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The Contribution of Marine Fisheries to Socio-economic Development in Tanzania Mainland: Reflections on the Blue Economy Concept from Selected Coastal Villages

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Abstract

Marine fisheries, as a sub-sector, may potentially play a significant role in the advancement of socio-economic development in countries that aim to spearhead the concept of 'blue economy' in Africa, south of the Sahara, including Tanzania. This paper assesses the contribution of marine fisheries to the socio-economic development in Tanzania in terms of livelihood improvement and advancement of the national economy. Data for this paper were captured from a study that involved 1,026 respondents from eight (8) fishing villages in four coastal regions of Tanzania Mainland: Dar es Salaam, Coast, Tanga and Lindi. The study adopted a cross-sectional research design, mixed-methods research approach and triangulation of methods to ensure the validity of data. Data were captured using a semi-structured questionnaire, interviews, focus group discussions and personal field observations. Obtained data were complemented with documented input from the Ministry of Livestock and Fisheries, and analysed qualitatively and quantitatively. The results indicated that fishing as a primary source of income in coastal communities may contribute to household food security through the consumption of households' catch. The results also suggested that local fishers have a limited access to resources in the exclusive economic zone (EEZ) due to the continued use of traditional fishing gears and vessels. It is recommended that local fishers be capacitated to exploit EEZ resources through support to access credit facilities and the provision of modern fishing vessels and appropriate gear. This could pave the way for the development of a fisheries sector based on EEZ resources.

Keywords: *blue economy, livelihood, marine fisheries, national economy, socio-economic development*

1. Introduction

Blue economy, as a concept, entails a sustainable use of ocean resources for economic growth and improved livelihoods. It considers aquatic resources as a new opportunity that promotes economic growth and improves livelihoods (Cohen et al., 2018). Recently, people have started to look towards aquatic resources to improve their socio-economic development, livelihood, economic revitalization and poverty reduction in the short-, medium- and long-term strategies (Attri, 2016).

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Blue economy components like fisheries, aquaculture, marine and coastal tourism have been adopted to promote food security, decent livelihoods and economy in several coastal developing countries, with the aim of gradually integrating it with other important economic sectors (Ababouch, 2015). Despite the significant contribution of blue economy to the growth of national economies in Africa, its potential is yet to be fully realized (UNECA, 2016). In Sub-Saharan Africa (SSA), aquatic resources are not adequately monitored, understood and valued in the context of national development agendas (Odongkara et al., 2009).

Tanzania is well-endowed with water resources; and specifically, it is reasonably rich in fishery resources, which makes fisheries a potentially important sector in the country's economic development (USAID, 2015). The fisheries sector is crucial in Tanzania's socio-economic growth in terms of food supply and generation of foreign exchange through exports. It not only provides income to households, but also employment to many people living along the coast (Jiddawi & Öhman, 2002; USAID, 2015). Despite the importance of the sector to the local and national economy, Tanzania has not yet managed to fully exploit it for economic development as illustrated by its contribution to the country's Gross Domestic Product (GDP), which according to the BOT (2021) is very low; and has remained so constantly over the last decade, ranging from 1.6% to 3.1% per annum (ibid.). This could reflect the fact that other sectors might be growing much faster than the fisheries sector, even though it is also true that a large amount of catch is consumed before going to formal markets, and thus cannot adequately be reflected in official GDP statistics.

Furthermore, most fishing communities still languish in poverty, with their ability to meet their daily minimum basic needs severely limited (Onyango & Jentoft, 2010; Rabo et al., 2014). According to Bailey (1988), fishers are regarded as the poorest of the poor. It can be argued that poverty in the fishing communities is attributable to systemic causes and outcomes; and that governance may be both part of the problem and the solution (Onyango & Jentoft, 2010).

Moreover, most fishers are unable to access deep water resources in the exclusive economic zone (EEZ) because of low capacity in terms of vessel size and technology, such as limited range of the traditional vessels, with 90% being propelled by sails, paddles and long poles, and limited range of the continental shelf (Mbukwa et al., 2019). Therefore, the majority are artisanal marine fishers mostly confined to shallow water areas along coral reefs, mangrove creeks, sea grass beds, and sand banks where fish species associated with these habitats are few. Only a few fishermen and licensed industrial vessels fishing

in Tanzania's EEZ target large pelagics such as tuna and tuna-like species in somewhat deeper waters (Jiddawi & Öhman, 2002). Consequently, this limits the full exploitation of aquatic resources for socio-economic development in Tanzania.

Furthermore, Tanzanian marine fisheries are beset by natural and social issues such as fish stock availability; illegal, unreported and unregulated (IUU) fishing; overfishing and decline in catch (Mayala, 2018). Overexploitation and IUU fishing by local and distant-water fishing vessels undermine the ability of Africa's fisheries to contribute to the blue economy and the sustainable development of its people (Carney, 2017; Belhabib et al., 2020; Okafor-Yarwood & Belhabib, 2020). According to de Graaf and Garibaldi (2014), African governments lost a total of US$3.3bn potential revenues due to illegal foreign fishing, which account for 25% of all marine catches on the continent. For example, de Graaf and Garibaldi (2014) report that West Africa lost about US$2.3bn through IUU fishing. This is, of course, not only a major concern to artisanal fishers' livelihood sustainability, but also to national economic development at large; and necessitates the establishment of proper docking and landing facilities for trawlers and foreign fishing vessels, as well as buying modern fishing vessels.

Despite the importance of the fisheries sector in unlocking opportunities of the blue economy, there are gaps in knowledge on the subject matter, especially on the contribution of small-scale fisheries in uplifting the socio-economic status of coastal people. This paper, therefore, is designed to evaluate Tanzania's coastal marine fisheries in the context of the blue economy by determining the contribution of marine fisheries to both the livelihoods of the coastal people and the national economy, as well as identifying potential opportunities for marine fisheries that could improve the prospects of blue economy in Tanzania.

2. Context and Methods

2.1 Study Site

Three sampling zones were established for this study: northern (Tanga), central (Dar es Salaam and Coast), and southern (Lindi). These zones were strategically selected to accommodate diverse locations where fishing activities are conducted.

2.2 Study Design

The study adopted a cross-sectional research design and a mixed-methods research approach to assess the contribution of marine fisheries to the national socio-economic development.

