Original Article

Participation of women in the blue economy value chain at Kilifi, Kenya

Solomon Njenga[1]*

[1] Institute of Climate Change and Adaptation, University of Nairobi, PO Box, 19132-00501-Nairobi, Kenya

Western Indian Ocean JOURNAL OF Marine Science

Open access

Citation:
Njenga S (2024) Participation of women in the blue economy value chain at Kilifi, Kenya. Western Indian Ocean Journal of Marine Science 23(2): 121-134 [doi: 10.4314/wiojms.v23i2.10]

Received:
February 19, 2024

Accepted:
November 21, 2024

Published:
December 20, 2024

*** Corresponding author:**
solomonnjenga@gmail.com

Abstract

Participation of women in the blue economy value chain in Kilifi County in Kenya was assessed based on household surveys and key informant interviews. A sample of 96 households from the coastal Malindi sub-county was selected based on cluster sampling. The most senior female in each household was interviewed, and an additional 10 women leaders from 10 self-help groups were interviewed as key informants. Data from the household survey were analysed for mean, percentages and frequency while content analysis was used to analyse qualitative data. Based on the interview data, 88.5 % of women worked in fish processing, 63.2 % in trading of fish products, 62 % in fish eateries, 18.4 % in fishponds, 23 % in solid waste management, and 20.7 % in mining. Consequently, individual women participated in more than one activity, with a mean of 2.75 activities per woman. Work-related, cultural and economic challenges inhibited women's participation with mean responses of >3 on a 4-point Likert scale. Low levels of participation were observed in economic decision-making, access to information, ownership of productive resources, leadership positions and women's living conditions. Participation of women in the blue economy value chain should be prioritized in strategic decisions by government and stakeholders.

Keywords: women, participation, blue economy, value chain, seascape

Introduction

The economic paradigms currently dominating the world are not sustainable. The threats from climate change, exploitation-based approaches to commerce, and the excess acquisition of resources loom large (Lendoye, 2022). Maintaining a balance between development and ecosystems, aspirations for growth, and the need for sustainability is a prescient challenge (Vasseur, 2017). UN Sustainable Development Goals (SDGs) recognise that sustainable macroeconomic growth cannot be achieved without the full participation of women in economic opportunities (Katila, 2019). SDG 5 specifically speaks to achieving gender equality and empowering all women and girls (Hirsu, 2019). To achieve this goal, there is a need to ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic, and public life (Lütz, 2023). Further, there is the need to undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance, and natural resources, by national laws (Barbier and Burgess, 2019).

The blue economy refers to the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of the ocean ecosystem (Choudhary, 2021). The Blue Economy concept aspires to increase human well-being and social fairness while drastically lowering environmental dangers and ecological scarcity (Choudhary, 2021). This covers conventional ocean sectors like fishing, tourism, and maritime transportation, as well as emergent activities like offshore renewable energy, aquaculture, and marine biotechnology. The blue economy value chain is a series of actions that starts with manufacturing and concludes with markets. It involves

both upstream and downstream entities, including producers and market participants. The micro level includes value chain operators and operational service providers, whereas the meso level includes specialised commercial or governmental players who offer support services. In the context of women, a blue economy value chain is a development process that strives to employ ocean resources sustainably for economic growth and improved livelihoods while maintaining the ocean ecosystem from production to sale and consumption. It is frequently described as three interwoven pillars: mentality creation, socioeconomic distribution, price, demand, and consumption. The blue economy value chain aims to use these pillars to provide a long-term and sustainable business model for the blue value chain (Choudhary, 2021).

Indeed, women's economic participation is one source of macroeconomic growth (Mose, 2024). Women's participation in economic opportunities is thus central to their economic participation. This research adopts the definition of women's participation suggested by Rimmer (2017) which held that women's participation has two elements. The first is 'Women Economic Advancement', meaning economic success and gain for individual women and groups of women based on the skills and resources necessary to compete in markets, plus fair and equal access to economic institutions (Nodirovna, 2024). The second is 'Women Power and Agency', meaning the ability of women to take and act on decisions and control their resources and profits (Bryan, 2024). In addition, Women's Participation is the process of change that gives women access to and control over resources and markets; increased agency and choice (Chacko, 2017). There is an increasing affirmation from scholars and policymakers involved in the development field worldwide that the Blue Economy Value Chain is a potent instrument for advancing economic participation, reducing poverty, generating employment, and fostering sustainable development, among other outcomes (Williams, 2023). The Blue Economy Value Chain around the ecosystem has immense economic opportunities for the general population and women (Rachmawati, 2024). The Blue Economy Value Chain has recently emerged as a novel development paradigm aimed at fostering growth and dynamism in coastal countries (Das, 2023). This paradigm emphasizes the importance of adhering to established norms related to environmental and ecological sustainability (Rachmawati, 2024). The Blue Economy Value Chain encompasses a wide range of activities, including fisheries, port and shipping operations, deep sea mining, ocean energy, coastal tourism, ecosystem services, and marine services (Haimbala, 2019). These activities hold significant potential for economic expansion (Haimbala, 2019). As countries increasingly vie for limited land resources, it is expected that competition will shift to the domain of the ocean sector (Mohanty and Dash, 2020). Furthermore, maritime transport remains a crucial means of navigation and trade (Haralambides, 2023). Many coastal nations in Asia and Africa boast extensive coastlines and large coastal communities, which can serve as catalysts for economic development (Haralambides, 2023). Given the importance of investment, employment, growth, and non-traditional security concerns, it is essential to have a deep understanding of the potential of various sectors within the Blue Economy Value Chain (Haimbala, 2019). Therefore, recognizing the pivotal role played by the Blue Economy Value Chain is of utmost importance (Haimbala, 2019). The fishery sector, for example, is intricately linked with food security, nutritional security, and livelihood security, making it a key component of the Blue Economy Value Chain. Eastern African countries such as Kenya, Madagascar, Mozambique, Comoros, and others, are strategically located in the Indian Ocean seascapes with rich marine heritage. (Lendoye, 2022). This advantageous position affords them significant opportunities to tap into the potential of marine resources for business expansion, entrepreneurship promotion, export growth, job creation, and participation of coastal communities (Haimbala, 2019). With the increasing awareness of the Blue Economy Value Chain and advancements in technology, there exists tremendous potential for investment and the stimulation of growth (Riddick, 2021). Despite their extensive coastlines and abundant ocean resources, the Eastern African countries have yet to fully harness the potential of the Blue Economy Value Chain for economic growth and other developmental objectives (Karani, 2022).

