

CHALLENGES OF FISH PRODUCTION AND FISHERFOLKS AT SOME FISHING COMMUNITIES IN SOUTHERN IJAW LOCAL GOVERNMENT AREA OF BAYELSA STATE

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ABSTRACT

This study was conducted to evaluate the fish production pattern and the livelihoods of the fisherfolks at the Southern Ijaw Local Government Area (SILGA) of Bayelsa State. Data collection was done using snowballing approach in stratified random sampling with structured questionnaire programmed in an electronic application "KoboCollect" and semi-structured interviews (SSI) for target groups in thirteen (13) selected fishing communities. The main occupation of respondents in sampled area revealed capture fisheries (fishing) dominance with a percentage of 90.91% compared to aquaculture which contributed only 9.09% of the total fish production in the Local Government Area (LGA). It was also observed that the fisherfolks do not have access to basic amenities such as potable water, good housing, toilet facilities, electricity and access to quality education. Rudimentary fishing expeditions majorly observed are in wooden canoes and paddles with very few motorized boats. Challenges of fish production due to insecurity in the area includes poor access to credit facilities from banks, incessant flooding due to climate change, lack of cold chain facility, inaccessibility to National grid; better farming practices and inputs including lack of aquatic veterinarians to combat fish diseases in the study area. There is urgent need for sustainable livelihood programmes, improved infrastructural facilities and technological supports to boost production via aquaculture value-chain and enhance income that will improve their standard of living.

Keywords: Fisherfolks, Fish production, Social-infrastructures, Livelihood, Niger Delta

INTRODUCTION

The fisheries and aquaculture sectors are critical component of West Africa's rural economy, supporting the food and income security of millions of people, and contributing substantially to the region's socioeconomic development and human well-being. The region is a powerhouse in African fisheries and aquaculture, accounting for 32% of the continent's fish production and 21% of its aquaculture output, with a significant 57% share of Sub-Saharan Africa's aquaculture production, and demonstrating the most substantial growth in aquaculture production over the past decade. (RAAF, 2024). More than 70 percent of Nigeria's total domestic fish supply originates from artisanal small-scale fishers from coastal areas, creeks and lagoons, inland rivers and lakes of the Niger Delta. (Subasinghe *et al.*, 2021). Empirical studies have demonstrated the economic viability of small-scale fisheries in Nigeria (Ashley-Dejo *et al.*, 2022) and small-scale aquaculture production (Subasinghe *et al.*, 2021). not only in Nigeria but other countries like Indonesia (Diatin *et al.*, 2021)

The devastating effects of climate change are being felt in marine ecosystems, fisheries, and the livelihoods of millions of fishers who depend on them. In Sub-Saharan Africa, the severity of these impacts, coupled with the limited adaptive capacity of many in the fisheries sector, exacerbates the vulnerability of fishers, their families, and communities (World bank, 2025). Climate change also has differing degrees of impact on aquaculture in different parts of the world. Inland aquaculture practices are affected by shortages in freshwater availability and quality due to climate change. (Abisha *et al.*, 2022). Poor credit facilities, lack of cold chain, inaccessibility to better

farming practices and inputs (e.g. quality seed and feed), poor broodstock development, unavailability of fish disease specialists have been reported to be some of the challenges of Nigerian aquaculture system (Subasinghe *et al.*, 2021).

The Niger Delta region, Bayelsa state inclusive has provided livelihoods for many communities through culture and capture fisheries for generations and so very imperative that studies are conducted from time to time to update information and make evidence-based management decisions to boost the fisheries industry in the region. However, the role of fisheries, aquaculture and aquatic foods in the transformation of food systems has remained relatively overlooked due to the lack of scientific data, metrics, and evidence to inform donor agencies, governments, and private investors in decision making and investment planning. This study therefore tends to appraise the fish production in Southern Ijaw Local Government (SILGA) as well as the livelihood constraints faced by the fisherfolks in the area.

MATERIALS AND METHODS

Study Area

The research was conducted in Southern Ijaw Local Government Area (SILGA), one of the eight LGAs of Bayelsa State, Nigeria. SILGA is bordered by the Atlantic Ocean on the south and characterized by its riverine geography with several rivers and creeks running through it. It has a geographical position of 4°48'17N and 6°04'44E in Bayelsa State. It has about 2,682 km² surface area (Wikipedia.org) with Nun River flowing through the communities located along its banks.

