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THE IMPACT OF COASTAL COMMUNITY ACTION FUND ON THE LIVELIHOODS OF ARTISANAL FISHERS IN COASTAL AREAS OF TANZANIA.

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ABSTRACT

Coastal communities in Tanzania are characterized by high level of poverty that in-turn compromises the sustainable management of natural resources. With donor support, Tanzania government implemented Marine and Coastal Environment Management Project (MACEMP) between 2005-2011 addressing sustainable management of marine fishery resources through group focused livelihoods improvement initiatives. This study intended to assess the impact of Coastal Village Fund sub-component using livelihood indicators in three districts, Muheza, Bagamoyo and Mkuranga through a sample survey conducted in December, 2012. The results of the survey indicate that mean monthly income of the respondents improved by 49%. This translated into acquisition of motorized fishing vessels and gears, operation of bank accounts and enhanced saving culture. Meal intake improved by 38% among those who can provide three meals per day, with a decrease of 33% and 6% among those who could only provide two and one meal per day respectively. There was also a 75% increase among respondents who can afford costs for primary health care. Moreover, there was an increase of 16% of the respondents capable to meet costs of education with those paying school fees by installment decreasing by 27.4%. Improved income and formation of beach management units has motivated the respondents to participate in management of their fisheries resources. Given the limitations of this study, which are lack of comparison and small sample size it is not possible to associate the observed improvements to the MACEMP project alone. Further investigations on the role of other external factors are suggested.

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1 INTRODUCTION

Marine resources are critical to Tanzania's economic and social development. The resources support the livelihoods of the coastal communities who depend on them for food and income. However, there are indicators that these resources are being degraded resulting in loss of income among the resource users. Rapid increase in human population alongside lack of appropriate economic development plans have been pointed out as being responsible for poor management and utilization. This has resulted in local communities exploiting the resources without due regard to sustainability. This is further compounded by lack of alternative income earning opportunities in the coastal areas. Marine resources have been overexploited through the use of destructive fishing gears and methods (MLFD 2012a).

Livelihoods of the coastal communities in Tanzania are characterized by extreme poverty with low per capita of less than US\$100, large families and high illiteracy levels (URT 2005a). They depend mainly on artisanal fishing, seaweed farming, livestock husbandry, petty trade, small holder farming as well as lime and salt production. Currently the coastline of Tanzania supports approximately 25% of the country's population, which is projected to more than double by 2025. Surveys by Gustavson *et al.*, (2009) and URT (2005b) indicate that the country is also among the poorest countries in the world with almost 60% of its population living below the poverty line, having little access to credit and market facilities and services such as schools, health care, and safe drinking water.

Harrison (2010) in recognizing the problems of coastal and marine resources pointed out that resource management problem cannot be solved unless poverty is directly addressed. In doing this, he identified programmes that seek to develop small-scale micro activities as being of fundamental importance. Coherent integration of community development and livelihood enhancement into resource management and development initiatives is essential. This is especially relevant as the rural population remains highly dependent on natural marine and coastal resources, and the rate of socioeconomic development is slow.

Most of the coastal communities depend on fishing for their livelihood underscoring the need for sustainable utilization of the fishery resources as a way of securing their future. It is in view of this that the Government of the United Republic of Tanzania in 2005 initiated a six-year project (2005-2011), Marine and Coastal Environment Management Project (MACEMP) that was financed by the World Bank with the intention to strengthen the capacity to sustainably manage marine and fisheries resources. One project component, Coastal Community Action Fund (CCAF), was established to empower coastal communities to develop, implement and monitor micro economic projects that were intended to reduce poverty, and improve social wellbeing, and environment in coastal areas.

This project supported artisanal fishers (fisher folk) and other groups to improve fishing gear and vessels as well as engaging in alternative income generating activities which integrated conservation with improved livelihood in coastal areas to reduce poverty and vulnerability. Moreover, one of the intended outcomes of the project was increase in income and participation of rural communities in resource management decisions and benefits.

The artisanal fishery contributes over 90% of the Tanzania fish catches and is characterized by small scale operators who use rudimentary fishing gears, methods and vessels. The

handling of the catch and processing technologies is equally poorly developed owing to low capital investment. As a result, most of the fishers operate in the near shore waters which results in over exploitation in such areas. Moreover, inadequate knowledge and skills in entrepreneurship, fish handling and processing technologies hinders them from getting best value for their catch.

Although with its challenges, Lyon (2003) observed that a focus on groups is the best strategy for rural development interventions. Many World Bank (WB) funded projects and other international non-governmental organizations (NGOs) subscribe to this idea of making group formation a requirement for accessing project resources. Group focused initiatives in remote rural areas has been demonstrated to enhance rate of community development and reduce poverty through allowing members to have greater control of their own livelihoods, opening new economic opportunities and empowering people to determine their own priorities and organize themselves (Lyon 2003).