Indeed, women's involvement in onshore fisheries, aquaculture, marine product processing, waste recycling, eco-tourism, conservation, and disaster-risk reduction initiatives, has been identified as a powerful tool for economic participation and sustainable development (Rimmer, 2017). Further, Mukhopadhyay *et al*. (2020) noted that blue economy value chain enterprise offers opportunities around food security, energy, climate change, trade and investments, maritime connectivity, tourism, poverty alleviation,

and socioeconomic growth. Doherty (2018) asserts that women's blue entrepreneurship is an innovative strategy for economic participation in the context of developing countries. It elucidates that women entrepreneurs have long been utilizing the abundant oceanic resources in coastal nations sustainably to enhance the future prosperity of the planet, promote welfare, and address the growing gender disparities. The study by Rimmer (2017) explores the prospects for the Women's Participation region from a feminist global governance perspective. The study noted

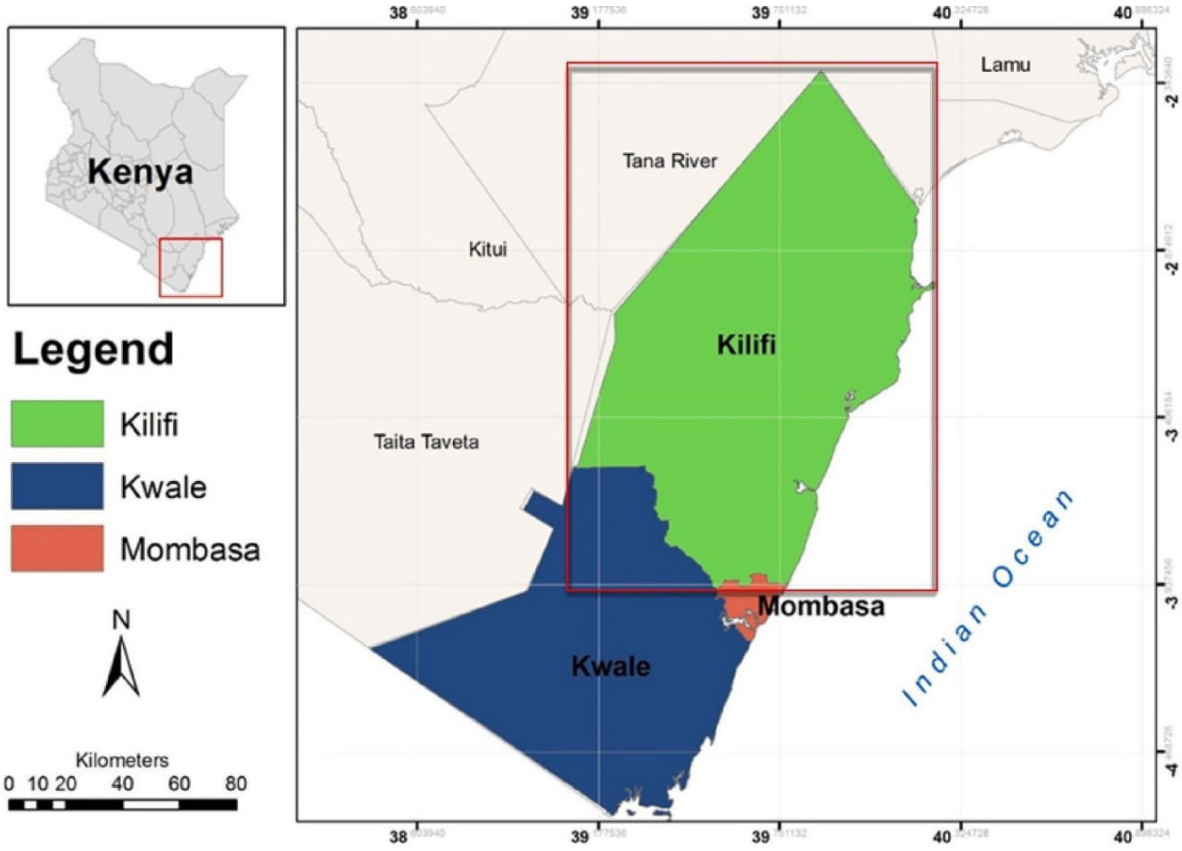

Figure 1. Map of Kilifi County.

that Trade policy should enable women to become key actors in sectors that benefit from trade, provide development pathways into technologically advanced sectors, and address the gender wage gap and women's time poverty. The study proposes a framework for achieving improvements in gender equality and women's participation, specifically targeting Sustainable Development Goal 5 (Doherty, 2018). The study notes that fair trade is critical to achieving women's participation. Fairtrade includes economic, social, and political dimensions, with market access serving as a tool to achieve social goals.

Fairtrade International is the largest certification scheme for cocoa, paying both a minimum floor price and a social premium payment (Parra-Paitan and Verburg, 2023). Many chocolate confectionery companies are now promoting women's participation as part of their cocoa farming support programs. Chacko (2017) asserted that women's participation in blue economy value chain can be achieved through gender equality in work, which involves providing women with access to resources, markets, increased agency, and choice. Even with the critical role of women in sustainable development, the participation of women is still lagging behind that of men (Chacko, 2017). Empowering women in the economy and closing gender gaps at work are thus central to the 2030 Agenda for Sustainable Development (Carpentier, 2020). The UN estimates that at the current rate of change, it will take over 100 years for women and girls to have the same rights as men (Doherty, 2018). Achieving gender equality and the participation of all women and girls is Goal 5 of the sustainable development goals (Doherty, 2018). The participation of women in economic opportunities in general and the Blue Economy Value Chain

has been constrained by several challenges: culture, religion, economic factors, and gender roles among others (Murunga, 2021). Murunga (2021) provides insight into how gendered power dynamics constrain and enable choices and opportunities for addressing gender inequality in small-scale fisheries. The authors note that the gendered-power dynamic is crucial for renegotiating gender equality with social norms and politics, including challenging simplistic views on poverty, vulnerability, and subordination of women. It's evident that women play a key role, in post-harvest activities relating to processing, marketing, and trade but their role remains undervalued (Biswas, 2018). Women are engaged in small-scale fishing activities across all regions of the globe. It is estimated that 11 % of participants involved in small-scale fishing activities are women (Galappaththi, 2022). These women collectively catch around 2.9 million tonnes of marine fish and invertebrates annually (Galappaththi, 2022). The monetary value of the catch made by women is estimated to be about USD 5.6 billion (Galappaththi, 2022). Most of these catches are obtained along the shoreline, either on foot or from small, non-motorized vessels (Manyang, 2019). The catches made by women are primarily intended for personal consumption and are therefore considered part of the subsistence sub-sector (Biswas, 2018). Kilifi County has a massive Blue Economy Value Chain investment potential arising from its 265 km long coastline and the 200 nautical mile Exclusive Economic Zone on its eastern side (Omukoto, 2024). This presents various economic opportunities in Kilifi County in areas such as fishing and fisheries, tourism, logistics and transport, ash crop growing, staple food growing, mining, and animal rearing (Molla, 2021). However, the participation level of women in such economic activities has been questioned. This study therefore sought to assess the status, trends and barriers to Women's Participation in the Blue Economy Value Chain among women in households in Kilifi County, Kenya.