2.3 Methods

2.3.1 Sampling

A total of eight (8) fishing villages were studied, with two (2) villages being chosen for sample collection in each region. The study villages were Kigombe and Moa in Tanga; Jibondo and Kilindoni in Coast region; Kunduchi and Buyuni in Dar es Salaam; and Songosongo and Magengeni in Lindi (see Figure 1). The study communities were chosen on the basis of the paucity of information on the role of marine fisheries in improving livelihoods and the national economy in these areas. In addition, the selection of the villages was also based on their dependence on fisheries and proximity to the coast; the presence of fish markets; accessibility, availability of other fisheries-related economic activities; and the activeness of fishing throughout the year.

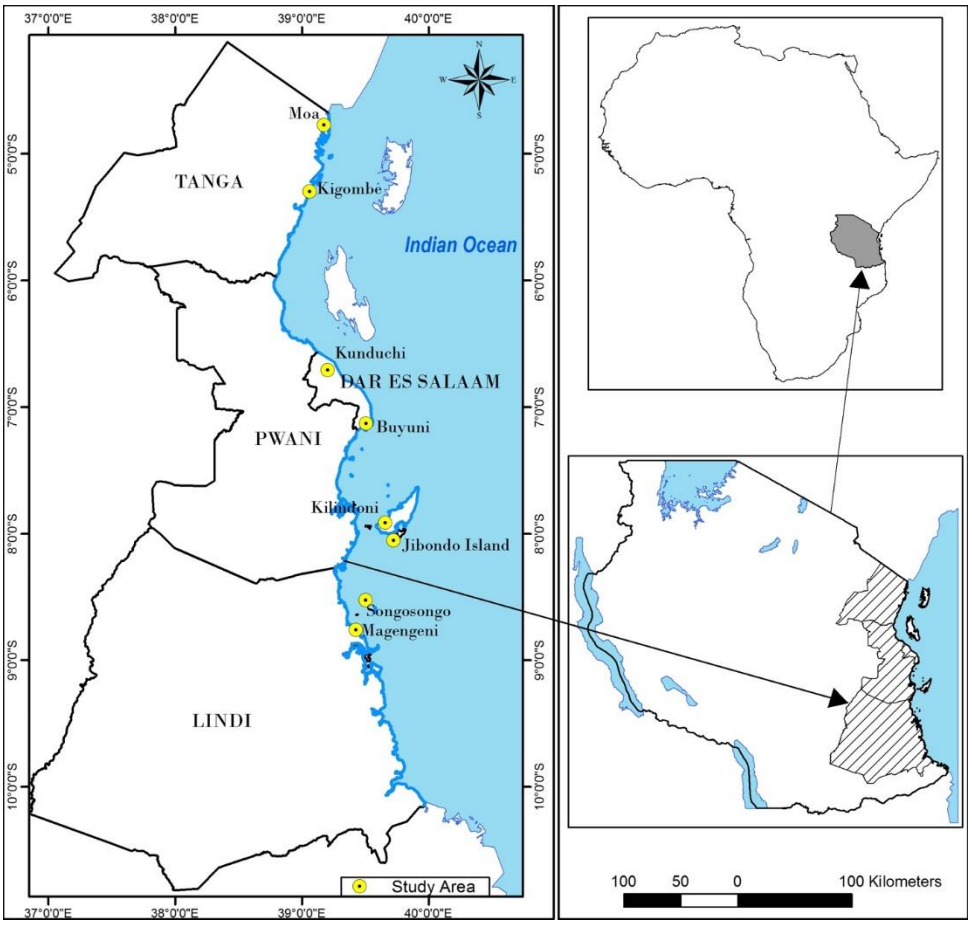

Figure 1: Study Sites in Four Regions Representing Three Fisheries Zones (Northern, Central and Southern)

Source: GIS Unit, Institute of Resource Assessment, University of Dar es Salaam, 2022

A simple random sampling method was used to select the respondents for the study. In this study, the target population consisted of members of the selected villages; and particularly fishers, fishmongers and processors. Key informants included village leaders, elders and BMU leaders. According to the national census of 2012 (NBS, 2012), the total population of the studied sites was 114,783, with 62,892 households. This study involved a total of 1,026 respondents, including 641 fishermen, 135 fishmongers, 100 small fish processors, 70 gear makers/sellers, and 80 others—which included such people as seaweed and sea cucumber farmers, elders, leaders, and district fisheries officers (DFOs). This sample size was deemed sufficient for the study as it was calculated using the formula described by Yamane (1967), as cited in Israel (1992).

2.3.2 Data Collection

Collection of data was carried out using semi-structured questionnaires, interviews, focus group discussions (FGDs), personal field observation, and a review of records from Tanzania's Ministry of Livestock and Fisheries.

Close-ended questionnaires were used to capture key information regarding the respondents' socio-economic and demographic characteristics; household income derived from fishing activities; and the contribution of fishing in improving livelihood assets such as human capital, physical capital, financial capital and natural capital. Also, this method was employed to gather information about available investments and opportunities that can increase the value of the fishing industry for people's livelihoods and national economic development.

Focus group discussions (FGDs) were undertaken to validate the data collected from individual respondents. A total of 16 FGDs were conducted in this study. Two (2) FGDs—i.e., one for men and another for women—were separately conducted in each village with 6–8 people; including fishers, fish processors, fishmongers, fish traders, village elders and leaders. In-depth interviews were administered to key informants such as village leaders, fisheries officers, elders and BMU leaders. A total of 24 key informants were interviewed—i.e., three (3) key informants from each village (elders/leaders, BMUs and DFOs). Secondary data regarding the contribution of marine fisheries to the national GDP, the number of people employed in marine fisheries, export revenues and trends of marine fisheries production were obtained from the Ministry of Livestock and Fisheries (MLF, 2021).

2.3.3 Data Analysis

Qualitative data were analysed using content analysis (Mayring, 2000). Using this analytical method, the data that had been collected through

questionnaires, key informants and FGDs were analysed. These were coded, cleaned and categorized. The data on household income derived from fishing activities, and its contribution to improving livelihoods, as well as the contribution of marine fisheries to the national GDP, employment creation, export revenue and trends of marine fisheries production: all were analysed descriptively into frequencies, percentages and means combined with statistical information, graphs, and tables. This method facilitated the inclusion of a large amount of textual information and a systematic identification of its properties. Textual information was categorized to provide meaningful information. Both descriptive (frequencies, percentages, means) and inferential statistics (two-sample t-test and chi-square) were used in data analysis. Quantitative data were analysed and processed by employing the SPSS software, version 25.0 (IBM Corp., 2017).