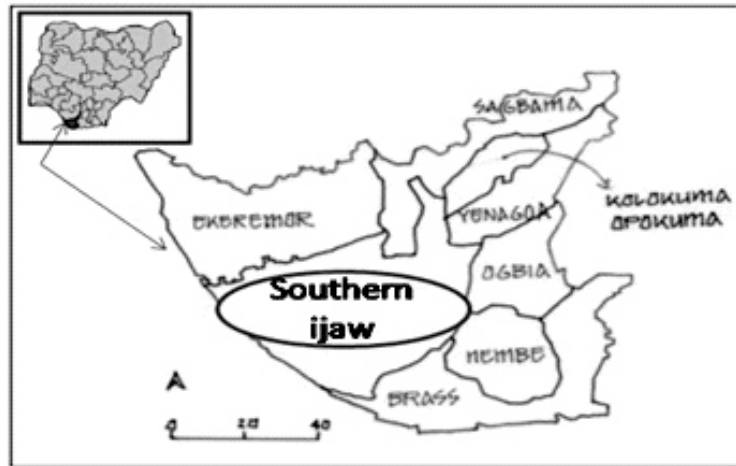


Fig. 1: Map of Bayelsa State showing the eight LGAs (Source: Brisibe, 2014)

The Nun River has a coastline of 60 km on the Bight of Benin (Soluap, 2023) which is where the fishing activities take place in the SILGA and there are, five (5) main fishing camps marked as the “gbenes in Ijaw language” meaning fishing camps. They include, Ikoromogbene, Ipirigbene, Okongbene, Ofinigbene, and Ogilagbene. The other eight (8) communities sampled are, Oporoma, Angiama, Ayama, Nangiama, Onyoma, Opuama, Amasomma and Ekowe, the Polytechnic’s host community.

Research design

A purposeful multi-stage stratified random sampling method as described by Creswell (2014) was deployed to conduct the study in thirteen (13) communities based on their fishing characteristics and history to ensure representation of the target groups and subgroups. The communities with the suffix 'gbene' (which means fishing camps) were selected and other areas (with the suffix 'ama' meaning town origin) were included in the sampled population using snowballing approach for wider coverage of the Local Government Area. A total number of 132 fish producers from the purposely selected 13 communities were captured in the survey using semi-structured interviews and structured questionnaires programmed in an android survey-based application known as Kobo collect.

Data collection

Data were collected using snowballing approach with questionnaires programmed in Kobo Collect which is an electronic-based application for field surveys (Pham and Vinck, 2005) and semi-structured interview (SSI) prepared for target groups in the selected areas. This open-source data collection application was used to collect and process the data. The information obtained includes; major fishing communities, fish production pattern, socio-economic data on fisherfolks, and scale of fishing business within the local government area. On-site sampling and visual observations (FAO, 2012) were also adopted during the assessment survey.

Data analysis

The data collected and other demographic information of the respondents were analyzed using descriptive statistics (Creswell, 2014). Graphical, bar-chart and pie-chart methods were used to analyze the data.

RESULTS

The map below (figure 2) shows the thirteen communities displayed in colors to differentiate the fishing sites as recorded during the survey. Ikoromogbene recorded the highest presence of fishermen while Nangiama recorded the lowest.

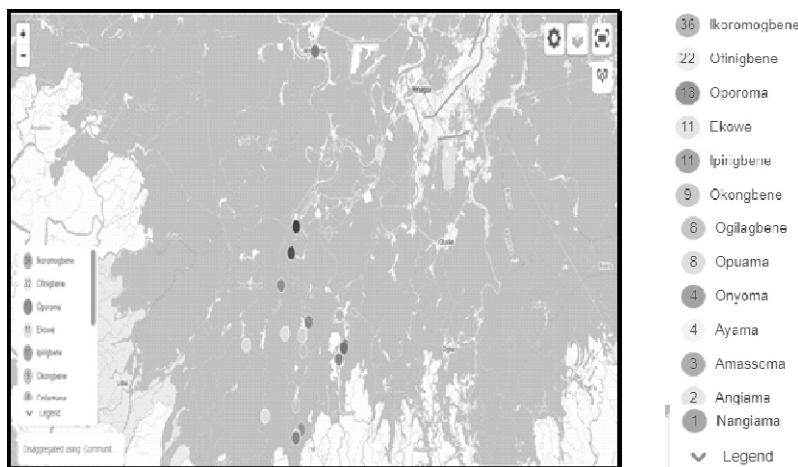


Fig. 2: Map showing the location of the sampled communities and the number of sampled fisherfolks from each community.



The demographic characteristic of the respondents (Table 1) shows that both women and men are actively involved in fish production in the Local Government Area (50:50). Majority of the respondents are still under the economic active age, 40-50yrs (38.64 %) and 42.42% of the respondents are relatively educated (possessing basic

education) with a small percentage of 18.94% without any formal education. The respondents are responsible adults that shoulder responsibilities as seen in their marital status and household sizes. Fish production in SILGA was observed to be dominated by the indigenes of the state.

