concerns from pollution and waste; (iii) environmental degradation and reduction of availability of ecosystem services; (iv) livelihood impacts for SSF; (v) lost access to marine resources needed for food security and wellbeing; vi) inequitable distribution of economic benefits, (Vii) social and cultural impacts; (viii) marginalization of women; (ix) human and Indigenous rights abuses; and, (x) exclusion from governance.* Since blue justice research is still in its infancy and was not factored in our original research approach, we applied an inductive coding procedure to our original questions to facilitate the incorporation of the novel knowledge of blue justice domains outlined by Benett et al. (2021). Since fishers were asked how they were affected (i.e., positive, negative, or neutral) by port development in their different life aspects (e.g., livelihood, fish market, access to the fishing area). We calculated the proportion of fishers who replied in each category and referred the results to the coded blue justice domains. throughout the discussion.

3. Results

3.1 Fishers' characteristics

The characteristics of fishers and fishing activities in both study areas are very similar. All the fishers surveyed in Lamu and Bagamoyo were men and had an average age of 41 and 44 years, respectively (Figure 2A). Most of the fishers interviewed had substantial fishing experience, with an average number of years fishing of 24 years for fishers in Lamu and 23 years for fishers in Bagamoyo (Figure 2B). Most fishers from both study areas used wooden boats ranging from 2 to 20 m in length and fished for 6 days a week on average (Figure 2C). The majority of fishers surveyed in Lamu and Bagamoyo had a daily income of less than $20 (Figure 2D) and spent up to 6 years on average in school (Figure 2E). There were differences in propulsion modes for fishing boats, with most of the fishers in Lamu using fishing boats with engines (73%) and sailboats (23%). In Bagamoyo, the majority of fishers reported the use of paddle boats (59%), sailboats (25%), and motorized boats (16%) (Figure 3). In terms of preferred fishing gears, fishers in Lamu mostly used seine nets (31%), handlines (25%), gill nets (21%), and spears (25%). Whereas, in Bagamoyo, handlines (47%) and gillnets (45%) were the most commonly used fishing gears (Figure 3).

For the targeted fishes, 75% of the respondents in Lamu targeted demersal fish families that are often found in or near coral reefs. These include Palinuridae (lobsters), Scombridae (tuna), and Lethrinidae (emperors). In Bagamoyo, fishers targeted lethrinids, palinurids, and carangids (trevallies or scads) (Figure 3). Lobsters are considered a high-value species collected by divers using harpoons.

3.2 Important fishing grounds

Coral reefs and mangroves were identified as the most preferred fishing habitats for the majority of the respondents in both Lamu and Bagamoyo (Figure 4). More specifically, 34% of fishers in Lamu identified coral reefs as the most favored fishing grounds, followed by mangroves with 22% and pelagic waters with 19%. Of the respondents in Bagamoyo, 27% fished in coral reef-mangrove areas, 19% in mangrove areas, and 16% in coral reefs. Spatially, fishing intensities varied across the different habitats. For fishers in Lamu, fishing grounds with the highest fishing intensities mostly overlapped with coral reefs followed by pelagic waters. Similarly, in Bagamoyo, coral reefs had the highest fishing intensities, followed by mangroves. Most of the fishing grounds identified were within 10 kilometers of both ports in Lamu and Bagamoyo (Figure 5).

3.3 Fishers' perception of port development impacts

Using six of the blue justice domains described by Benett et al. (2021), we describe the perceptions of the fisher respondents in Lamu and Bagamoyo on port development and implementation. The majority of the fishers surveyed in both