The MACEMP project through the Coastal Village Fund (CVF) of the CCAF invested 5.4 Million USD in promoting and strengthening 470 micro-economic groups along the entire coastline of Tanzania mainland between 2006 and 2011. Way into the end of the project, there is a need to examine how the investment affected the livelihoods of the communities. Given that the groups undertook different initiatives; this should gauge the initiatives and inform future interventions among such communities. This study examined the impact of the CVF on the livelihood of the artisanal fishers using structured questionnaires administered in sampled districts between December 2012 and January 2013.

2 BACKGROUND

Tanzania is a coastal state in the West Indian Ocean. The country is well endowed with a rich diversity of tropical marine and coastal ecosystems including coral reefs, sea grass beds, mangrove stands and cultural resources. The country has a total land area of 945,000 km² out of which 881,000 km² is in mainland, 2,000km² is in Zanzibar and 62,000 km² of inland waters including lakes, river systems, and numerous wetlands. On the marine side, the country has a territorial sea of about 64,000 km² and coast line of 1,424 km. The Exclusive Economic Zone (EEZ) of 200 nautical miles covers an area of 223,000 km² (MNRT 1997, Sobo 2012).

Tanzania is among the least developed countries in the world with a population of about 47 million people in 2012 (CIA 2012). The growth in GDP increased from 1.6% in 1992 to 7% in 2007. GDP per capita increased from 1,300 US\$ in 2008 to 1,700 US\$ in 2012 (CIA 2012). The agriculture sector contributes about 45% to GDP and about 76 % of the working population are employed in this sector (FAO 2008). Despite this economic growth rate, poverty has remained a challenge to majority of the population especially for those living in rural areas. Survey by NBS (2007) indicated little (5%) reduction in poverty over a 17-year period indicating that the observed economic growth rate did not directly translate into poverty reduction.

2.1 Overview of the Fisheries Sector in Tanzania

In Tanzania, the role of fishing in national development, both from poverty alleviation point of view and from a national economic perspective, raises some concerns. For a long time fishing has been regarded as one of the most important activities, which form basis for the livelihoods of households living along the coast (Sesabo and Tol 2007). Most of the fish caught is consumed on home market, while the Nile perch; sardines and prawns are exported. The average annual fish catch is about 350,000 metric tons and the estimated exploitable fish resource potential in territorial waters is about 100,000 metric tonnes (Table 1).

Table 1: Estimated fish resource potential in territorial marine water (Source: MLFD 2011).

Water Body	Total Area (km ²)	Tanzania share (area km ²)	Coverage (%)	Estimated Fisheries Resource Potential (Tones)
Territorial sea	64,000	64,000	100	100,000

Fishing in Tanzania takes place on both marine and freshwater bodies mainly at artisanal level. Currently, marine fishing contributes about 15% of the total landings while fresh water bodies contribute around 85%. The fishing industry is divided into artisanal fisheries (small scale) and commercial/industrial fisheries. The artisanal fishery is of great importance in the country as it contributes more than 90% of the total landings from fresh water and marine waters. The industrial fishing initially was contributing about 10% of the total national annual fish landings mainly shrimp fishery, which was later closed in 2007 due to decrease of fish stock. Exports of fish and fish products in 2011 were 37,996.4 metric tonnes (mt) amounting to US\$ 153 millions (MLFD 2011).

The trend of fish catch in marine waters indicates that, the annual average fish production is about 50,000 metric tons, with high landings observed in 1996 (Figure 1). The number of fishers and fishing vessels has also been increasing with a high increase in 2005 -2009 (Figures 2 & 3). This could be due to fisheries related projects that were undertaken during that time in coastal areas. Even though, the catch in marine waters is almost the same over years (Figure 1), but there has been an increase in values of the fish. This could also be attributed by high population which resulted in increase of the demand of fish. Also, access to better motorized vessels supported by fishing related projects in coastal area has increased efficiency and catch of large fish from distant grounds which has higher price than small species (Figure 4).