Table 1: Demographic analysis of respondents

Characteristics	Categories	Frequency	Percentage %
Sex	Male	50	50%
	Female	50	50%
Age range	40-50	51	38.64%
	30-40	32	24.24%
	20-30	25	18.94%
	50-60	24	18.18%
Marital Status	Married	105	79.55%
	Single	11	8.33%
	Widow/widower	9	6.82%
	Divorced	7	5.3%
Religion	Christian	125	94.7%
	Muslim	3	2.27%
	Traditional	2	1.52%
	No religion	2	1.52%
Level of Education	Secondary education	56	42.42%
	Primary education	44	33.33%
	No formal education	25	18.94%
	Tertiary education	7	5.2%
Household Size Including relatives	6-10	68	51.52%
	1-5	42	31.82%
	11-15	14	10.61%
	15-20	8	6.06%
Fishing Experience	11-20	37	28.03%
	1-10	31	23.48%
	21-30	36	26.57%
	Above 30	17	12.88%
Originality:	Indigenes	109	82.58%
	Non-Indigenes	23	17.42%
Total respondents	132		

Fig. 3 characterized the fish production in the local government area. The report depicts that fish production in SILGA is dominated by the artisanal fisheries (90.91 %) while aquaculture contributes only 9.09 % of the total fish production.

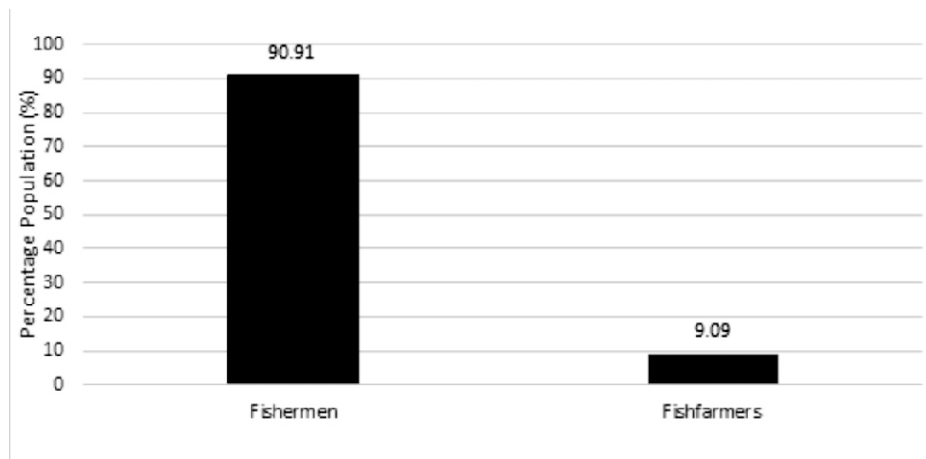


Figure 3: Characterizing fish production in SILGA



Information on the income distribution of respondents and alternative source of income is highlighted in Figure 4a and figure 4b respectively. More than one third of the sampled populations are jobless (56.06 %) outside fishing while another percentage close to one third are fisherfolks that sustain on the sales from fish and fish products (23.48 %). A small percentage of the population (3.03%) is civil

servants while 13.64 % and 3.79 % are into groceries store business and crop farming respectively. From figure 4b, majority of respondents (32.10%) earn about N75,000 monthly while the least group with a percentage of 7.58% generate up to N350, 000 monthly from their fishing business.