3. Results

3.1 Contribution of Fisheries to Livelihoods Improvement

The results shows that fishing is the primary source of income for the majority of individuals in the studied areas. As can also be seen in Figure 2, the results also show that the majority of households engage in fishing. A large proportion of the fishermen in the study areas engage in fishing for commercial purposes; while most of the fishers in Moa, Tanga, engage in fishing for selling and consumption (Figure 3). Most fishers engage in fishing for finfish, followed by molluscs and crustaceans.

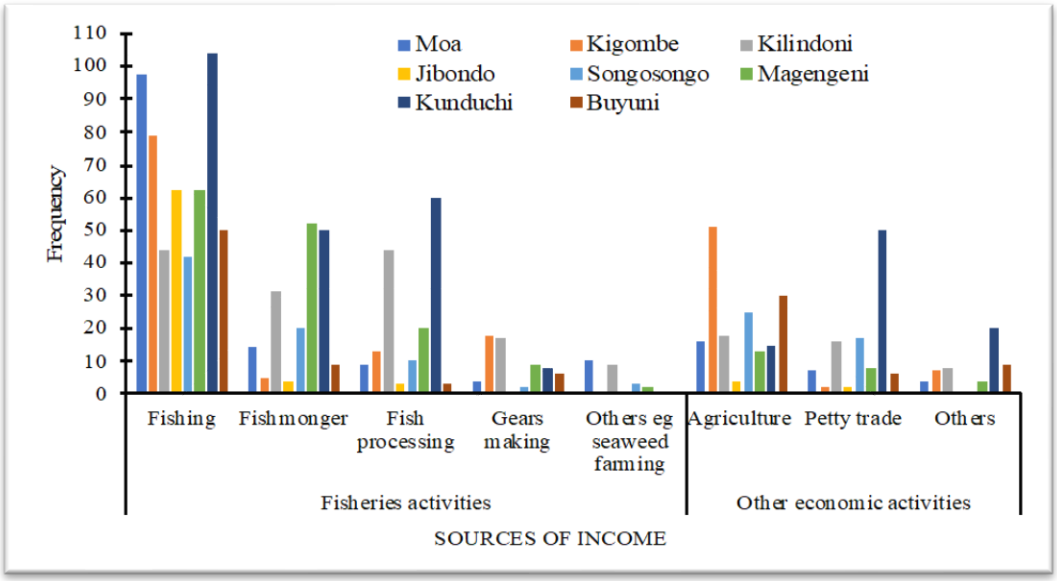

Figure 2. Sources of Household's Income

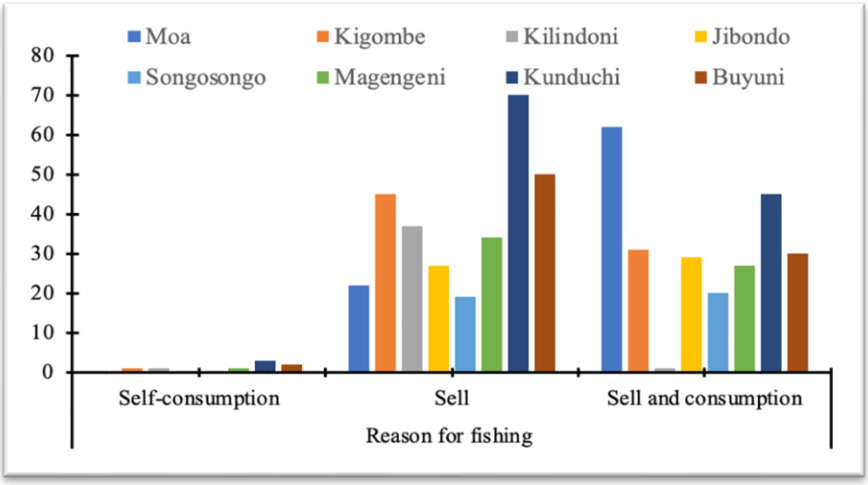

Figure 3: Fishermen's Reasons for Fishing

The data show that the annual average marine harvest has been 50,000t for the past 26 years (Figure 4). The catch per unit effort (CPUE) was high in 1996 at 15.8t, but fluctuated with a declining trend to 6.9t in 2020 (Figure 5). The overall CPUE has been on a strong decline since 2004 to the present, with only a few years showing a minor increase (Figure 5). The CPUE for vessels, on the other hand, has remained relatively stable, possibly due to the usage of traditional fishing gear.

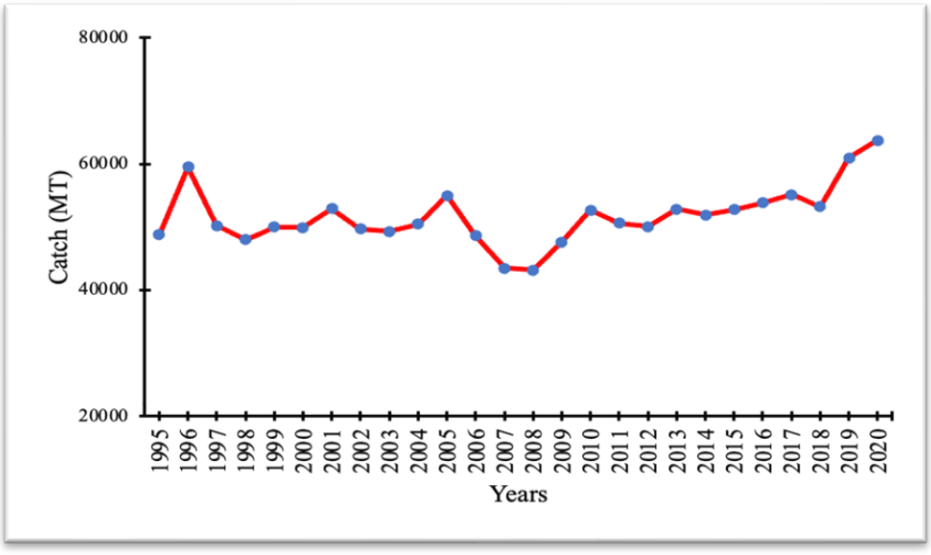

Figure 4: Trend of Marine Catches in Metric Tons (1995–2020):
Source. Ministry of Livestock and Fisheries, 2021