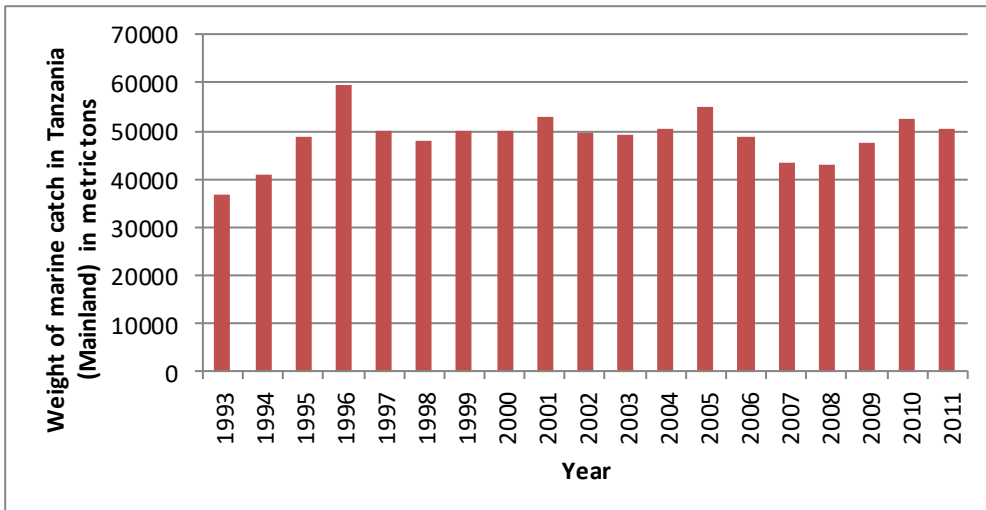


Figure 1: Fish landings from marine waters 1993-2011 (Source: MLFD).

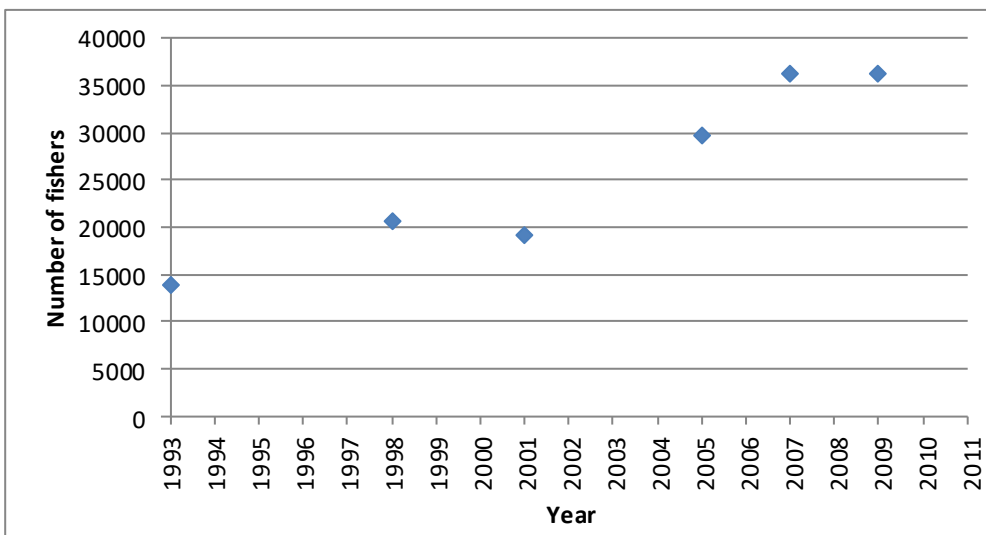


Figure 2: Number of fishers in marine fisheries 1993-2011 (Source: MLFD).

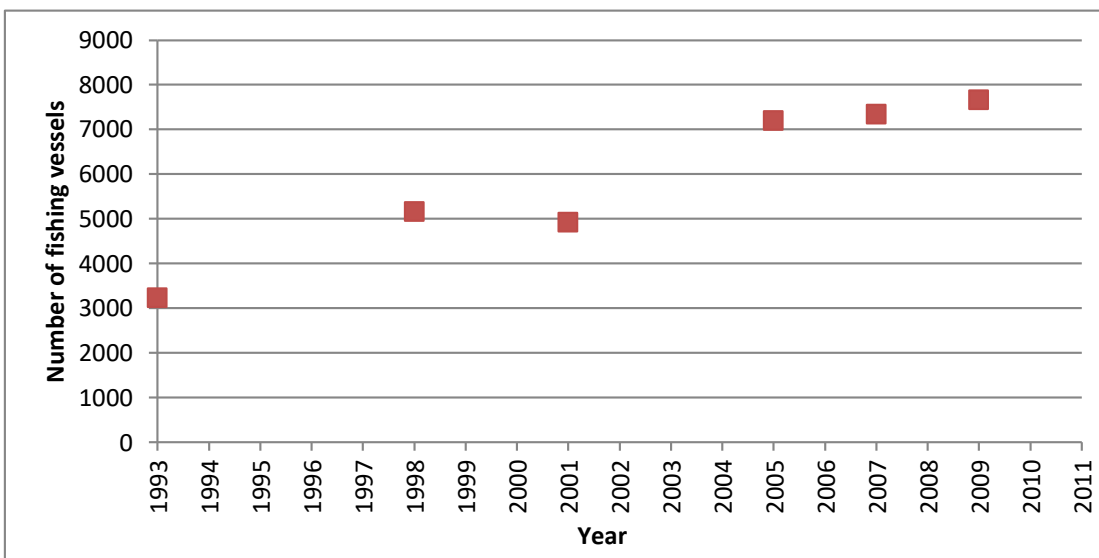


Figure 3: Number of fishing vessels in marine fisheries 1993-2011 (Source: MLFD).