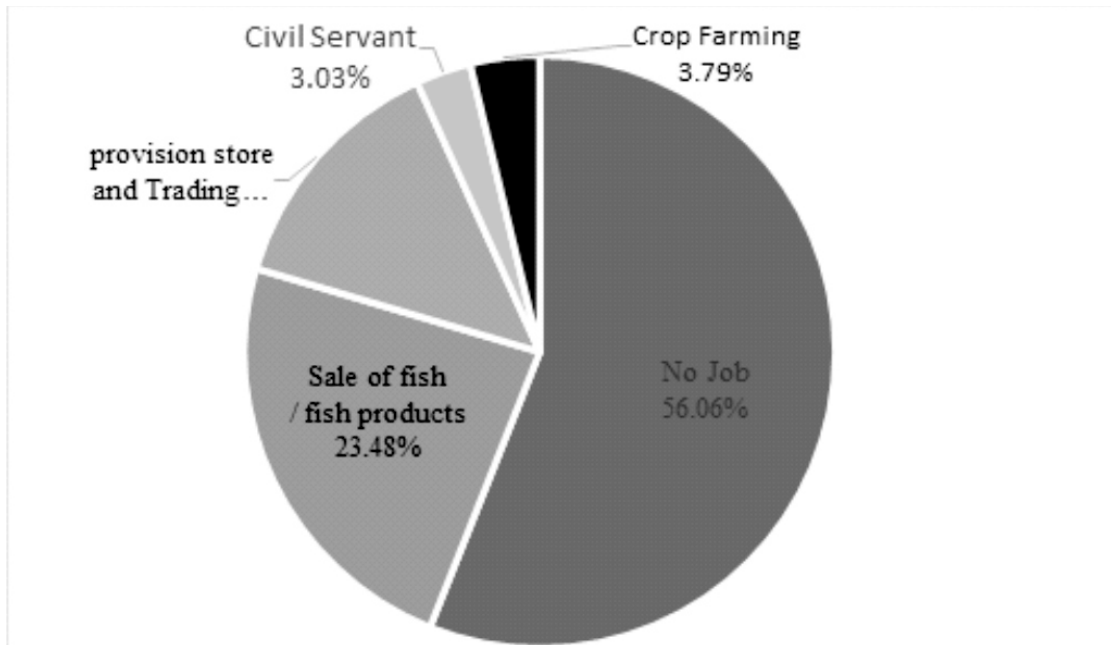


Figure 4a: Alternative sources of income and livelihood support by respondents

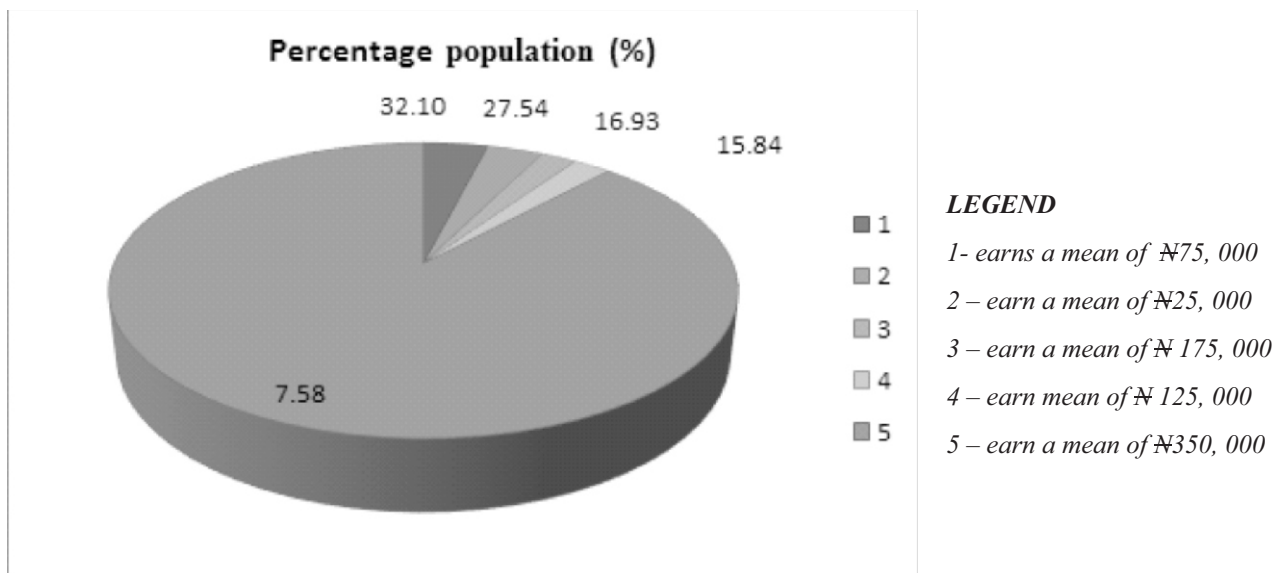


Figure 4b: Monthly income distribution of respondents

Information on the housing system from the sampled communities is presented in figure 5. Majority of the respondents (56.06%) live in thatched/mud house while 12.12% live in a brick house with zinc roof.