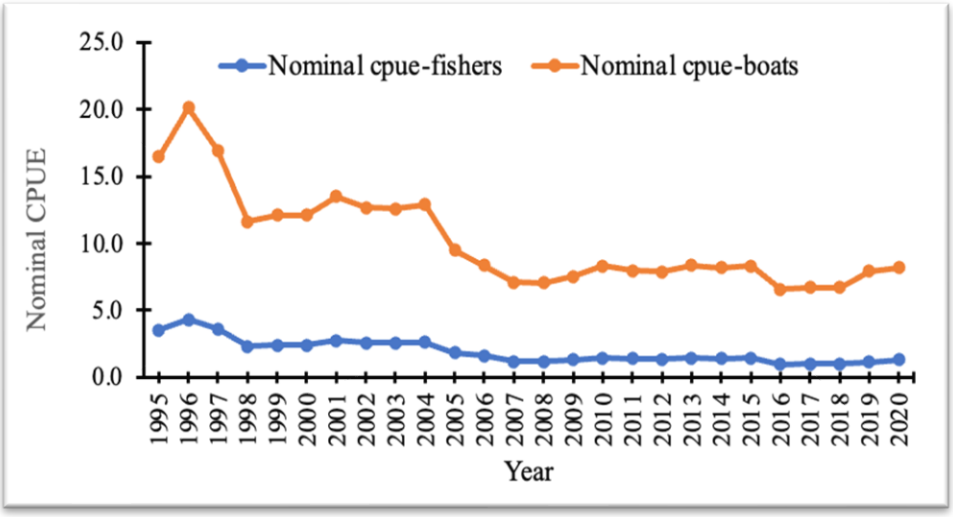

Figure 5: Nominal or Raw CPUE Trend
(Calculated from the total no. of fishers and fishing vessels from marine fisheries (1995–2020)
Source. Ministry of Livestock and Fisheries, 2021

For a 26-year period (1995–2020), both catches and revenue increased from 48,762t in 1995 to 63,764t in 2020; and TZS25m in 1995 to TZS319m in 2020, respectively (Figures 4 and 6); with an average revenue of around TZS115m (Figure 6) per year.

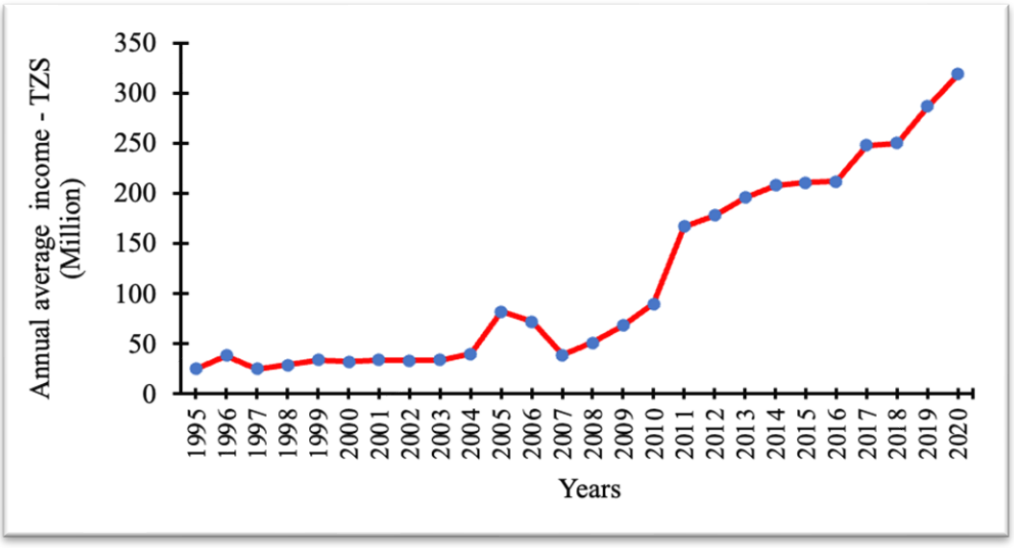

Figure 6: Average Annual Income from Marine Fisheries (1995–2020)
Source. Ministry of Livestock and Fisheries, 2021

3.2 Trend and Contribution of Fisheries to Export, GDP and Employment

The contribution of the fisheries sector to the GDP for the period 1996–2020 fluctuated between 1.5% and 2.5%; and for a five-year period from 2016–2020 it ranged from 1.5% to 1.8%, with an average of 1.7% (Figure 7).

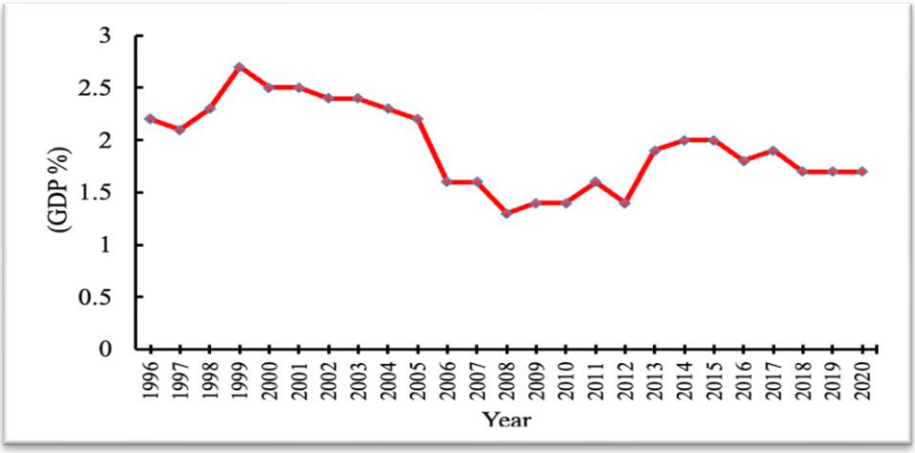

Figure 7: Contribution of Fisheries Sector to GDP (1996–2020)
Source. Ministry of Livestock and Fisheries, 2021

For a period of 25 years (1996–2020), an average of 32,077 people were directly employed in marine fisheries as fishermen, with an average of 6,778 fishing vessels. From 1995 through 2020, the number of fishers and fishing vessels steadily increased (Figure 8); with the number of fishers increasing rapidly compared to the number of fishing vessels. This would suggest that fishermen were increasingly using large-size boats compared to the years before 2005.