Materials and methods

Study Area

Kilifi County (see Fig. 1) is located on Kenya's coast, 56 kilometres (35 miles) northeast of Mombasa, and is one of six counties in Kenya's coast region. The county has an area of 12,370.8 km² (Omollo, 2022). The county lies on Kilifi Creek and sits on the estuary of the Goshi River. Kilifi town is the capital of Kilifi County. Kilifi County is popular for its sandy beaches and the ruins of Mnarani, including mosques and tombs, dating from the 14th to the 17th century (Cheruiyot, 2022). There are seven sub-counties in Kilifi including Ganze, Kaloleni, Kilifi North, Kilifi South, Magarini, Malindi and Rabai (Tsofa, 2017). Fishing is the main economic activity in Kilifi due to its proximity to the Indian Ocean (Sheriff, 2022); the tourism industry plays a major role also due to the presence of wildlife sanctuaries, sandy beaches, and historical sites (Sheriff, 2022). Agriculture is also practiced and the county is known for growing sisal and cashew nuts. Kilifi County has appreciable quantities of mineral resources (titanium, iron ore and vast salt deposits) which are exploited to support development (Omollo, 2022).

Population and sampling

The study's key population included women in Kilifi County, Kenya. The population census undertaken in 2019 revealed that of the 1,453,787 people living in Kilifi County, 749,673 were women spread across 298,472 households (Kenya National Bureau of Statistics, 2019). The researcher adopted formulae suggested by Kothari (2015) to pick the sample size. Given the target population of 298,472 households, the sample size was arrived at as follows:

$$n = \frac{298{,}472 * 1.96 * 1.96 * 0.5 * 0.5}{0.1 * 0.1 * (298{,}472 - 1) + (0.5 * 0.5 * 1.96 * 1.96)} = \frac{286{,}652.5088}{2984.71 + 0.9604} = \frac{286652.5088}{2985.6704} = 96.00$$

The study adopted a cluster sampling method where the target population was segregated into seven sub-counties (Berndt, 2020). One of the major reasons why cluster sampling was chosen was its low cost. Money on travel and logistics was saved by focusing on select clusters rather than the total population. Then one sub-county was selected randomly with Malindi sub-county being selected to participate in the study. The sample size of 96 households was thereafter randomly drawn from the Malindi sub-county with the oldest female from each household being selected to participate in the household survey based on purposive sampling. In most cases, the oldest female was either the wife of the head of the household, the head of the household, or the oldest daughter in the household. The household survey was undertaken in homesteads with the assistance of research assistants from the Malindi sub-county. The survey questionnaire was structured into three parts. Part A collected demographic information such as marital status, education, and age. Part B of the questionnaire collected information on the participation of women in different Blue Economy Value Chain activities including fish processing, fish rearing in ponds, artisanal fishing, guiding tourists, selling artefacts and palm wine to

tourists, trade in fish, eateries for fish and sea foods, solid waste collection and recycling, sand harvesting and mining, planting of mangrove forest and working in hotels and resorts. The participation in each activity was based on a Yes or No response question. Part C of the survey questionnaire sourced information on barriers to women's economic participation in the Blue Economy Value Chain (economic challenges, work-related challenges, cultural and religious barriers). The study adopted a 4-point Likert scale (where 1 was not at all, 2 was to a small extent, 3 was to a moderate extent and 4 was to a great extent) to examine the extent to which each barrier inhibited women's participation in economic opportunities. Part D of the survey instrument examined women's participation. The study used questions that collected information on five indicators (input in economic decisions, access to information, ownership of productive resources, participation in leadership positions and women's living conditions) of women's participation. The questions measuring women's participation were adapted from de Hoop *et al*. (2020). The household survey was undertaken in October 2023. The study also undertook a key informant interview (KII) with 10 women leaders from 10 self-help groups (SHGs) operating in Malindi based on purposive sampling. The KII guide was administered by the chief investigator in November 2023. Quantitative data from the household survey questionnaire was analyzed based on descriptive statistics tools such as frequency of distribution, mean, and percentages with the aid of Statistical Package for Social Sciences (SPSS) version 25 (Abu-Bader, 2021). SPSS Statistics V25 was chosen because it is a user-friendly statistical programme that has a wide variety of capabilities for new and sophisticated statistics for data analysis, data visualisation, data mining, and other applications. Further, content analysis was used to analyze qualitative information collected through KII. Major themes were identified around study objectives before they were explained.

Conceptual framework

The study adopted a conceptual framework (see Fig. 2) that outlines the key concepts, variables, relationships, and assumptions underlying the study. The framework provides a roadmap for understanding the phenomena under investigation. In the conceptual framework, women's participation in Blue