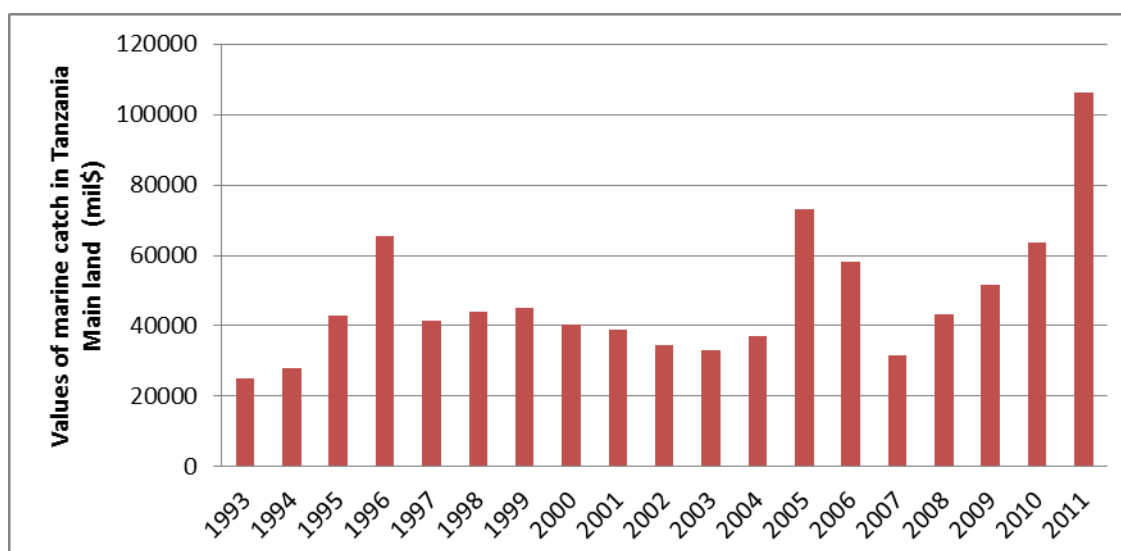


Figure 4: Values of Marine catch in Tanzania Mainland in Million US\$ from 1993-2011 (Source: MLFD).

The fisheries sector provides substantial employment, income, livelihood, foreign earnings and revenue to individuals as well as the country. The industry employs more than 4,000,000 people in fisheries and fisheries related activities, thereof more than 177,527 fishers are directly employed in the sector (MLFD 2011). Contribution of the fisheries sector to GDP was around 1.6% in 2011, per capita fish consumption was 8.0 kilogram per annum amounting to about 30% of animal protein consumption in Tanzania (MLFD 2011).

2.1.1 Industrial Fishery

The industrial fishery activities take place both in the territorial waters and in the Exclusive Economic Zone (EEZ). The fishing is primarily characterized by large mechanized vessels and the fishing gears used are mainly long line and purse seine, coastal trawling and on shore fish processing. The main target species in the territorial waters are shellfish (shrimps and lobsters), cephalopods and crabs which are exported. The industrial foreign offshore fishery mainly targets migratory fish such as tuna, tuna like species, marlin and swordfish (Lema, 2003). Destruction of the nursery fishing ground and increase in fishing effort for prawn fishery resulted in decrease of the fish stock (Table 2). The government closed the prawn fishery in 2007 through to-date no recovery in stocks have been observed (Sobo 2012). However, catches from the EEZ cannot be compared due to the fact that most of the vessels fishing in the zone do not land the fish in Tanzania. Some of the vessels report their catches to the fisheries department and others do not.

2.1.2 Artisanal Fisheries in Coastal Areas

Artisanal fisheries are characterized by the use of traditional and primitive fishing vessels and gears, handling and processing technologies. The most common vessels are dugout canoes, outrigger canoes, dhows and small boats that are normally driven by sails, paddles and few fitted with outboard engines. The operational range of a vessel is determined by its size and whether it is sail or motor-driven, some of the fishing vessels driven by sails rarely go further than four km from shore. Common fishing gears used in coastal areas include traps, hook-and-line, nets and spears. Fishing is practised throughout the year but the peak season is

during the northeast monsoon (November to April) when the ocean is relatively calm and the waters clear (TCMP 2003).

Table 2: Production trend of prawn fishery in Tanzania Mainland from 1999-2007 (Source: MLFD).

Years	Prawn production (mt)
1999	613
2000	910
2001	1194
2002	926
2003	1320
2004	661
2005	467
2006	312
2007	202

The fishery is open access and efforts is concentrated in coastal inshore waters due to lack of technical skills and capital to acquire modern fishing gears and vessels that can operate beyond the inshore waters. The fishing intensity has been increasing in the inshore waters and has led to over fishing in these areas (Jiddawi and Ohman 2002).