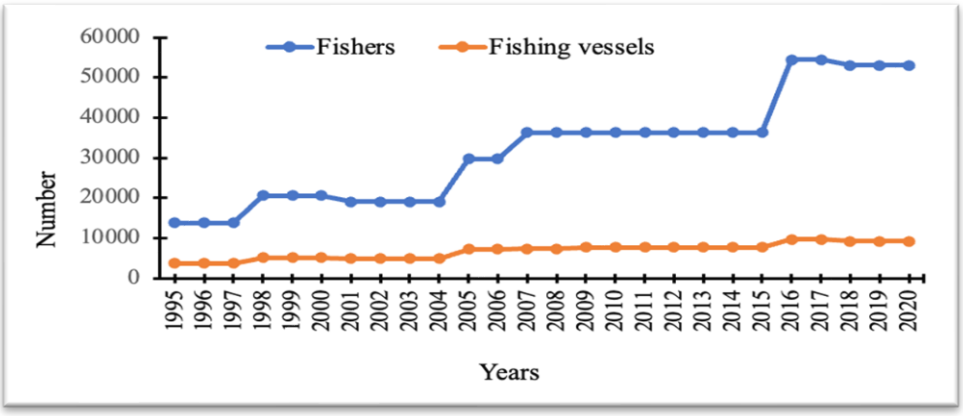

Figure 8: Number of Marine Fishers and Fishing Vessels (1995–2020)
Source: Ministry of Livestock and Fisheries, 2021

Tanzania's fishery exports, on the other hand, ranged from 21,386t to 182,690t in the same period (1996–2020), with an annual average of 87,413t (Figure 9).

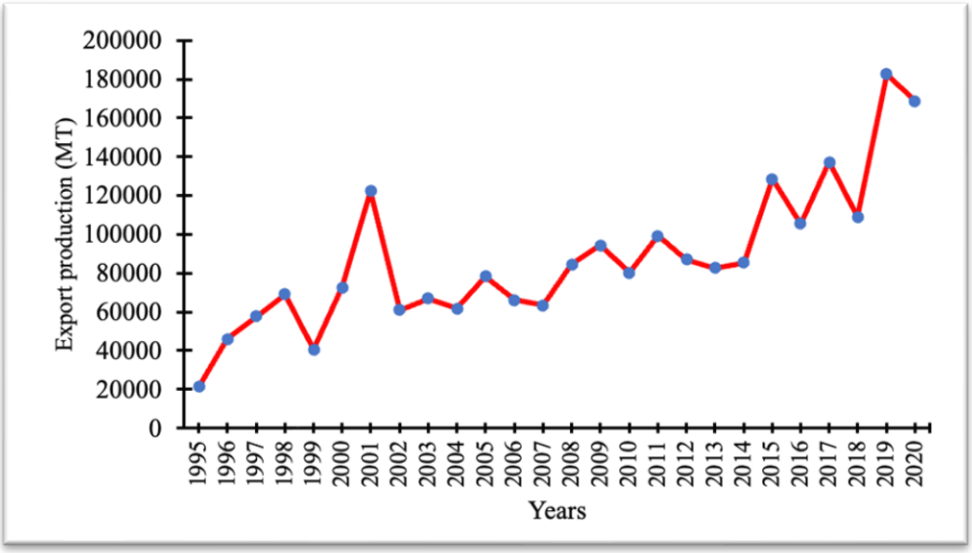

Figure 9: Fisheries Export Production in Metric Tons (1995–2020)
Source. Ministry of Livestock and Fisheries, 2021

3.3 Available Investments for Marine Fisheries Sector Development and Livelihoods Improvements

According to the study findings, most fishers use traditional fishing gear and vessels, which limits their ability to reach EEZ resources (Figure 10).

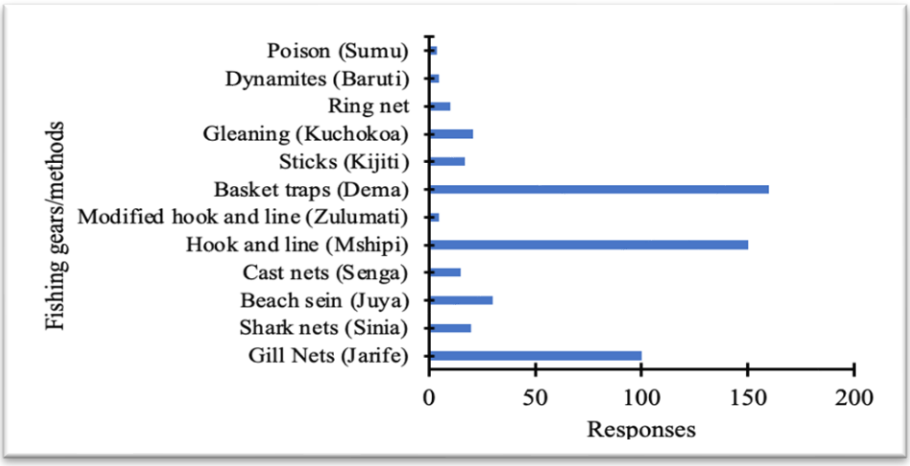

Figure 10: Fishing Gears and/or Methods Used by Fishers

Some fishers use illegal fishing gear or practices such as beach seining, dynamite, and poisoning. In this study, the only modern fishing gear found was a ring net and modified hooks and lines. The study revealed that 74% of all respondents believe that the existing fishing investments do not allow them to access deep water resources in the EEZ and improve the value of their fishery products. Fishers were able to identify fishing investments that would help them to improve their fishing activities, the value of their fishing products, and their livelihoods (Figure 11).