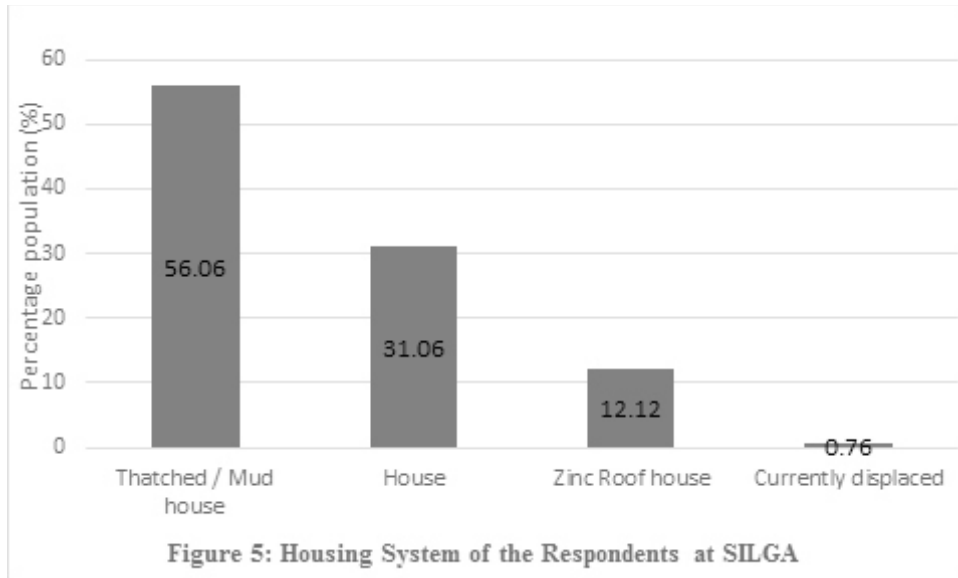
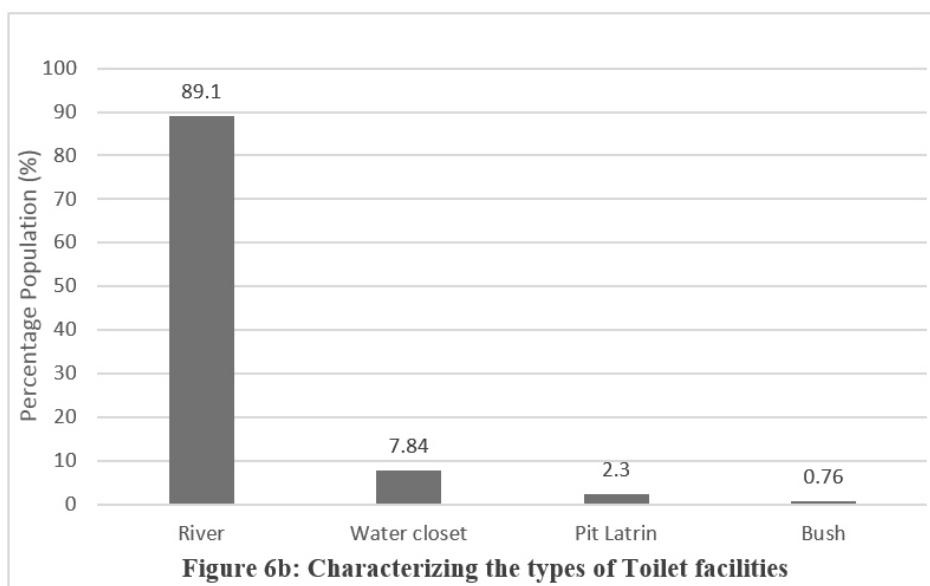
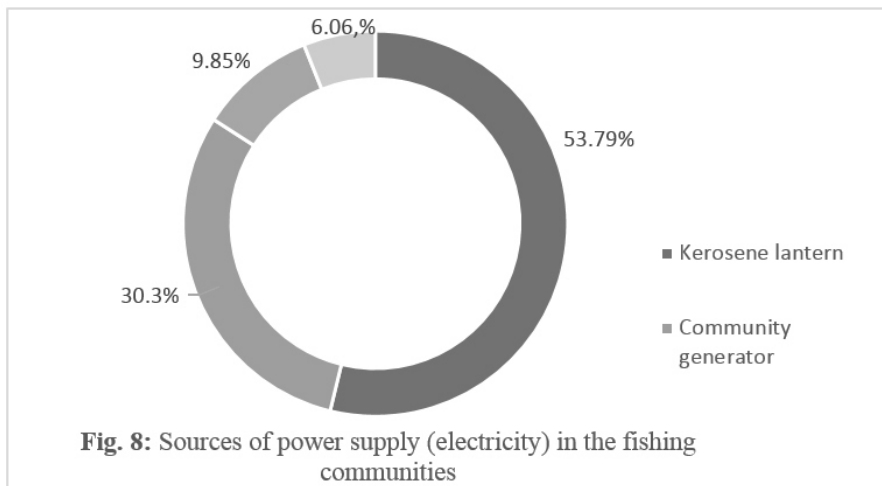
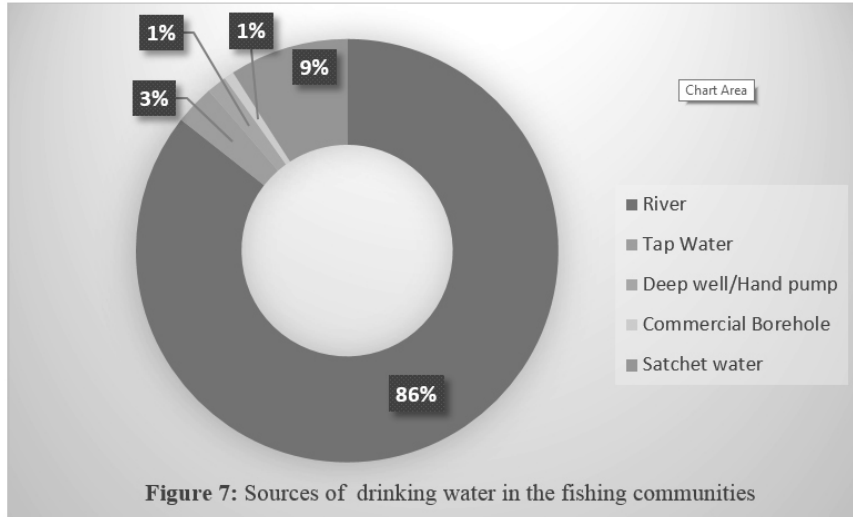