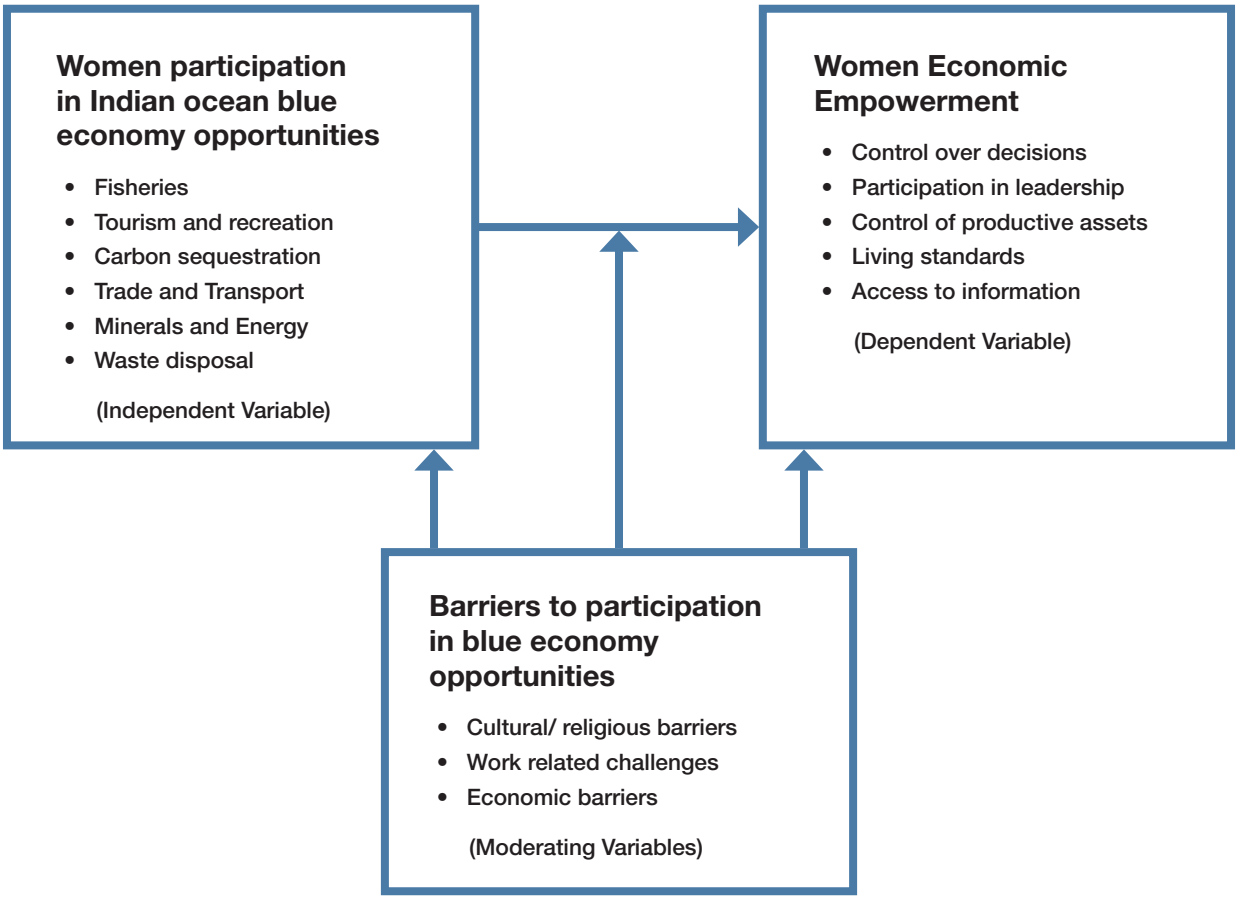

Figure 2. Conceptual Framework.

Economy Value Chain opportunities is the independent variable. Aspects of the Blue Economy Value Chain opportunities considered included fisheries, tourism and recreation, carbon sequestration, trade and transport, minerals and energy, and waste disposal. The dependent variable was Women's Participation captured with aspects such as control over decisions, participation in leadership, control of productive assets, living standards, and access to information. The moderating variable was barriers to women's participation in the Blue Economy Value Chain opportunities such as cultural/ religious barriers, work-related challenges, and economic barriers. The study validated the study's premise that women's engagement in Blue Economy Value Chain opportunities should lead to economic participation. Furthermore, the obstacles to participation should lead to a decrease in the opportunities offered by the Blue Economy Value Chain, hence reducing their economic involvement. The study adopted a positivist research paradigm that asserts that reality is objective and can be studied through objective measurement of a phenomenon of concern to the researcher. The philosophy further asserts that since variables can be operationalized in quantitative terms, it is possible to examine the causal effect relationship between them (Goddard and Melville, 2004). The study thus sought to establish the effect of women's economic participation in the Blue Economy Value Chain opportunities on their economic participation in Kilifi County. Such examination was based on objective data collection through a survey questionnaire tool. Further, the study was based on quantitative research methods. Quantitative research is applied when a phenomenon can be expressed in numerical or quantitative terms hence allowing the generation of relevant data in numerical form which can be subjected to rigorous quantitative analysis (Kothari, 2004).

Results and Discussion

Demographic information

The study was undertaken among 96 households with 87 households giving adequate information for analysis hence the response rate was 90.6 % which was considered adequate. The study examined demographic variables of the women from the Malindi area of Kilifi County in terms of marital status, education, and age. The study revealed that most women (75.9 %) who participated in the study were aged between 20 and 39 with those aged below 20 being 11.5 % and those aged 40 and above 12.6 %. As regards age, most women were youthful. Further, most (78.1 %) women possessed either primary or secondary education with the rest having no formal or college education. This finding implies that most women did not have specialized formal skills gained from college and university education. Finally, most women were married (59.8 %), followed by single and widowed at 16,1 % each, and finally separated at 8 %. The finding implies that most women were in marriage as expected from their strong cultural and religious doctrines that encouraged marriage.

Participation of women in Blue Economy Value Chain opportunities

The study team asked women if they had engaged in any economic activities within the previous year. The household survey findings in Table 1 revealed that women in Kilifi participated in multiple blue economic activities at the same time. The study revealed that 88.5 % of women participated in small-scale fish

Table 1. Participation of women in Blue Economy Blue Value Chain opportunities.

Question	Economic Opportunities	Responses			
		Yes		No	
		Freq	%	Freq	%
Did you participate in any of the economic activity in the past 12 months year?	Fishpond and fish rearing	16	18.4	71	86.6
	Small-scale fish processing	77	88.5	10	11.5
	Artisanal fish in the ocean	21	24.1	66	75.9
	Guiding Tourists on sites	27	31.0	60	69.0
	Selling palm wine and artefacts to tourists	27	31.0	60	69.0
	Trade in fish and other seafood	55	63.2	32	36.8
	Eatery for fish, sea foods and Swahili dishes	54	62.0	33	37.9
	Solid waste collection and recycling	20	23.0	67	77.0
	Sand harvesting and Mining of gypsum, limestone	18	20.7	69	79.3
	Planting of mangrove forest	32	36.8	55	63.2
	Working in hotels and resorts	46	52.9	41	47.1

processing, 63.2 % in trading in fish and seafood and 62 % in eateries for fish, seafood and Swahili dishes among other Blue Economy Value Chain opportunities. However, only 18.4 % participated in fish rearing in fishponds, 24.1 % in artisanal fishing in the ocean, 23 % in solid waste collection and recycling and 20.7 % in sand harvesting and mining of gypsum and limestone. These economic activities have tended to be preserved for men. In a KII with the woman leader of Machina Self-help Group, the respondent noted:

"Most women shy away from actual fishing because that is a preserve for the men. Woman's work is to receive fish at the harbour for clearing and drying before it is sold or prepared for eating at home."