Artisanal fishers target mainly pelagic species, such as sardines, swordfish, mackerel, kingfish and tuna. The small pelagics are mainly caught by purse seines. The marine demersal catches are bream, grouper, parrotfish, snapper, rabbitfish, and emperor which are caught using hand lines, traps and nets. Octopus and lobster are collected by hand from reef flats during low tide or by divers. Prawn and shrimp are caught by seines in estuarine waters, particularly at the mouths of large rivers, and the squid are mainly caught using hand lines, seine nets or fixed nets. Other species caught include sharks and rays (TCMP 2003).

Fishing activities are undertaken by men. Women in coastal communities are mainly involved in collection of seashells, sea cucumber and octopus, marketing and processing of fish. (Chando 2002, Jiddawi and Ohman 2002). Many fishermen in Tanzania live below the poverty line and fishing is both an important source of income and an essential food source (URT 2005).

2.1.3 Marketing and Distribution

The demand for fish in Tanzania is increasing, particularly with the greater number of people living along the coast and expansion of tourism activities (Sesabo 2007). The increased demand for fish products has raised the prices substantially, which has increased income of some people in the fisheries trade. As a result, the number of households participating in fishing increased due to high prices driven by high demand of fish products. The trend of increased numbers of fishers has continued to date (Figure 2).

There are 257 landing sites along the Tanzania coast, where fish are landed before processing or further distributed to the consumers, out of which only 135 landing sites have good water supply, 117 possess gear repair facilities and 101 have boat workshops (MLFD 2009). Fresh fish traders are found in most of the landing sites, they purchase fresh fish and sell them in

the surrounding area. About 80% of the fish landed is sold as processed. The methods of fish processing include smoking, sun-drying and salting (January and Ngowi 2010).

In some areas, traders take the fish to distant markets especially Dar es Salaam ferry market where they can achieve a higher price for the fresh produce. There has been a shift in preference from cured fish to fresh fish, which is believed to be a function of technological development coupled with the availability of ice and improved transport systems in some area such as boats and trucks, depending on the type of fish and market destination. There is no effective central marketing agency for villages. Fish are transported to the markets by fish traders, hence fish prices are linked directly to the variable cost of transport.

2.1.4 *Challenges in Marine Resource Management in Tanzania*

Despite being an important source of livelihood for the majority of the coastal communities, the fisheries sector in Tanzania has been plagued by a number of problems. These include poor and inefficient fishing gears and vessels, lack of capital, poor fisheries management, limited access to better markets coupled with poor handling facilities, poor infrastructure and high post-harvest losses (Semesi *et al.*, 1998, TCMP 2001). These cause most of the coastal communities to be trapped in poverty.

Various initiatives have been taken by the Tanzanian government, international organizations and non-governmental organization to ensure that fishing activities bring about economic, social and national benefits. Among of these initiatives include implementation of different programmes like Japanese Social Development Fund (JSDF), Tanzania Coastal Management Partnership (TCMP), Kinondoni Integrated Coastal Management Programme (KICAMP) and Tanga Coastal Zone Conservation Programme (TCZCP). The focus of the current study is to assess the effect of a recent programme (MACEMP) on the aspects of livelihoods in the coastal areas of Tanzania Mainland.

2.1.5 *MACEMP Project Summary*

Project Description

In 2005 the Government of the United Republic of Tanzania (GoT) initiated a six-year project Marine and Coastal Environment Management Project (MACEMP) amounting to 61 Million US\$ financed by the World Bank through IDA credit and GEF grant. The project was designed to strengthen the capacity of the government to sustainably manage marine and coastal fisheries resources, and thereby contribute to economic growth and poverty reduction to the coastal communities. Therefore, the project assimilated the national Poverty Reduction Strategy (PRS) of 2000 and the National Strategy for Growth and Reduction of Poverty (NSGRP) which both address the issue of income poverty, employment, non-income poverty, vulnerability and environment.

The project had four components namely:

- i. Sound management of the EEZ which was established to implement a common governance regime for the EEZ that contributes to the long-term sustainable use and management of fisheries resources inhabiting the country's EEZ
- ii. Sound management of the Coastal Marine Environment aimed at supporting comprehensive system of Managed Marine Areas in the Territorial Seas, building on

- Integrated Coastal Management (ICM) strategies that empower and benefit coastal communities
- iii. Coastal community action fund, with CVF and Coastal Capacity Enhancements as sub-components, aimed at improving livelihoods of coastal communities and sustainable management of the coastal resources through micro-economic groups
 - iv. Implementation support which provided efficient and effective project implementation services in terms of staffing, monitoring and evaluation, development communication strategy and safeguard issues.

The overall development objective of the project was to improve sustainable management and use of the Exclusive Economic Zone (EEZ), territorial seas, and coastal resources that were expected to increase revenue collection, reduce threats to the environment, and enhance livelihoods of coastal communities and institutional arrangements.