Figure 6a: River toilet facility on a wooden housing system in some communities



River Nun is the major source of drinking water for majority of the respondents (85.61%), while commercial borehole is the least (0.76%) available sources (Fig. 7). In addition, the source of energy/power for light in the night at all the sampled communities is basically kerosene lanterns and community generators with none of the

communities connected to National grid (Fig. 8). Only 9.85% of the respondents owned power generating sets because most of the Niger Delta communities do not have access to national grid especially those located on islands such as SILGA.



From Figure 9), over one hundred respondents in different needs areas do not have access to extension service (90.15%), access to credit facilities (86.36%) however, they do not also pay any form of levies to the government such as revenues and taxes (87.88% respectively)

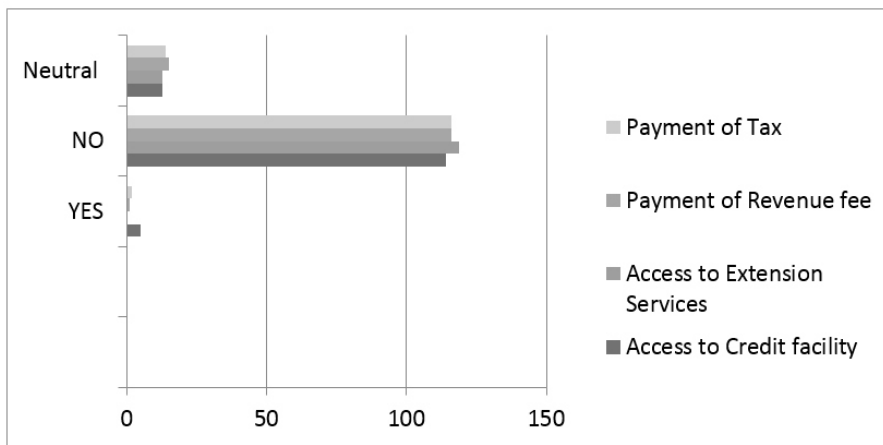


Figure 9: Payment of levies and access to support by fisherfolks at SILGA

About 88.64% (figure 10b) of the fisherfolks operate in wooden canoes with paddles while 2.27% of the respondent /fishermen use motorized boats. Nevertheless,

9.09% do not have access to any craft rather they go on rentage whenever they want to go for fishing.



Motorized boat in SILGA



Wooden canoes with paddle in SILGA

Figure 10a: Fishing crafts used in SILGA by the fishermen

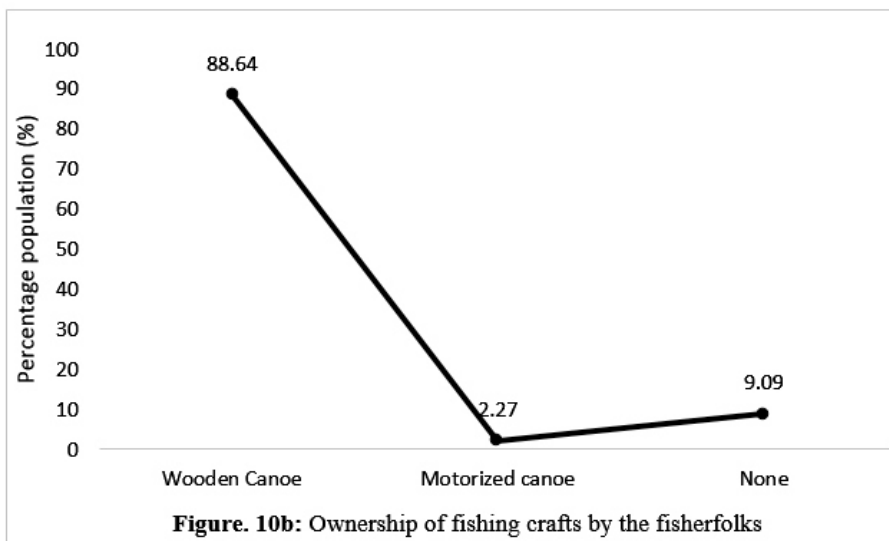


Figure. 10b: Ownership of fishing crafts by the fisherfolks

From table 2 above, it was observed that fisher folks do not keep accurate record of their fishing activities, hence enumerators help them to estimate during interview. This calls for sensitization and capacity building programmes

to enable them understand the need for record keeping for data generation towards proper planning and management of fisheries resources.