The finding implies that women participated in the fishing industry doing small-scale fish processing and trading in fish and fish products. However, they participated less in mining, artisanal fishing, and solid waste collection. The study concluded that women were confined to fish processing and trade in fish products among the available Blue Economy Value Chain opportunities in Kilifi County. Empirical investigations corroborated the results that women participate in just a small proportion of available Blue Economy Value Chain opportunities. Vipinkumar *et al*. (2017) highlight the gender bias and inequalities in the marine fisheries sector. This emphasizes the importance of self-help groups in promoting gender mainstreaming. Meetei *et al*. (2016) who worked on women's active participation in various fisheries and aquaculture activities in Manipur note that participation in fisheries activities significantly contributes to the participation of rural women.

Rewards for the participation of women in Blue Economy Value Chain opportunities

The study also investigated the rewards received by women in Kilifi from their participation in Blue Economy Value Chain opportunities. The rewards were categorized as either profit, salary/wages or subsistence. The survey findings in Table 2 showed that of those women who participated in small-scale fish processing, 63.6 % earned a profit while the rest earned a wage or for subsistence. Further, of those who participated in trade in fish and seafood, 70.9 % of them did it for a profit with the rest earning wages for their services. Further, of those women who participated in sand harvesting and mining, solid waste collection, planting of mangrove forests and working in hotels, 77.3 %, 85.0 %, 87.5 %, and 78.3 % respectively earned wages with the rest earning a profit or for subsistence. In a KII with a woman group leader from Malindi town who operates an eatery in Malindi town she said:

> *"I operate this hotel to make a profit for taking care of my family. Here, I sell different kinds of food with fish being the popular dish among my customers."*

According to the findings, women who participated in more Indian Blue Economy Value Chain activities tended to make a profit from their work and therefore had control over their earnings, whereas women who participated in fewer activities tended to receive a wage or did so for subsistence. In these situations, the employer set their pay. Empirical studies have also noted that women do two more hours of unpaid work per day than men hence implementing policies to reduce and redistribute unpaid work could increase GDP by up to four percent. (Alonso *et al*., 2019).

Table 2. Rewards for the participation in the Blue Economy Value Chain.

Question	Economic activity	Responses					
		Profits		Salary/Wage		Subsistence	
		Freq	%	Freq	%	Freq	%
Is your participation in the economic activities for a salary, profit or family subsistence?	Fishpond and fish rearing	10	62.5	5	31.3	1	6.2
	Small-scale fish processing	49	63.6	22	28.5	6	7.8
	Artisanal fishing in the ocean	16	76.2	0	0.0	5	23.8
	Guiding Tourists on sites	16	59.2	9	33.3	2	7.4
	Selling palm wine and artefacts	25	92.6	2	7.4	0	0.0
	Trade in fish and other seafood	39	70.9	16	29.1	0	0.0
	Eatery for fish, seafood	24	44.4	30	55.6	0	0.0
	Solid waste collection and recycling	3	15.0	17	85.0	0	0.0
	Sand harvesting, Mining of gypsum, limestone etc.	4	22.2	14	77.3	0	0.0
	Planting of mangrove forest	4	12.5	28	87.5	0	0.0
	Working in hotels and resorts	10	21.7	36	78.3	0	0.0

Barriers to women's economic participation in the Blue Economy Value Chain

Cultural and religious Barriers

Table 3 presents the mean response score for statements on cultural and religious challenges facing women in their participation in Blue Economy Value Chain opportunities. The most prominent cultural challenge was forced/early marriages with a mean response of 3.6 on the 4-point Likert scale; hence tending towards a great extent. The finding implies that women in Kilifi County were hindered in their participation in Blue Economy Value Chain opportunities by early or forced marriage. The least-faced cultural challenge was gender-based violence at a mean response score of 3.1 on the 4-point Likert scale coinciding with a moderate extent and implying that gender-based violence was also a cultural hindrance to women's participation in Blue Economy Value Chain opportunities. All mean responses on cultural and religious barriers to women's participation in Blue Economy Value Chain opportunities were 3 and above on the 4-point Likert scale implying that the women in Kilifi County were hindered by cultural barriers in their participation in Blue Economy Value Chain opportunities. Further, the KII with the Kivangaraa Women group leader revealed:

> *"...I am a woman and every day before I go out to sell fish, I have to feed the goats and do household chores. These activities eat into my time for selling fish..."*.

The findings imply that culture and religion bestow on women additional activities and roles that end up limiting their participation in Blue Economy Value Chain opportunities. These findings are in agreement with empirical studies (Muli, 2020; Azizi and Moradi, 2022; Alemu *et al*., 2022). Muli (2020) noted that cultural practices, property ownership, and early marriages influenced women's involvement in economic projects while Female Genital Mutiation (FGM) and widow inheritance had minimal influence. Azizi and Moradi (2022) observed that barriers to women's presence in economic, social, and cultural dimensions and providing solutions for removing those barriers is needed to obtain practical results in the field of employment policy. Alemu *et al*. (2022) noted that factors inhibiting women's participation in income-generating activities included husbands not allowing participation, local customs, family size, land size, and livestock holdings, among others.

Work-related challenges

Table 3 presents the mean response score for statements on work-related challenges facing women in their participation in Blue Economy Value Chain opportunities. The most prominent work-related challenge women in Kilifi faced was unequal pay for women as evidenced by a mean response score of 3.3 on the 4-point Likert scale, tending towards a great extent. Women in Kilifi therefore received relatively lower pay compared to men in their participation in Blue Economy Value Chain

Table 3. Barriers to women's economic participation.