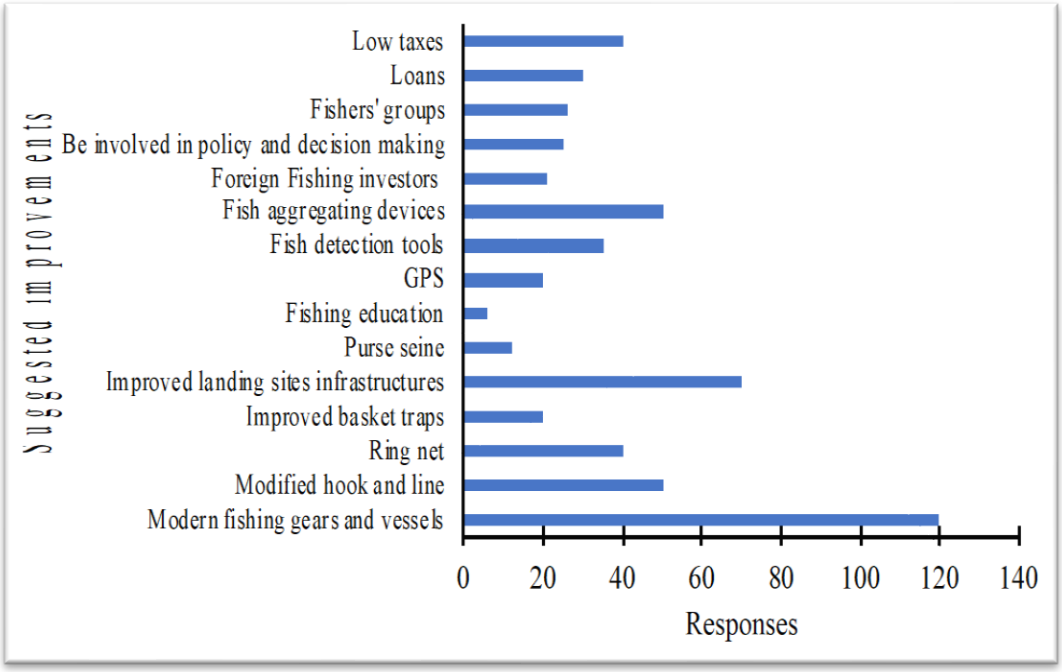

Figure 11: Suggested Investments and Improvements for the Fishing Industry

Again, a high proportion of the interviewed fishmongers and fish processors believed that the available fish storage facilities, transportation, and processing tools do not preserve and improve the value of their fishery products, hence hurting their livelihood. Among the available fishery investments in some of the studied villages included transportation, modern storage and processing facilities such as the Alphakrust fish processing factory, TANPESCA fish processing factory, and World Wide Fund for Nature (WWF) ice producing plant (Figure 12). Fishmongers and processors were able to identify fish storage, transportation, and processing investments that would help them improve their activities, the value of their fishing products and their livelihoods (Figure 13).

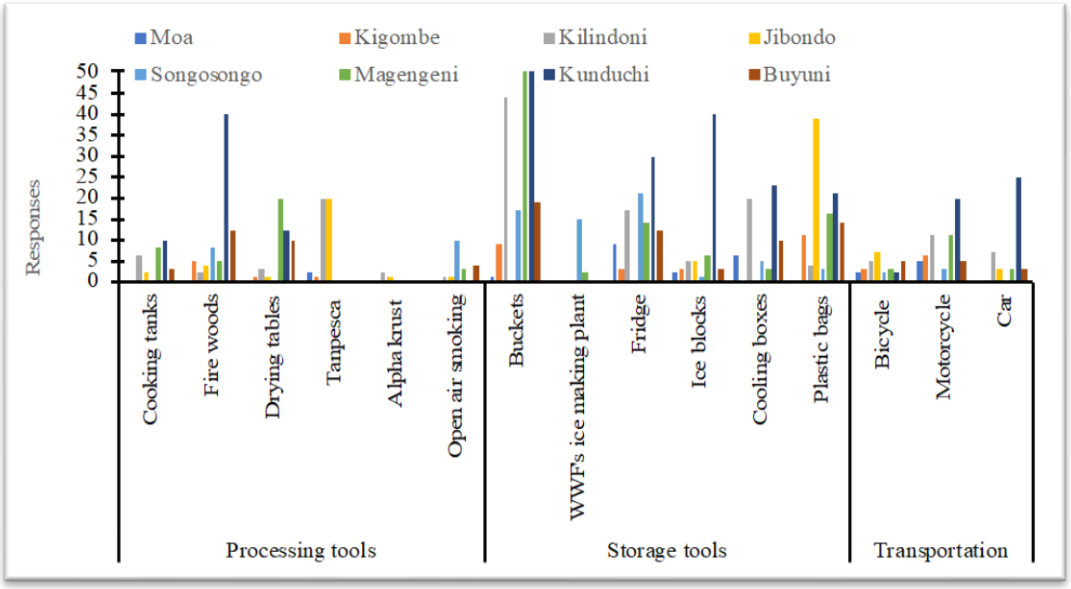

Figure 12: Available Fish Storage, Transport and Processing Tools

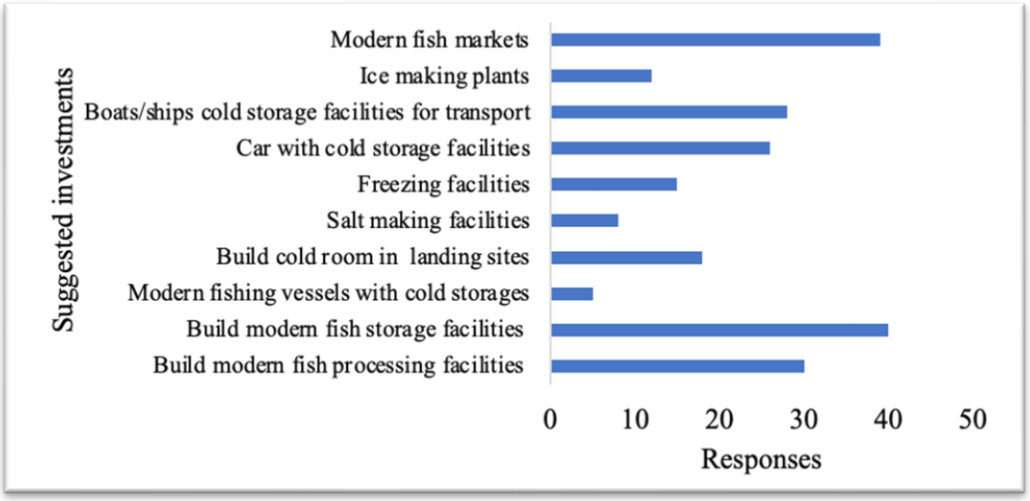

Figure 13: Suggested Investments for Fish Storage, Transportation and Processing

3.4 Existing and Potential Marine Fisheries Opportunities for Industrialization and Livelihood Improvement

According to the respondents, there are a number of potential solutions and opportunities that would significantly improve Tanzania's fisheries sector. For

instance, Tanzania currently lacks the facilities needed for trawlers and international fishing vessels to dock and land their catch. In recognition of the urgent need for the development of a fisheries harbour, the Tanzania government is building one at Kilwa. Along with the development of the harbour infrastructure, suitable processing and storage facilities would also be required. This might, indeed, pave the way for the growth of the fisheries sector in the country that is centred on resources in the EEZ. Additional improvements required to maximize the potentials of the sector include modern fishing gear and technologies, transportation, an efficient marketing channel, as well as a modernization of both fisheries management and the fish value-chain (Figure 14).