Table 2: Analysis of average catch per week Income

Quantity of harvest	Frequency	Percentage (%)
<100kg	45	34.10%
<200kg	39	29.54%
Don't know	25	18.93%
<300kg	13	19.84%
>500kg	10	7.58%
Total	132	100%



DISCUSSION

The active involvement of both men and women in fish production activities has implicated the potential of job creation from the fisheries sector to the masses in the study area (Table 1). Research has shown that both aquaculture and artisanal fisheries provide employment opportunities for millions of people, directly and indirectly (Ali *et al.*, 2023). The youths aged between 30 – 50 years are more actively engaged in the fishing activities more than any other age groups (Dizyee *et al.*, 2022). Quite a number of the sampled population have at least basic education which is vital for effective communication of knowledge and skills for capacity building.

Nevertheless, the disparity in fish production in the local government area studied could be attributed to the low-risk and low capital investment involved in fishing compared to fish farming which demands substantial expenditures on infrastructure, equipment, and inputs (fish seed and feed) with numerous challenges such as disease, water quality issues, and market fluctuations. Additionally, many rural communities possess a rich cultural heritage of traditional fishing knowledge and skills, transmitted through generations, hence, their choice of fishing instead of aquaculture. Fishing is also perceived often as an integral part of rural cultures and communities, providing a sense of identity and social connection. Martino *et al.* (2023) reported that fishing is an important part of Scotland's cultural heritage, particularly in Oban and Mallaig where seafood consumption patterns reflect this cultural value.

The livelihood of an average fisherman in the Niger Delta region may not be sustainable due to average family size and almost no support from the wives who often are dependents. Approximately one third of the sampled population is jobless (56.06%) outside of fish production. Also, about quarter of the respondents (23.48%) are fisherfolks who were sustained on sales from fish and fish products while a few other populations engage in trading or agriculture. From this report, fishing formed the major source of income for these riverine communities. The choice of sales of fish and fisheries products as major livelihood support might be an indication of the profitability of the fisheries post-farm gate value chains. Dizyee *et al.* (2022) reported that generally, fish value chains are economically viable (profitable) and inclusive, as women and youths own over half of post-farm gate value chain activities. Though, the fishing data in this region is lacking as the fisherfolks do not keep proper records of their expeditions.

The disparity in the fish production sector could also depict multifaceted implication. The area's rich aquatic environment has not translated into substantial investment in aquaculture, possibly due to concerns about investment security and climate change impacts. Hon *et al.*, (2021) observed that, threat of insecurity in the Niger Delta region constituted threat to lives and properties, hindered business activities, and discouraged local investors and most importantly, foreign direct investments from foreign investors. Climate change has

led to the small fish farmers with ponds to harvest their crop, end the culture in a shorter period often prior to desired culture cycle/gestation which impacts on the economics and livelihood of practitioners (Abisha *et al.*, 2022). Security issues may also play a role in the indigenous people's preference for fish production pattern in the area concentrating less in fish farming but more (>90%) in favour of fish hunting (artisanal) with little or no risk of theft on investment.

The remoteness, lack of essential infrastructures (mostly electricity) coupled with inaccessibility by road might have precipitated the unavailability of essential service providers for aquaculture such as input suppliers (fish feed, medicants and fish seed suppliers) with insecurity negatively attracting credit institutions (banks) at the study area. These perhaps posed a significant effect to the choice of Artisanal fisheries instead of fish-farming in the Local Government Area. The fish-farmers therefore, needs to travel a long distance (average of 90 kilometers to capital city of Yenegoa) by water in order to access quality commercial feeds (local or imported) which in turn increases cost of production via expensive voyage fare, hence, making their output/products prices non-competitive in the market. The price of high-quality nutritious commercial fish feed locally produced and/ or imported where available, is always unaffordable to smallholder aqua farmers such as those in SILGA who cannot purchase in bulk due to their capital outlay and no access to credit from financial institutions (Subasinghe *et al.*, 2021).