Cultural and Religious Barriers	**Mean**
Early/ forced marriages	3.6092
Participation in-home care and subsistence work	3.4713
Childbearing and rearing	3.3678
Denial of education opportunity	3.3218
Female genital mutilation	3.2414
Gender-based violence	3.1609
Work-Related Barriers	**Mean**
Unequal pay for women	3.3333
Assigning inferior tasks to women	3.2874
Assigning tasks based on sex	3.2874
Stereotypes of what women can do	3.2644
Sexual harassment	3.1839
Economic barriers	**Mean**
Inadequate skills training and education	3.3103
Financial illiteracy	3.2874
Low levels of income	3.1724
Low access to credit facilities	3.1724
Low access and ownership of productive resources	3.0345

opportunities. The least faced work-related challenge was sexual harassment at a mean score of 3.1 on the 4-point Likert scale, coinciding with a moderate extent. This finding means that even though sexual harassment was the least faced work-related challenge, it still had an impactful effect on the participation of Kilifi women in Blue Economy Value Chain opportunities. Further, all the mean response scores on work-related challenges were above 3 on the 4-point Likert scale. This implies that work-related challenges inhibited Kilifi women's participation in various Blue Economy Value Chain opportunities to a great extent. In KII with the woman leader of the Wachuma Women Group, the respondent stated:

> *"I am a woman who works as a fish seller, our culture does not allow women to go fishing. The activity is reserved for men. All we can do is clean the fish and sell it. I am not even allowed to own a boat as no male fisher will even dare work with it..."*

The findings mean that Kilifi women face a number of work-related challenges that hinder their participation in Blue Economy Value Chain opportunities. Critical work-related challenges include unequal pay in favour of men, inferior tasks for women, assigning tasks based on sex, and sexual harassment among others. Women's economic participation is influenced by structural biases, such as the sexual division of labour, the glass wall and glass ceiling effects, and the feminization of poverty (Masreka, 2020). Neyer and Stempel (2019) noted that in Nigeria discrimination leads to inefficient working time allocation between women and men—discrimination results in lower wages, output, and welfare for women labourers. Women's contributions to agriculture and economic development are underrepresented. Gender biases hinder women's participation in productive agricultural activities (Uche, 2019).

Economic barriers

Table 3 presents the mean response score for statements on economic barriers facing women in their participation in Blue Economy Value Chain opportunities in Kilifi. The most faced economic challenge was skills training level as evidenced by a mean response score of 3.3 on the 4-point Likert scale. The finding means that the most inhibiting economic challenge facing them in their participation in Blue Economy Value Chain opportunities in Kilifi County was the lack of skill sets needed. The least faced economic challenge was ownership of productive resources as evidenced by a mean response score of 3.0 on the 4-point-Likert scale. The finding implies that even though ownership of productive resources was the least faced economic challenge, it was still a major inhibitor to the participation of Kilifi women in Blue Economy Value Chain opportunities. Nevertheless, all the economic challenges were ranked above 3 on the 4-point Likert scale implying that economic barriers were a significant inhibitor to the women's participation. Further, data collected through KII also paints a picture of economic barriers limiting women's participation in Blue Economy Value Chain activities. A woman leader from the Malembe women group noted:

> *"We women do not have easy access to credit facilities to improve our livelihoods. Our ability to take loans is limited to the social capital that the group can offer each of us. Banks want collateral before they can advance loans to us. The land we own is ancestral and is in the name of my husband so we are not even allowed to talk about it let alone use it as collateral to get a loan to improve my business..."*

These findings imply that women face various economic challenges that inhibit their ability to participate effectively in Blue Economy Value Chain opportunities. The major economic challenges are access to credit, lack of skills, and financial literacy, among others. The findings have a basis in the empirical study by Ojwala (2012) who noted that the financial knowledge and education of women help in determining success in business enterprise and management while enhancing women's confidence and bargaining power. Further, training creates awareness of the issues affecting women and prepares or equips them on how to tackle and sustainably maintain a balancing act that meets their needs. Khalid and Raza (2022) noted that access to finance, legal constraints, and entrepreneurial skills also play a significant role in limiting women's participation in business activities. Finally, Jahan and Khan (2016) in a paper discussing the significance of women's role in agriculture development and the lack of technical advice and skills training they receive, suggest that this affects their participation in economic activities.

Women's participation in Kilifi County

The study examined the level of women's participation in Kilifi County as far as their participation in Blue Economy Value Chain opportunities were concerned, and challenges inhibiting such participation as presented in Table 4. Women's participation was examined in terms of women's input in economic decisions, their access to information needed to

Table 4. Women's participation level.

Statements	Responses					
	Little to no input		Input into some decisions		Input to all or most decisions	
	Freq	%	Free	%	Free	%
Input in decisions on participation level in economic activity	29	33.3	34	39.1	24	27.6
Input in decisions on how much output generated is sold or consumed	32	36.8	40	46.0	15	17.2
Input in decisions on how income generated is spent	27	31.0	54	62.1	6	6.9
	Not at all		Small extent		Moderate extent	Great extent
	Freq	%	Freq	%	Freq %	Freq %
Access to information for decisions	33	37.9	28	32.2	23 26.4	3 3.4
Change in living conditions of self and family	28	32.2	27	31.0	19 21.8	13 14.9
	No		Yes			
	Freq	%	Freq	%		
Ownership of productive assets	68	78.2	19	21.8		
Participation in community leadership	53	60.9	34	39.1		

make economic decisions, their living conditions and that of the household, their ownership of productive assets and their participation in leadership positions in the community. Input in economic decisions was based on a 3-point scale (where 1 was little to no input, 2 was input in some decisions and 3 was input in all or most decisions). 72.4 % of the women in the household survey reported that they either had little to no input or some input in decision-making on the economic activity they participated in. The finding implies that the input in most decisions regarding the participation rate of Kilifi women in Blue Economy Value Chain opportunities was made by someone else other than them. Further, 82.8 % of the women in the household survey revealed that they either had little to no input or some input in decisions about how much output is sold or consumed in the family. The findings mean that the input into decisions on use of outputs was mainly made by someone else other than them. Finally, 93.1 % of the women in the household survey had either little to no input or some input into decisions regarding how income earned from participation in Blue Economy Value Chain opportunities is spent implying the use of income tended to be decided by someone else and not women themselves.

The study also examined the level of access to information needed to make economic decisions based on the 4-point Likert scale (where 1 is not at all, 2 is to a small extent, 3 is to a moderate extent and 4 is to a great extent. The finding showed that 70.1 % of the women in the household survey reported either not at all or to a small extent implying that in most cases Kilifi women did not have access to the right information for decision-making as regards participation in Blue Economy Value Chain opportunities. Further, the study evaluated the extent to which the living standards of the Kilifi women and that of their household had changed since they began participation in Blue Economy Value Chain opportunities with 63.2 % reporting either not at all or to a small extent. This finding implies that the living standard of the Kilifi women and that of their household had not changed much even after years of their participation in various Blue Economy Value Chain opportunities. Finally, on whether the economic activity women participated in had enabled them to own productive assets in their name or jointly with their spouse, 78.2 % of women in the household survey responded with a 'no' meaning that most of them did not own productive assets either in their name or jointly with their spouses. On whether their participation in Blue Economy Value Chain activities had enabled them to participate in leadership positions in their community, 60.9 % responded with 'no' implying that most women in Kilifi County were not in leadership positions in the community. The findings revealed that Kilifi women had a low level of economic participation on all indicators adopted to measure women's participation. In this case, low levels of economic involvement meant

that women's participation in the blue economy value chain was minimal, and that their future access to economic resources was therefore limited.