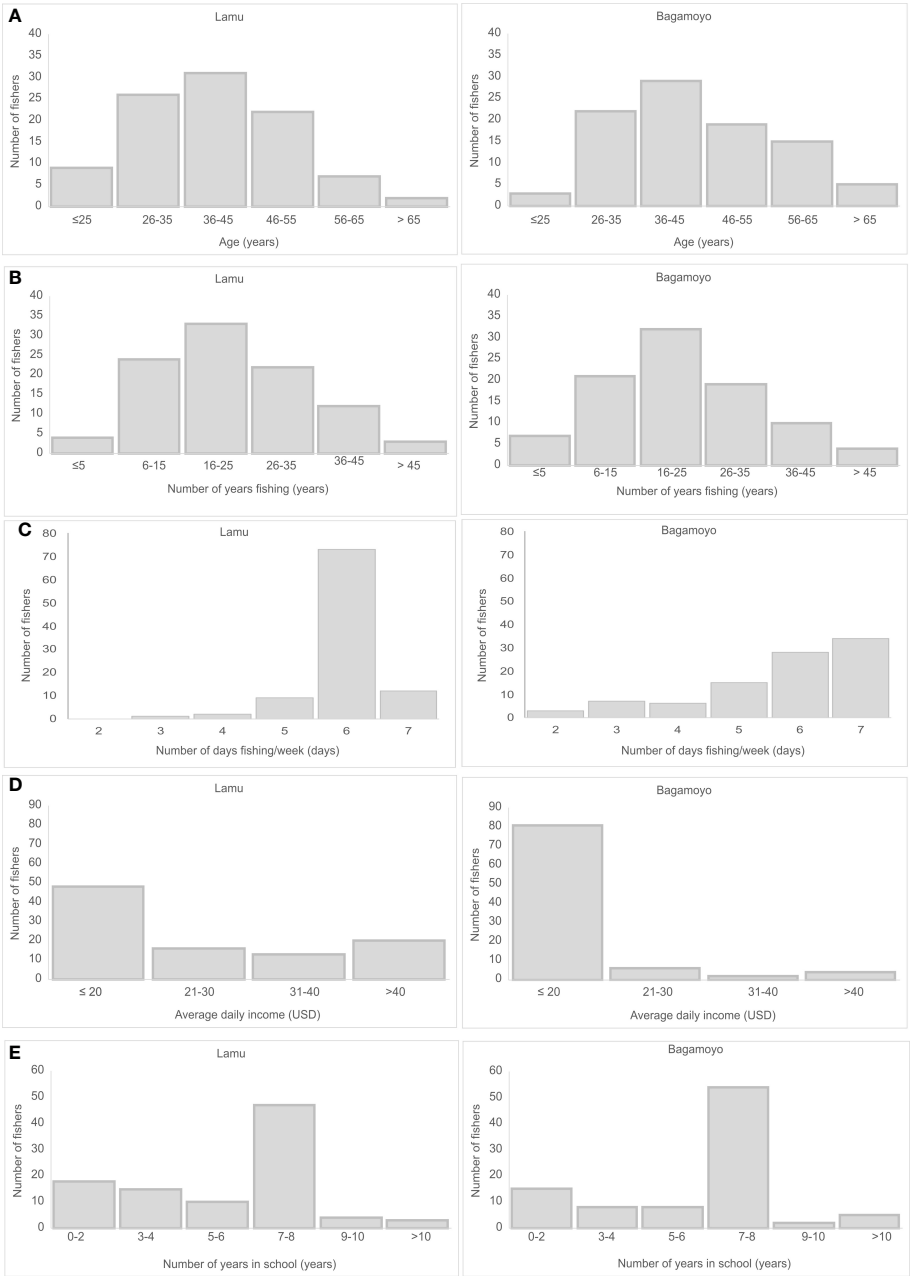

FIGURE 2
Summary of different fisher characteristics in Lamu (left panel) and Bagamoyo (right panel). Fishers' characteristics include **(A)** age; **(B)** the number of years fishing; **(C)** the number of fishing days per week; **(D)** daily income; and **(E)** the number of years spent in school.

study areas believed that the proposed ports would have negative impacts on the environment and their livelihoods (Figure 6).

3.3.1. Dispossession, displacement, and ocean grabbing

Most fishers surveyed in Lamu and Bagamoyo reported that the proposed port areas were an important fishing ground and that they had been displaced and forced to find new fishing grounds (Figure 6). These findings are consistent with the location of multiple fishing grounds in the port area, as shown by maps of fishing grounds and intensities (Figure 3).

3.3.2. Exclusion from governance

A great majority of fishers surveyed stated they were not involved or at least consulted during the port planning process.