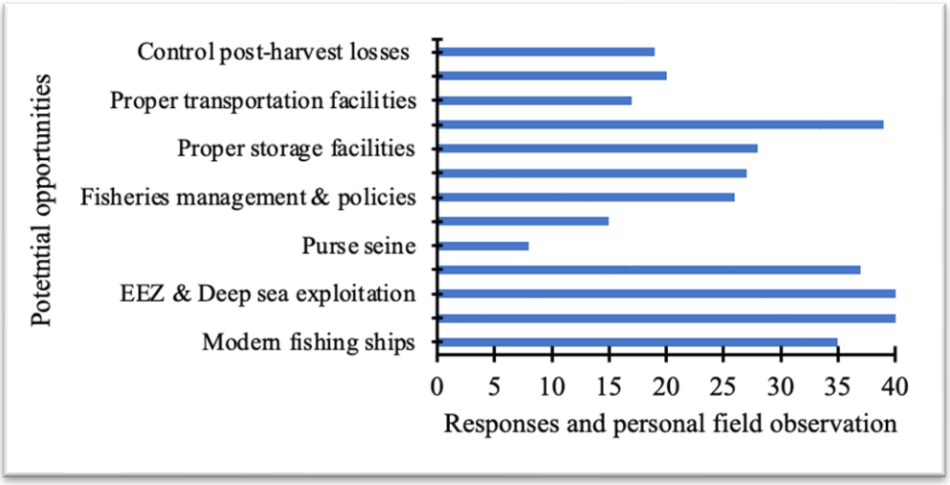

Figure 14: Marine Fisheries Improvement Potentials for the Fisheries Sector

4. Discussion

4.1 Contribution of Fisheries to Livelihoods Improvement

The majority of people in the studied areas rely on fishing as their primary source of income. The most likely reason is that, in comparison to other resources, fisheries are the most widely available and easily accessible natural resources, making them the most convenient option to use. These findings are in line with those of Mkama et al. (2010), who revealed that up to 80% of households along the Bagamoyo District's shore were involved in fishing. Similarly, Olawuyi and Rahji (2012) reported that 71% of households in Ode-Omi, Ogun state, Nigeria, are involved in fishing. Also, Hazanaki et al. (2007) found that 81% of households in the coastal settlements of the estuary region of the Ribeira valley in south-eastern Brazil are involved in fishing. These findings support the claim that fishing is the most accessible source of income for coastal residents.

Furthermore, it was also observed that fishing contributes to household food security through the consumption of household catch, i.e., self-consumption. Such contributions are undoubtedly critical to individual/household food security for many poor households engaged in full-time, seasonal, or occasional small-scale fishing activities. The extent to which poverty influences how much of a catch is consumed is complicated, and not immediately obvious or well-understood. While it is commonly assumed that the poor consume a greater proportion of their catch (Sobo, 2012; Chuenpagdee et al. 2019), a study in the Lake Chad area (Béné et al., 2003) revealed that the poorest households may consume a lower proportion of their catch than better-off households as they instead sell most of their fish to buy cheaper foodstuffs. As a result, the direct contribution of fish to food security for the poorest households may be smaller than previously assumed, thus preventing these households from fully benefiting from the nutritional benefits of fish.

The present study has revealed that the majority of fishermen fish just for the purpose of selling, with only a handful fishing for the purpose of both selling and consumption. Most fishermen claim that they fish because household income from fishing is higher than income from other sources. This study has shown that fishermen do not have diversified livelihoods, and hence they primarily focus on fishing as the main source of income. These fishermen have a strong occupational attachment, work satisfaction, family tradition, culture, and a sense of identity: all of which make it difficult for them to give up fishing, even when it would be an economically rational decision. This is also in line with findings by other studies which have shown that the fishing culture has survived and even flourished within situations where fisheries stocks are in rapid decline (Brookfield et al., 2005; Katikiro et al., 2015). In this respect, Jul-Larsen et al. (2003) argued that small-scale fisheries in developing countries are much more essential for the mitigation of economic uncertainty and prevention of negative poverty impacts than to support or generate economic growth.

According to the findings of the present study, both catches and annual revenues were observed to increase in recent years, possibly as a result of recent investments in fisheries—such as the use of ring nets and modified hook and line—that have boosted productivity. People in fishing villages believe that whatever they obtain from fishing or associated activities does not meet their needs, and thus does not contribute to improving their livelihoods. They say that improving fishing, processing, and storage facilities will help them enhance and strengthen their activities, which will in turn result into improved livelihoods and increased revenues for the government. This study finding is corroborated by Katikiro et al. (2013) and Silas (2022), who observed that traditional fishing gear—such as different kinds of traps and handlines—have been replaced by motor-powered boats that operate fishing nets in a bid to withstand exposure to adverse weather conditions in offshore fishing grounds, and hence increase fish catch.

Secondary data showed that the overall catch per unit effort (CPUE) has been on a strong decline since 2004 to the present, with only a few years showing a minor increase. A declining CPUE usually implies overexploitation, whereas a stable CPUE indicates sustainable harvesting. The observed overall decrease in CPUE could be due to an overall increase in the number of fishers and vessels, which has an impact on fishing effort. An increased number of fishers, combined with a significant increase in vessel numbers, may be a driver of increasing fishing effort, consequently decreasing CPUE. This clearly indicates that increasing fishing capacity in the absence of effective and restrictive management actions may intensify the risk of overexploitation. These findings concur with Zeller et al. (2021) who reported that CPUE declined by 91% across the Mozambique Channel region as a result of motorization and growth in vessel numbers during the period 1950–2016. Also, Silas et al. (2020; 2021) observed that artisanal fishing vessels, which are dominant in the nearshores of coastal areas in Tanzania, have resulted in overexploitation of fisheries resources as signified by decreasing CPUE.

Fisheries, as a subsector of the blue economy, can help Tanzania achieve sustainable socio-economic development if it is properly managed. However, one recurring issue in the monitoring, benefit-sharing, and implementation of ocean economy projects is the top-down management approach, which frequently leads to further exclusion of coastal communities (Sowman & Sunde, 2018; Isaacs & Witbooi, 2019), resulting in limited economic input and destruction of local livelihoods (Belhabib et al., 2020; Okafor-Yarwood & Belhabib, 2020). Given the reliance of coastal communities on marine resources, stakeholder conflicts between development, industry, government, and communities are common (Kadagi et al., 2020).