Moreover, the project also intended to support marine and near-shore policy reforms and implementation of activities that had positive impact on the quality of the lives of the populations living in the coastal areas, and on the integrity of the off-shore resource base, that is of national and international significance. Emphasis was placed on the establishment of an effective regulatory and institutional framework; participatory planning; creation of an enabling environment for integrated coastal and marine resources management, and private investment in the target areas.

Implementation of the project was through the Ministry of Livestock and Fisheries Development (MLFD) in Tanzania Mainland. Implementing partners included eleven government departments/institutions and sixteen coastal Local Government Authorities. Other key partners were the Vice President's Office, Ministry of Foreign Affairs, Ministry of Finance, Ministry of Human Settlement Development and Lands, Prime Minister's Office - Regional Administration and Local Government and Non – Governmental Organizations (URT 2005b).

Coastal Village Fund

The focus in this project will be on the Coastal Village Fund (CVF), which had the stated intention to empower coastal communities who to a large extent depend much on natural resources for their livelihood and have limited opportunities to link to the national and global economies. The funds were to develop, implement and monitor micro-economic projects that were intended to reduce poverty and improve social wellbeing and sustainable management in coastal areas. The component also included alternative livelihood schemes and empowerment of project beneficiaries.

Funds for the beneficiaries under this subcomponent were channelled through the Tanzania Social Action Fund (TASAF 2). Implementation of the activities followed the decentralized administrative structure which provides for delegation of control to regional and district level offices. Each Local Government Authority (LGA) had an implementation team that included experts from different departments, who were responsible for the running of project activities including training of communities in project management, procurement and financial management.

A total sum of 5.4 million US\$ was allocated to support micro-economic groups in coastal communities to increase their income and enable them to participate in resource management

and improve their wellbeing. Implementation of this component was through Tanzania Social Action Fund in which a separate account for CVF was established to deliver funds to the eligible groups in the coastal areas. The funds provided to beneficiaries were grants. Beneficiaries were required to contribute from 5% to 20% of the total cost of the project, and this was given in terms of cash or through their own effort to ensure commitment and sense of ownership. The amount of funds given to each individual group ranged from 10,000 and 20,000 US\$ depending on the nature and type of the project. The grants given to eligible fishing groups were used to procure modern fishing gears, fishing boats, lifejackets and storage facilities (MLFD 2012b, URT 2005b).

Group formation was a prerequisite to access the project resources. At district level the LGAs staff facilitated formation of groups in a participatory manner by guiding the communities in preparation and operation of the project. Implementation of project activities was the responsibility of the beneficiaries, which involved both men and women. Gender equality was taken on board by ensuring equal representation of men and women in Community Management Committees (CMCs) and among leaders of their groups (URT, 2005). Although fishing activities were mainly dominated by men, women were mainly involved in marketing of fish and fish processing activities (MLFD 2012b).

In the course of implementation, Community Demand Driven (CDD) approach was used to ensure grass root level involvement in project planning and control of the resources. The system gives control on resources and decision making to community groups, which work in partnership with demand responsive support organizations and service providers including local governments, private sector, NGOs and central government agencies (Alkire *et al.* 2001). The CDD approach has been observed to be an effective mechanism for poverty reduction, complementing markets and state run activities. This has resulted in poverty reduction focusing on empowerment of poor people and vulnerable groups.

In an effort to support communities, the beneficiaries were able to identify and prioritize projects (micro-economic activities) of their own choice and make application for funding. The community initiatives targeted under this component included fishing and fish related activities, seaweed farming, fish farming, crab fattening, salt production, poultry keeping, beekeeping, animal husbandry and vegetable gardening (MLFD, 2008). The beneficiaries of this component were the vulnerable and poor groups (orphans, disabled, and elderly, people affected/infected with HIV and widows), food insecure households with limited access to basic social services (MLFD 2008, URT 2005).

The project supported 470 community sub projects worth 5.4 US\$ million, out of which 240 were of fishing activities worth 3.06 US\$ million benefiting a total of 8,078 people (4,900 men and 3,178 women) in the coastal area (MLFD 2012b).

Although provision of funds to the beneficiaries was in the form of grants, the government of Tanzania will pay back the loan. According to agreements made between the government of the United Republic of Tanzania and the World Bank: Repayment of the project funds is over a period of thirty years. Repayment will start effectively from 2015 and last repayment will be made on 15th February, 2045.

The Geographical Location of the Target Groups

The CVF operated in 16 Local Government Authorities (LGAs) covering 273 villages in the 5 regions of Tanga, Coast, Dar es Salaam, Lindi and Mtwara that are found along the coast of the Indian Ocean (Figure 5). In the first two years 2005-2007, the project was implemented in three pilot districts of Kilwa, Mafia and Rufiji. However, in 2008 the project implementation was extended to cover all the remaining LGAs in the coastal areas. Table 3 summarizes the number of sub projects, funds allocated to the groups and number of beneficiaries in all the 16 LGAs. The highest number of projects is located in the Kilwa followed by Rufiji with the least from Ilala. The higher the number of project, the higher the funds allocated to the Local Government Authority. Rufiji recorded the highest number of beneficiaries followed by Kilwa and then Mtwara DC with the least from Ilala.