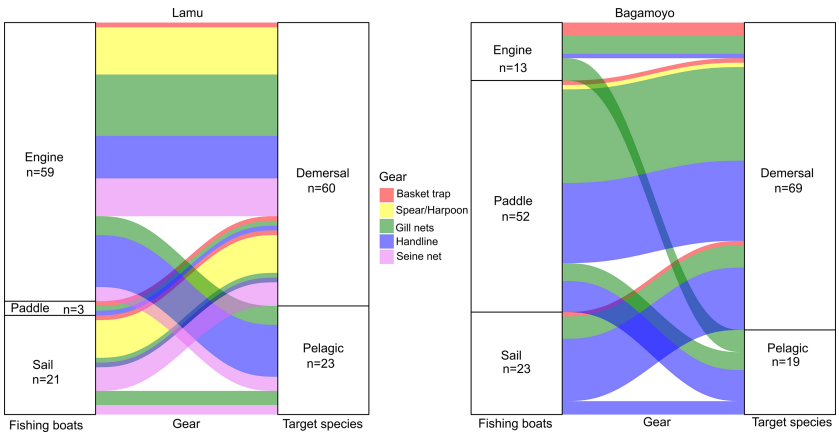

FIGURE 3
Diagram describing the diversity of types of fishing boats and gears used and the targeted species groups by fishers from Lamu (left panel) and Bagamoyo (right panel).

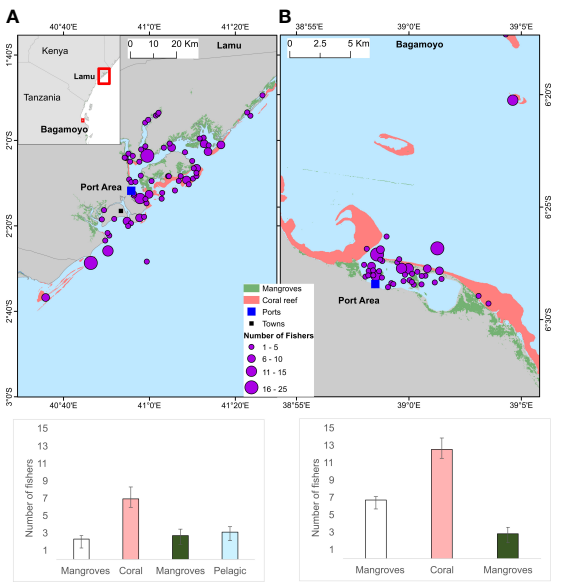

FIGURE 4
Distribution of fishing effort and fishing intensities based on the number of times the fishers mentioned a fishing ground in the interviews in **(A)** Lamu and **(B)** Bagamoyo. The bar charts indicate the mean number of fishers in the four habitat categories. Error bars present the standard error of the mean.

However, after probing the BMU leadership and some of the respondents, we found that there had been some forms of consultation undertaken, which included interviews, BMU-level consultation meetings, and public hearings in villages. For those that have been involved in consultation processes, they stated that they were included in a survey, or participated in BMU-level meetings or village-level public hearings. In Lamu, 62% of the fishers were consulted at the BMU level, 24% personally, and 14% at the village-public hearing. In Bagamoyo, for those who said they were consulted, 31% said they were consulted at the BMU level, while 69% said they were consulted at the village public hearing.

3.3.3. Environmental justice concerns from pollution and waste

Port development and implementation are believed to pollute fishing grounds. More specifically, 84% and 94% of respondents in Lamu and Bagamoyo, respectively, said that the port would degrade ecosystems and reduce water quality because of dredging and port operations. Surprisingly, fishers in Lamu feared that the port would attract more predators, such as sharks, which could endanger fishers. Respondents from Lamu had mixed perceptions on the impact of the ports on the fish catch; where, only 48% of respondents believed that the ports would have a negative impact, 26% believed there would be no impact, and 26% believed the port would improve their fish quality. In Bagamoyo, 59% of the respondents believed the port development would reduce fish quality, while 35% believed there would be no impact. Additionally, some fishermen from Bagamoyo believed that increased predators such as sharks would improve fish quality.

3.3.4. Environmental degradation and reduction of availability of ecosystem services

Almost all of the respondents in Bagamoyo and Lamu said that port development would cause the degradation of coral reefs and mangroves. They identified dredging, increased depth, and sedimentation as the most likely causes of coral reef damage, and mangrove clearing, erosion, and sedimentation as the potential causes of mangrove forest degradation.