With regard to the first indicator 'input in economic decisions', the Kilifi women had either little to no input or some input. This means that women in Kilifi County had little input in decisions around participation in spending output and rewards from the Blue Economy Value Chain opportunities. Concerning the second indicator 'access to information', Kilifi women did not have access to the right information for decision-making as regards participation in Blue Economy Value Chain opportunities. The third indicator 'living standards', showed that the living standard of the Kilifi women and that of their household had not changed much even after years of participation in various Blue Economy Value Chain opportunities. The fourth and fifth indicators, 'ownership of productive assets' and 'participation in leadership positions' revealed that most women did not own productive assets and were not in leadership positions in the community. Therefore, Kilifi women's participation level was low; a phenomenon that is attributed to inadequate participation in all Blue Economy Value Chain opportunities. The low participation was due to several barriers including work-related, economic, cultural and religious barriers. The empirical studies point towards a nexus between participation in economic opportunities and women's participation level. Empirical studies have shown that when women have increased participation in value chains, their relative bargaining power within the household improves, leading to a greater ability to contribute to household welfare through decision-making processes related to food, nutrition, branded food items, and child education (Pandey *et al*., 2021). Further, patriarchal norms can limit women's financial decision-making within households, resulting in lower participation in financial markets, limited equity holdings, and reduced asset diversification (Luigi, 2023). Elapata and De Silva, (2018) observed that decision-making power in the fisheries sector is concentrated among males and that women's contribution towards investment decisions in the sector is poor.

Conclusion

This study examined the levels of women's participation in the Blue Economy Value Chain in Kilifi Seascape, Kilifi County, Kenya. The study established that women in the Malindi area of Kilifi participated more in Blue Economy Value Chain activities such as fish processing, trading in fish and seafood and eateries of fish and seafood. However, few women participated in fish rearing in fishponds, artisanal fishing, guiding tourists and solid waste collection. These economic activities are reserved for the men. The findings also showed that cultural barriers (i.e., early/ forced marriages, participation in-home care, patriarchal society, polygamy, childbearing and rearing, denial of education), economic barriers (i.e., skills training level, financial literacy and access to use of productive resources) and work-related challenges (i.e., unequal pay for women, assigning inferior tasks to women and assigning tasks based on sex) inhibited Kilifi women participation in Blue Economy Value Chain opportunities. As regards women's participation, the findings showed most women had minimal input in decisions regarding the economic activity they participate in, how much output generated is sold or consumed in the family and how income generated from the economic activity is used. Further, the majority of women did not have access to the right information for decision-making. Moreover, their living standards and that of their families had not improved from their participation in the economic activity. Finally, most women did not own productive assets and were not in leadership positions in the community. Therefore, the economic participation level of women in the Malindi area of Kilifi County was low given their low participation in most activities and barriers inhibiting their participation in Blue Economy Value Chain opportunities.

Implications for policy and theory

The study's findings have practical and theoretical implications for women's involvement in the Blue Economy Value Chain potential in Kilifi and beyond. The study's conclusions are important for policymakers at both the subnational (Kilifi County) and national levels. Subnational and national governments, through their ministries and agencies, should encourage women to participate in Blue Economy Value Chain activities by identifying and removing impediments. The government and stakeholders should therefore prioritise skill development, access to financial resources, gender awareness sensitization, women's rights to equitable participation, preventing retrogressive cultural and religious traditions, and preserving women's employment rights, among other things. Gender mainstreaming should be implemented in sub-national and national development policy frameworks to enable women's participation in all aspects of the economy, including Blue Economy Value Chain opportunities. The study is also important for theory, particularly in

terms of women's participation in economic activities and participation. Specifically, it informs on women's participation levels and factors (cultural, religious, economic, and work-related) influencing women's participation in economic opportunities presented by the Blue Economy around the world. This research is one of the few that measure women's engagement in Kenya as a direct result of their participation in the Blue Economy. The study findings should be evaluated within the context of Kilifi County, and any application outside of Kilifi should be done with caution.

References

Abu-Bader H (2021) Using statistical methods in social science research: With a complete SPSS guide. Oxford University Press, USA. pp 305-307

Alemu A, Woltamo T, Abuto A (2022) Determinants of women participation in income generating activities: evidence from Ethiopia. Journal of Innovation and Entrepreneurship 5 (2): 11-12

Alonso C, Brussevich M, (2019) Reducing and redistributing unpaid work: Stronger policies to support gender equality. IMF Working Paper 19 (225)

Azizi F, Moradi F (2022) An analysis of barriers to women's economic participation in Iran. The International Journal of Humanities 5: 99-107

Barbier EB, Burgess JC (2019) Sustainable development goal indicators: Analyzing trade-offs and complementarities. World Development 122: 95-105

Berndt AE (2020) Sampling methods. Journal of Human Lactation 36 (2): 224-226

Biswas N (2018) Towards gender-equitable small-scale fisheries governance and development: a handbook. UN -iLibrary. pp 67-69

Bryan E, Alvi M, Huyer S, Ringler C (2024) Addressing gender inequalities and strengthening women's agency for climate-resilient and sustainable food systems. CGIAR GENDER Impact Platform Working Paper (13). Nairobi, Kenya. pp 40-49

Carpentier L, Braun H (2020) Agenda 2030 for Sustainable Development: A powerful global framework. Journal of the International Council for Small Business 1 (1): 1-10

Chacko P (2017) Women's economic participation in the region through gender equality in work: building a common agenda: Journal of the Indian Ocean Region 13 (1): 1-8

Choudhary P (2021) Empowering blue economy: From underrated ecosystem to sustainable industry. Journal of Environmental Managemen 291: 91-92

Cheruiyot J, Kimanthi M, Shabani S, Nyamu F, Gathu C, Agoi F, De Meijer (2022) Climate change poses a threat to nutrition and food security in Kilifi County, Kenya. African Journal of Primary Health Care & Family Medicine 14: 14-19

Das J (2023) Blue economy, blue growth, social equity and small-scale fisheries: a global and national level review. Studies in Social Science Research 4 (1): 38-82

de Hoop T (2020) Protocol for a scoping review of the evidence base and gaps related to women's groups in Uganda. The Evidence Consortium on Women's Groups Press 1: 56-58

Doherty B (2018) Gender equality and women's participation through Fair Trade social enterprise: Case of Divine Chocolate and Kuapa Kokoo 8: 156-163