Table 3: Summary of funded fishing community projects in the 16 LGAs (Source: MLFD).

S/N	Name of LGAs	Number of sub projects	Value in US\$	Total no. of beneficiaries
1	Pangani	6	85,697	108
2	Muheza	5	69,557	94
3	Tanga City	11	161,240	218
4	Mkinga	7	105,937	121
5	Bagamoyo	47	770,445	747
6	Kinondoni	4	51,319	56
7	Ilala	7	103,667	115
8	Temeke	9	142,068	98
9	Mkuranga	10	145,586	147
10	Mafia	38	326,088	411
11	Rufiji	34	356,735	664
12	Kilwa	30	386,180	469
13	Lindi DC	10	162,690	209
14	Lindi Mc	7	91,794	187
15	Mtwara DC	10	153,031	252
16	Mtwara MC	5	77,281	104
Total		240	3,189,314	4,000

In addition, Public and Private Partnership (PPP) through component two of the project facilitated the establishment of coastal community banks in two districts of Mafia and Kilwa. The community banks intended to facilitate small lending operations through Savings and Credit Cooperatives Organizations (SACCOS) and village banks to promote savings and investment. These create an enabling environment for micro, small and medium enterprises (MSME) to growth and develop. Access to markets, resulted in improvement of handling and processing of their products (MLFD 2012b).

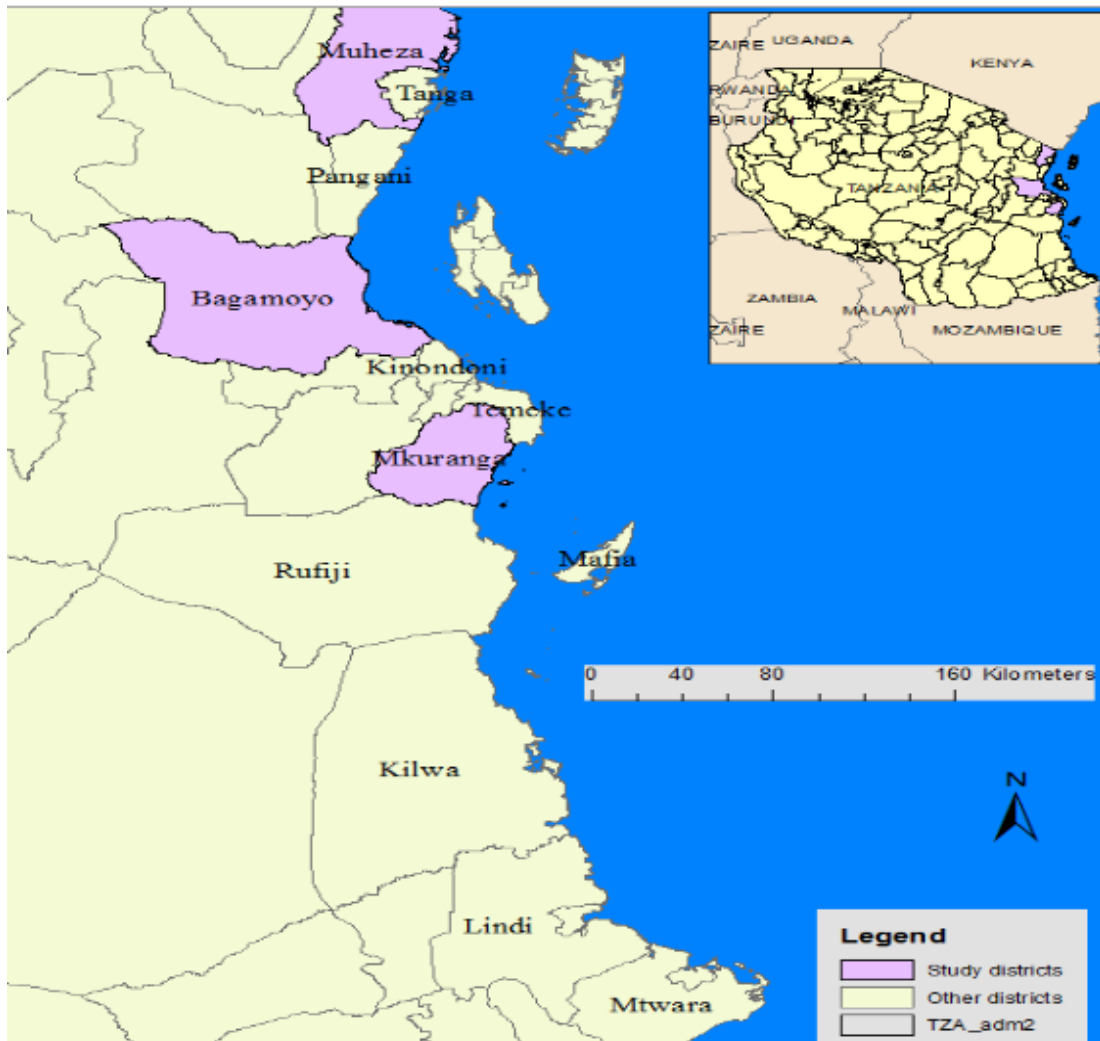


Figure 5: Map of Tanzania showing coastal districts and study area.