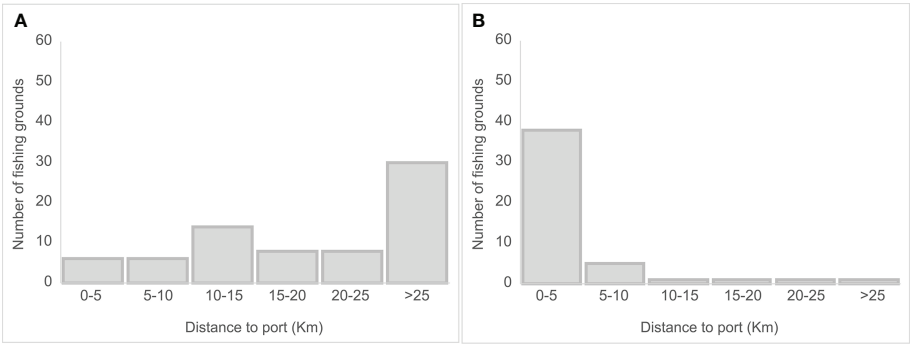

FIGURE 5
Distance between the preferred fishing grounds of fishers to the port area in **(A)** Lamu and **(B)** Bagamoyo.

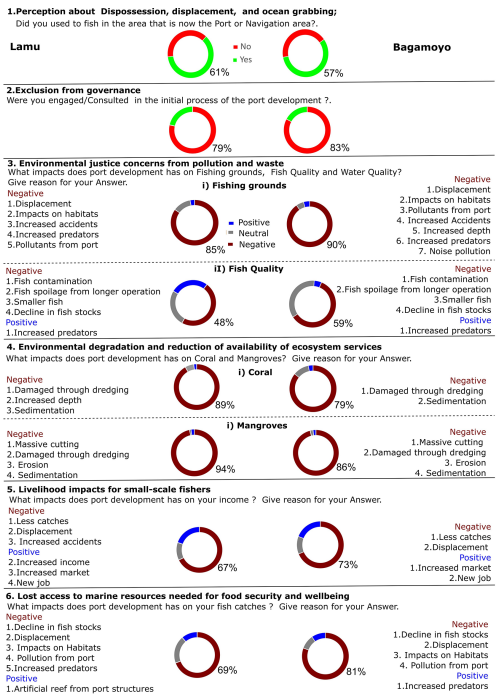

FIGURE 6
The perceived impacts of port development on SSF using the six blue justice dimensions (1–6, modified after Bennett et al., 2021).

3.3.5. Livelihood impacts for small-scale fishers

The perceptions of fishers on the effects of port expansion on their livelihoods were mixed. In Lamu, most of the respondents thought port development would negatively impact their livelihoods. Reduced catches, displaced fishing grounds, environmental damage, and more accidents resulting in the loss of fishing gear were some of the negative consequences of port development and implementation. Those that claimed the positive effects believed that the port could increase income, expand their market bases, and introduce new jobs. In Bagamoyo, most of the fishers said port development would harm their livelihoods. Fewer catches and displacement were suggested as potential negative implications, while new jobs and increased jobs were suggested as beneficial impacts of the port on fishers' livelihoods.

3.3.6. Lost access to marine resources needed for food security and wellbeing

In Lamu, most of the fishers believe their catches will decrease. The drop in fish catch was believed to be due to dwindling fish stocks, habitat changes and displacement, and increased predators. Some fishers thought the port structures acted as artificial reefs and would influence the increase in catches. In Bagamoyo, most fishers thought their catches would also decrease for the same reasons reported by the fishers from Lamu. However, these respondents believed that increased predators were a sign of a good impact on catches compared to the responses of Lamu fishers (Figure 6).

4. Discussion

This study presents the perceptions of small-scale fishers toward port infrastructure development and its potential consequences for SSF in Lamu and Bagamoyo. Many of the fishers included in the group discussions and surveys were concerned about the potential negative effects of port development. The power imbalance shown by the fishers' lack of meaningful engagement in decision-making processes reveals policy inadequacies that may assure equitable treatment of small-scale fishers as the blue economy expands in the study areas and eventually the entire countries of Kenya and Tanzania. Given the growing importance of coastal and maritime activities in East Africa, this is one of the first studies to describe the possible social and environmental injustices that small-scale fishers may face due to ocean-based developments in the region.

Since the majority of fishers from Lamu and Bagamaoyo use low-capital fishing boats and gears, they are often limited and unable to access offshore fishing grounds (Thoya and Daw, 2019), which makes them more reliant on nearshore and coastal ecosystems like coral reefs and mangroves (Honda et al., 2013; Carrasquilla-Henao and Juanes, 2017). Moreover, the majority of the targeted fish and invertebrate families, which include high-value species such as lobster and crab, depend on nearshore habitats. These high-value species are commonly targeted by fishers because they can earn a higher income from them. Hence, it is important to manage activities that can damage nearshore habitats so that nearshore fisheries resources, livelihoods, and food sources will not be affected (Fondo and Martens, 1998).