Lack of genetically improved, proper maintenance of broodstock lines or well-run multiplication processes to scale up quality seed supplies to smallholder farmers in Bayelsa State is a challenge to profitable fish farming (Subasinghe *et al.*, 2021). Often, rural fish-farmers are forced to source their fish seed from the wild which in some cases comes with diseases in an environment lacking effective veterinary support service, including disease control and health management at farm level (Subasinghe *et al.*, 2021). Transportation system (water transport/voyage) might also trigger a reduced presence of the post farm gate value chain actors (fish wholesalers and processors) compelling the few fish farmers to sell their product to the available locals perhaps at a below breakeven price. It should be noted that Fish farmers in the remote areas tends to lack access to extension services more, notwithstanding that Fisheries and aquaculture extension services in Nigeria are largely moribund, as in the other agriculture sectors (Subasinghe *et al.*, 2021).

Result from Figure 2 showed that Ikoromogbene, Ofinogbene and Oporoma communities recorded the highest number of fishermen and fishing activities accordingly hosting about 54.22 % of the fisheries activities in the sampled areas. Thus, monitoring fisheries activities in these three communities consistently will help monitor over half (50%) of fish production activities in SILGA and this can contribute immensely in managing the fisheries resources of the region. The major challenge



is the weakness in enforcing fisheries laws and regulations which often leads to overfishing and depletion of fish stocks (Ali *et al.*, 2023). This report revealed that fisherfolks in the study area do not pay any form of levies to the government to help manage and maintain the system and support facilities including extension services. They operate more of local methods and technologies using wooden canoes with paddles with just a small population operating motorized boats (2.27%) while about 9.09% do not have access to any craft which is an indication of poverty and inability to afford basic necessities.

Ali *et al.* (2023) has emphasized that blue economy offers opportunities for artisanal fisheries to contribute to sustainable economic growth and development by providing new markets and opportunities for artisanal fisheries; these opportunities are lacking at SILGA perhaps due to poor governance and non-organized fisherfolks into cooperatives. The fishermen at SILGA benefits from ecosystem resources such as aquatic resources which includes fin and shell fishes, aquatic birds and insects that drive the wellbeing of Wetland ecosystems such as the Nun River is good to prioritize, due to its high economic value and socio-cultural importance to the local dwellers (Okogbue *et al.*, 2021). However, proper planning and management of these resources is vital for sustainability via improved governance and co-management of the fishery in particular that will impact self-sufficiency in fish production.

The fisherfolks especially women in the study area should also diversify their livelihoods by engaging in alternative economic activities such as farming and/or trading (Winemiller *et al.*, 2016) more proactively to reduce fishing pressure and improve income. This diversification can help mitigate the impacts of declining fish stocks but may still be insufficient for sustaining families wholly dependent on fishing for survival. Hence, the need for capacity building and livelihood development programmes.

Some non-governmental organizations have also sought legal avenues for compensation but often encounter systemic barriers which inhibit justice delivery for affected fisherfolks (Ekpu *et al.*, 2018) especially in cases of oil pollution. Engaging stakeholders is key in driving cooperation and co-management via consultations, extension service and capacity building programmes. Measures should be put in place such as the Oguta Lake Watersheds Protection project which was targeted to revitalize the lake to promote sustainable development and management of wetlands resources (Okonkwo *et al.*, 2015). The need for community engagement using the stakeholder participatory approach in conducting community-based environmental and water-based projects have been identified since the outcome directly or indirectly affect the people. SERAP (2022) recommends interaction and effective feedback system among stakeholders to boost livelihood of the people. Igejongo (2021) suggested that policy variables such as extension,

education, and credit identified in his study at Igbokoda fish landing site in Ondo State are important determinants of efficiency for artisanal fishers, stressing that it will be a viable strategy to strengthen sustainable fish production in the Bayelsa State and Nigeria at large.

Alagoa *et al.*, (2018) also added that the rivers in the Niger Delta area have great potentials for fisheries exploitation if properly managed and utilized. Unfortunately, Fisheries decrees in Nigeria lack scientific data to effectively enforce the laws (Nwosu, Ita & Enin, 2012) and so there is the need for more research and in-depth studies to unravel the challenges and tackle the problems the fish farmers and fishermen face in order to improve their livelihood to support their fish production business sustainably.

CONCLUSION

This study revealed a disparity in fish production in the sampled area with artisanal fisheries taking the lead. Despite the significant challenges confronting the general aquaculture industry in Nigeria, remoteness of the area and water transport were observed to be the major bottleneck affecting the choice of the local communities to fishing rather than fish-farming. The livelihood of these fisherfolks is also a typical issue of concern. There is a need for socio-economic sustainability measures and optimal fisheries resource management. Insecurity must be eradicated with accelerated infrastructural development especially linkage to National grid and good road networks which are vital ingredients of development that will catalyze improved income and livelihood of citizens.

Authors' Contributions

ALA - Designed the project and wrote the manuscript, OBC - Supervised the enumerators, data collection and prepared first draft while NEA - Collected data, analyzed the data statistically and formatted the manuscript for publication.

All authors approved the manuscript for publication

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