4.2 Trend and Contribution of Fisheries to Exports, GDP and Employment

Tanzania's marine fisheries are critical to the country's economy, providing jobs, income, and cash from international exports. These fisheries employ an average of 32,077 fishers, and when combined with freshwater fisheries, the entire sector generates on average 1.7% of the country's GDP. However, the contribution of fisheries to the country's GDP is very low when compared to the richness of available fisheries resources (URT, 2022). This could be due to the fact that a large share of what is harvested is sold through an informal market, and hence it is not captured in official statistics. As a result, there is a case to be made that the contribution of the fishing sector to the national economy is not sufficiently reflected in official GDP statistics. We also suspect that the standard approach to measuring GDP leaves a significant number of fish and fish products unaccounted for, because GDP only includes goods and services that are sold in formal markets, while anything in the informal markets—where the majority of the daily catches are found—cannot be captured. Cai et

al. (2019) highlighted the lack of proper understanding and measurement of the contribution of the fisheries sector to GDP, and developed a conceptual framework for understanding the contribution of the fisheries sector to GDP. They also proposed an empirical methodology for measuring the contribution. Recognizing the importance of fisheries in the new Tanzanian economic paradigm, we argue that blue economy development initiatives should be established; and must take into account the potential contribution of fisheries to socio-economic development, as well as the consequences of ignoring community needs and social objectives. Obura (2020) argued that developing a successful blue economy in Africa's coastal and island nations will be a step closer to achieving SDG 14 (Indicator 14.7.1, which reads: "Sustainable fisheries as a percentage of GDP in small island developing states, least developed countries and all countries") (Cai et al., 2019: 51).

On average, Tanzania produced around 87,413 metric tons of fish annually for exportation in the past 26 years (1995–2020), resulting in an annual export value of TZS225bn, and an annual tax revenue of TZS8bn (MLF, 2021). However, we note that exports fell in 2020 compared to the previous year, when it reached the highest. In addition to insufficient fishing, processing, transportation, and storage facilities, the COVID-19 pandemic and the Ukraine war could also be a cause for concern. Consequently, government and private investments in programmes that promote access to the EEZ resources; the availability of high-quality fishing, processing, transportation, and storage facilities; as well as enhancing market access for fishermen: all will become increasingly vital in the post-COVID-19 and the Ukraine war situation (Cai et al., 2019; URT, 2022; Silas, 2022).

4.3 Available Investments for Fisheries Sector Development and Livelihoods Improvements

According to the findings of this study, most fishermen are unable to access the EEZ resources because they rely on traditional fishing gear and vessels that are incapable of performing this. Mbukwa et al. (2019) reported that artisanal fisheries are mainly found in shallow areas along coral reefs, mangrove creeks and seagrass beds, where people fish for species associated with these habitats, as well as small pelagic species. Thus, due to low capacity in terms of vessel size and technology—e.g., limited range of traditional vessels, which are 90% propelled by sails, paddles, and long poles—artisanal fishermen are unable to exploit resources in the EEZ. Furthermore, fishermen felt that if they had modern fishing vessels with processing and storage facilities, as well as modern fishing gear, they can exploit the EEZ resources.

The findings of this study have revealed that most of the existing facilities for storage, transportation, and processing are completely inadequate for the

protection and preservation of the value of fishery products. This situation has contributed to significant post-harvest losses. Hoof and Kraan (2017) pointed out that post-harvest losses are primarily caused by improper handling of catches on board, inadequate processing and storage facilities and techniques, and losses further up the marketing chain in transportation and trade. Post-harvest losses result in the loss of income, and should be considered a problem that has to be resolved. In addition to the existing facilities—the Alphakrust fish-processing factory, the Tanpesca fish-processing factory, and the WWF's ice-producing plant—fishmongers and processors in the areas believe that providing good fish storage, transportation, and processing facilities could contribute to improving the value-chain of fisheries products for improved livelihoods and boosting the national GDP. Furthermore, new public and private funding is required to address issues affecting marine fisheries, which range from local concerns to major environmental and economic challenges. Annual net socio-economic benefits of more than $1tr might arise from such efforts (Hudson & Glemarec, 2012).

4.4 Existing and Potential Marine Fisheries Opportunities for Industrialization and Livelihood Improvements

Only foreign trawlers and fishing vessels operate in the EEZ, and are obligated to land all by-catch in Tanzanian ports. However, because of the lack of suitable docking and processing infrastructure, these vessels do not dock in Tanzania; and so never land by-catch (Hoof & Kraan, 2017). As a result, revenue and resources are lost. As mentioned earlier, de Graaf and Garibaldi (2014) reported that African countries suffered a loss to the tune of US$3.3bn of potential revenues—which account for 25% of all marine catches on the continent—due to foreign fishers. This is evidently a major issue for the sustainability of artisanal fishers' livelihood, and national economic development at large. Thus, it is an issue that necessitates the establishment of proper docking and landing facilities for trawlers and foreign fishing vessels, as well as buying modern fishing vessels. Also, the establishment of proper fisheries harbours is required to permit the landing of EEZ resources and by-catch from foreign trawlers and fishing vessels. All these measures will help reduce the loss of revenue and resources due to overexploitation; and illegal, unreported, and unregulated (IUU) fishing by distant water fishing vessels: be they local or foreign (Carney, 2017; Belhabib et al., 2020; Okafor-Yarwood and Belhabib, 2020). Local fishermen may also be able to exploit EEZ resources if modern fishing vessels with processing and storage facilities, as well as modern fishing gear (e.g., purse seines and long lines), are provided. There are also concerns that should be dealt with at the policy level. These range from whether the national fisheries policy is appropriately and sufficiently supporting fisheries development in the context of the blue economy, to whether the current monitoring, surveillance, and control systems are adequate.

5. Conclusion

This study provided a contribution to the understanding of Tanzania's fisheries in the context of the blue economy concept, using coastal marine fisheries as a case study. Among other things, the study has revealed the dynamics of the socio-economic development of coastal communities in terms of livelihoods and national economy; as well as the contribution of fisheries to resources exploitation, exportation, GDP and employment. The study shows that fishing is not only a key source of tax revenue for the government, but also a better source of income for fishers compared to other activities. In addition, the study described existing investments in the fisheries sector, the requisite investments for further development of the sector; and how all these can be utilized to improve the contribution of marine fisheries to the development initiatives of the blue economy. There is a clear need to manage fisheries resources sustainably to ensure that both fishers and other people benefit either directly or indirectly, by contributing to higher standards of living. In conclusion, local fishers have a limited access to the resources in the EEZ due to the continued use of traditional fishing gears and vessels. It is recommended that local fishers be capacitated to exploit the EEZ resources through support to access credit facilities, and the provision of modern fishing vessels and appropriate fishing gear. This could pave the way for the development of a fisheries sector based on EEZ resources.

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