Another important finding of this study was that most fishers believed port development would expel them from their fishing grounds and damage the fish habitats, which threatens their livelihoods and food security. These perceptions were also supported by participatory mapping results that revealed that most of the fishing grounds highlighted by the fishers are located in areas that are likely to be impacted by the ports, either through pollution, navigation, or habitat conversion to make room for the port area. The impacts are already visible in Lamu, where fishers have experienced decreased catches and some have been forced to quit the fishery. Fishers that use diving methods and low-power fishing boats are the most vulnerable because their fishing activities are limited to the areas closer to the ports (Thoya and Daw, 2019). While fishers with high-powered fishing boats can adapt by fishing further offshore, this could still increase the cost of fishing due to additional fuel costs compared to fishing in nearshore areas. Considering the high cost of fishing, the catch per unit effort could decrease and the profit margin could shrink (Bastardie et al., 2013).

Better markets often appear to be a reasonable outcome of port development. Hence, some fishers thought the port development would benefit them by boosting their income and livelihood due to potential increased access to new markets and job opportunities. Moreover, Lamu and Bagamoyo are remote from the major cities and towns in Kenya and Tanzania. Fishers from these districts often have low incomes because their fish catch usually goes through intermediaries that pay low prices instead of getting sold in the cities directly. The growing population in the area will almost certainly result in a larger market and higher pricing (Wamukota, 2009; Kimani et al., 2020). On the other hand, we believe the fisher's perceptions that the port will provide them with job prospects are unlikely to happen. Our findings show that most fishers' education falls short of the minimum requirements for adapting to better and more formal positions at the port (Cinner et al., 2015; Cinner et al., 2018). Unfortunately, politicians and leaders responsible for gaining fisher support for these projects sometimes foster this idea, ignoring the poor education level of the local community and the difficulty of obtaining such job prospects (da Costa Oliveira et al., 2016).

The poor engagement of fishers in decision-making for the port development, as evidenced by the fisher's response, was a crucial outcome of our study. We find that this engagement was low because some of the fishers that were part of this study were not consulted throughout the port's development process. Moreover, it could also be possible that while some fishers were consulted, the engagement was not meaningful because their concerns were not considered. An informal talk with one of the Lamu fisheries officers confirms the lack of consideration of fishers' interests in the decision-making process. The officer mentioned that some disagreements have happened between the fishers and the port administration because of the insufficient amount of compensation offered due to port impacts and payment delays (personal communication). Hence, the fishers' strong stance against port development may have resulted from a poorly handled compensation procedure. However, since a large majority of fisher respondents said they were not consulted, it is highly likely that there was an insufficient number of consultations held. While some forms of consultation were carried out, we believe these consultations did not engage the fishers in more meaningful discussions. These discussions could include properly presenting the potential impacts of port development, ways to minimize and manage these impacts, and different approaches to compensate and support fishers that will be displaced and affected by the port.

While both Kenya and Tanzania have legislations that guide development projects, which include stipulations that require stakeholder participation in planning processes, our results showed that the participation of the fishers from Lamu and Bagamoyo in port planning and decision-making processes was minimal and showed discrepancies in the application of the relevant policies. The Environmental Management and Cooperation Act (EMCA) of 1999 in Kenya, and the Environmental Management Act (EMA) No. 20 of 2004 in Tanzania are the anchor legislations for undertaking Environmental Impacts Assessments (EIA) and strategic environmental assessments (SEA). Currently, these laws are used to guide ocean development and public engagement in each country. However, several obstacles still prevent effective public engagement in environmental decision-making, which include inaccessible information that contributes to the lack of public understanding of stakeholders' duties and rights during EIA and SEA processes, incomprehensible language in proposed project proposals, and insufficient regulations for public engagement during SEA are all issues (Okello et al., 2009). These obstacles need to be addressed and should also include building the capacity of BMUs and their leaders so that they can properly represent fishers in the development process. Increasing the capacity and role of BMUs will also be advantageous because they can improve the engagement of

fishers in future ocean development projects in both countries (de Mattos et al., 2022).