Elapata MS, De Silva A (2018) Women's position in the blue economy. Sabaragamuwa University Press, Sri Lanka. pp 68-69

Galappaththi M, Armitage D, Collins, AM (2022) Women's experiences in influencing and shaping small-scale fisheries governance. Fish and Fisheries 23 (5): 99-100

Goddard W, Melville S (2004) Research methodology: An introduction. Juta and Company Ltd, Manchester. pp 134-135

Haimbala T (2019) Sustainable growth through value chain development in the blue economy: a case study of the port of Walvis Bay. World Maritime University Press, Sweden. pp 35-39

Haralambides H (2023) The state-of-play in maritime economics and logistics research (2017–2023). Maritime Economics & Logistics 25: 429-451

Hirsu L, Hashemi L, Quezada-Reyes Z (2019). SDG 5: Achieve gender equality and empower all women and girls. Jean Monnet Sustainable Development Goals. Policy Brief Series. RMIT University. 32 pp

Jahan N, Khan N (2016) To study the participation of farm women in various agriculture and allied activities. GPR Publication, USA 2 (2): 263-265

Karani P, Failler P (2022) Africa's blue economy strategies are integrated in planning to achieve sustainable development in national and regional economic communities (RECs). Journal of Sustainability Research 4 (3): 22-25

Katila P, Colfer J (2019) Sustainable development goals. Cambridge University Press. pp 45-49

Kenya National Bureau of Statistics (2019) Kenya population and housing census press I. pp 20-23

Khalid R, Raza M (2022) The challenging factors affecting women's entrepreneurial activities. Journal of Liberty and International Affairs 8 (1): 51- 66

Kimanjara TM (2013) Influence of micro-finance on economic participation of women: A case of Kenya Women Finance Trust, Nakuru town, Kenya. Nairobi: Unpublished Masters Thesis, University of Nairobi. 178 pp

Kothari CR (2004) Research Methodology: Methods and Techniques. 2nd Edition, New Age International Publishers, New Delhi. pp 35-42

Lendoye M (2022) The blue economy and the sustainable development goal,s and corporate social responsibility. GASP Publication 3 (3): 240-262

Luigi G (2023) From patriarchy to partnership: Gender equality and household finance. Journal of Financial Economics 147 (3): 573-595

Lütz F (2023) Gender equality and artificial intelligence: SDG 5 and the role of the UN in fighting stereotypes, biases, and gender discrimination. Springer International Publishing 9 (2): 153-180

Masreka K (2020) Gender-based economic inequalities: A review of selected concepts. Journal of Economy Culture and Society 61: 371-382

Meetei WT, Saha B (2016) Participation of women in fisheries: a study on gender issues in Manipur, India. International Journal of Bio-resource and Stress Management 7 (4): 906-914

Mohanty S, Dash P (2020) Economic opportunities in blue economy in Africa. Asia-Africa Growth Corridor: Development and Cooperation in Indo-Pacific 3 (4): 89-110

Molla S (2021). Effects of fish post harvest handling practices on socio economics of fishermen and locals: A case study of Kukuwit Landing Site, Kilifi County, Kenya. Journal of Fisheries 2: 1-28

Mose N (2024) Economic Growth and Female Participation in the Labour Market: Gender Disaggregated Data: Business and Economic Research 14 (2): 93-110

Mukhopadhyay R, Loveson VJ, Sudarsan PK (2020) Blue Economy of the Indian Ocean: Resource economics, Strategic Vision, and Ethical Governance (1st ed). CRC Press. pp 23-26

Muli SM (2020) Factors influencing women's participation in economic development pojects: a case of women enterprise fund in Kilome Constituency, Makueni County, Kenya. Unpublished Masters Thesis, University of Nairobi. 205 pp

Murunga M (2021) Towards a better understanding of gendered power in small-scale fisheries of the Western Indian Ocean. Global Environmental Change 67: 69-78

Ojwala RA (2023) Gender equality in ocean science for sustainable development: Analysis of ocean science institutions in Kenya. pp 19-22

Neyer U, Stempel D (2019) Macroeconomic effects of gender discrimination. Research Papers in Economics: Journal of Düsseldorf Institute for Competition Economics (DICE) 13 (1): 10-12

Nodirovna S, Nazirjono'g'li D (2024) The role of women in business activity and measures taken in this regard. Journal of Economy, Tourism and Service 3 (3): 66-69

Omollo O (2022). Budgeting as a tool for implementing physical development plans: An insight from Kenya 3 (7): 45-46

Omukoto O, Graham A, Hicks C (2024) Fish markets facilitate nutrition security in coastal Kenya: Empirical evidence for policy leveraging. Marine Policy (164): 106-179

Pandey V, Nagarajan HK, Kumar D (2021) Impact of gendered participation in market-linked value chains on economic outcomes: Evidence from India. Food Policy 104: 42-52

Parra-Paitan C, Verburg P (2023) Large gaps in voluntary sustainability commitments covering the global cocoa trade. Global Environmental Change 8: 102-109

Rachmawati T (2023) Economic empowerment strategy model for coastal women based on blue economy and local potential in Surabaya. International Journal of Artificial Intelligence Research 8 (2): 11-24

Riddick S (2021) Innovation in the Blue Economy. Doctoral dissertation, Duke University. pp 97-100

Rimmer SH (2017) The future of women's economic participation in the region: governance challenges and opportunities. Journal of the Indian Ocean Region 13 (1): 4-24

Sheriff M, Mash R (2022) Climate change and primary health care in Chakama, Kilifi County, Kenya. African Journal of Primary Health Care & Family Medicine 14 (1): 11-23

Tsofa B, Goodman C, Gilson L, Molyneux S (2017) Devolution and its effects on health workforce and commodities management–early implementation experiences in Kilifi County, Kenya. International Journal for Equity in Health 4 (6): 1-13

Uche C (2019). Gender issues on economic diversification through agriculture in Nigeria: A thematic discuss. American Journal of Basic and Applied Sciences 2 (80): 19-20

Vasseur L, Horning D, Thornbush M (2017) Complex problems and unchallenged solutions: Bringing ecosystem governance to the forefront of the UN sustainable development goals. Ambio 46: 731–742

Vipinkumar, P, Narayanakumar R (2017) Gender mainstreaming and impact of self-help groups in marine fisheries sector. ICAR-Central Marine Fisheries Research Institute (Indian Council of Agricultural Research) 12: 276 – 287

Williams M (2023) Financing the blue economy: impacts and implications for gender equality and women's empowerment in the global south. Journal of Community Mobilization and Sustainable Development 17 (3): 763-769