Addressing policy gaps, strengthening and properly implementing existing policies to assure social fairness, equitable benefit distribution, and stakeholder participation can help protect the rights of people and affected communities, help develop trust between the stakeholders involved, and effectively manage ocean development (Bennett et al., 2019; Cohen et al., 2019). Since the blue economy is based on sustainable ocean development, it emphasizes the importance of increasing human well-being and social fairness apart from lowering environmental dangers and ecological scarcities (United Nations, 2014). Many countries have embraced the blue economy concept and developed relevant policies that align with their national development plans (Wenhai et al., 2019). Currently, Tanzania has a blue economy for the autonomous region of Zanzibar, while Kenya is still yet to create a blue economy policy (Hafidh et al., 2021). Given the importance of SSF in the region, the SSF Guidelines that FAO member states ratified in 2014 might be a valuable resource to utilize in the blue economy policy-making process to align future policies with the requirements of SSF (Jentoft, 2022).

Marine spatial planning (MSP) is another crucial instrument that African nations are using to boost the blue economy (AU-IBAR, 2019). It entails mapping and assigning marine space for various users and objectives (Ehler et al., 2009). The MSP process emphasizes stakeholder participation, equitable sharing, and sustainable use of resources (Pomeroy and Douvere, 2008; Ehler et al., 2009; Ntona and Morgera, 2018), and can be utilized with the blue economy policy to protect the rights and interests of small-scale fishers, ensure socioeconomic justice, and meaningful stakeholder participation in the ocean development process. Several African countries, including Kenya, have MSP initiatives at different stages of development (Ehler, 2021). This serves as an important opportunity that can reduce disputes between fishers and other users and lower pollution that could harm SSF if activities are well planned (Jentoft and Knol, 2014; Jentoft, 2022).

5. Conclusion

Small-scale fisheries is a very important sector in East Africa that supports the livelihood and food security of coastal communities. Ocean grabbing, environmental degradation, loss of livelihood, and a lack of inclusivity in decision-making are some of the dangers and risks posed by the recent increase in maritime development operations. Governments must take action to treat small-scale fishers fairly and to include them in ocean governance so that fishers can have sustained access to marine resources and livelihoods. This study employed interactive mapping through group discussions and community perception surveys to investigate and describe the perceptions of fishers in Lamu and Bagamoyo on the impacts of port development. Our results show that fishers in both study areas have been negatively impacted by port development, which has contributed to the increasing concerns about the survival of SSF. Currently, port activities have displaced fishers and contributed to the degradation of nearshore coastal habitats and reduced fish catch. While some fishers believe the port expansion will open new markets and job prospects, which may be true to some extent as with other port cities, these opportunities might not be that favorable to the Lamu and Bagamoyo fishers due to their lower levels of education and capacity. Moreover, we found gaps in governance in both Kenya and Tanzania, which limit fishers' engagement in decision-making processes that contribute to injustices in the implementation of the blue economy.

To address these gaps, we propose three approaches to help increase the representation of SSF in the blue economies of Kenya and Tanzania, and potentially the entire East African region. First, small-scale fishers should have access to correct information about ocean development projects and proper representation in decision-making processes, such as the EIA and SEA, to help them make informed decisions and have the space to voice their concerns about such projects. Second, Kenya, Tanzania, and the other East African countries should adopt blue economy policies that have safeguards for SSF, such as the FAO SSF recommendations, to ensure the sustainability of SSF and protection of the rights of small-scale fishers. Lastly, MSP has been recommended and is increasingly being able to demonstrate its utility in developing spatial management plans that can guide ocean development. Since MSP also strongly promotes stakeholder participation, it can help ensure proper representation of SSF and protect the interests of fishers.

This research, which builds on other studies such as Okafor-Yarwood et al. (2020) and Rodden (2014), is one of the first studies that described and critically analyzed the impacts of port development on SSF and the power imbalances in various sectors within the blue economy discourse. It is important that more research should be done to understand the extent and complexities of SSF and ocean development interactions and to evaluate policy gaps, interactions, and implementation to increase fairness and achieve blue justice in East Africa.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

This study was reviewed and approved by WIOMSA. The patients/participants provided their written informed consent to participate in this study.

Author contributions

Conceptualisation: PT, VH. Fund acquisition: All authors led by PT, JM. Supervision: VH, JM, KS. Methodology: PT, VH. Data curation: PT. Formal analysis: PT. Visualisation: PT, with input from all authors. Writing the original draft: PT. Writing review and editing: VH, JM, KS. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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