3 METHODOLOGY

3.1 Description of study areas

Bagamoyo District is among the six LGAs in the Coast region, located along the coast of the Indian Ocean approximately 65 km from Dar es Salaam. The district has an area of 9,847 km² and a coastline of 100 km with an estimated population of 271,569 in 2010 of whom 41,155 people 15% are in nine coastal villages. The district is rich in coastal resources; including coral reefs, mangrove forests and estuaries covering an area of 5635 ha which makes the area suitable for aquatic organisms some of which are commercially valuable such as prawn and finfish. The district has also two major rivers suitable for fishing and irrigation, the Wami and Ruvu, which both discharge water into the Indian Ocean (Semesi *et al.*, 2001).

Majority of the people in the district depend on available natural resources for their livelihoods. More than 90 percent of the population depends on fishing for their living. Others include farming and pastoralism for subsistence and by selling their products at local markets. The district also depends on tourists activities (TCMP 2011).

Mkuranga District is also found in the Coast Region, about 50 kilometers from Dar es Salaam. The district has an area of 2432 km² of which 1934 km² is suitable for cultivation, 51 km² is forest reserve area out of which 34 km² is covered by mangrove forest. In 2008 the population was estimated 223,573 people (Mkuranga District Council 2012). The district has a coastline of 90 km extending from Temeke to Rufiji District in the south, endowed with coral reefs, mangrove forests and coastal fisheries with unpopulated islands that host an endangered species, the red colobus monkey and attractive birds. Common fish species in the area are shrimps and finfish (Torell and Mmochi 2006). The district has fifteen official fisheries landing sites, the largest being in Kisiju Pwani, where the fish landings are recorded (MLFD 2009).

The main economic activity in the district is agriculture. More than 80% of the population depends on crop farming, fisheries and forestry. Fishing is undertaken by over 1,500 fishermen. Implementation of the project was carried out in eleven villages, out of which two were islands Kwale and Koma (Mkuranga District Council 2012).

Muheza is one of the eight districts in Tanga Region. The district has a total area of 1,974 km² and in 2007 the population was estimated 184,585 people. Livelihoods and economy of the district is dominated by agriculture, fishing, forestry, and mining. Agriculture employs about 80% of the district's population (MDC, 2008). Marine fish species include octopus, sea cucumber, spring lobsters, prawns and sea crabs. Fishing and mariculture activities especially growing of seaweeds, are the main occupation to the coastal communities where the project was implemented covering two villages of Kigombe and Msakangoto with a population of 2710 and 2868 respectively which is about 3.3% of the total district population.

3.2 Poverty indicators

In this study, four poverty indicators, income, food, education and health were identified through literature review and were used to assess the impact of the project on livelihoods of artisanal fishers in the study area. These indicators are the context of poverty commonly used in MDGs (UNDP 2011, URT 2008). The concept of well-being is described in terms of individual employment status (economic activity), income, health and possession of physical assets.

Chambers & Conway (1992) defined livelihood as capabilities, assets and activities required to perform and generate an adequate standard of living and risk reduction. The five important assets or types of capital that are core for sustainable livelihood framework are human, natural financial, social and physical capital. Natural capital include land, rivers, marine resources and forest, financial capital includes savings, credits and assets gained, human capital involves knowledge, skills, and good health, physical capital includes infrastructure and communications, and social capital involves relationships and social network among the group members (Allison and Ellis 2001).

3.3 Sampling

Project activities were carried out in 16 LGAs, in which fishing activities support majority of the population in terms of income and food. Since it was not feasible to carry out the study in all LGAs, three districts (Bagamoyo, Muheza and Mkuranga) were sampled randomly for this study. In Bagamoyo district, 20 groups were sampled out of 47, which is about 43 percent. Two questionnaires were administered in each of the 20 groups. Selection of members in each group was done randomly. In Muheza and Mkuranga districts where fishing groups

were few, a sample was taken from each funded group (5 in Muheza and 10 in Mkuranga) making a total of 35 groups sampled which is about 57 percent of the groups funded in the study area. A summary of funded fishing groups and those sampled in each of the district is given in Table 4.

Table 4: Summary of funded and sampled groups in the study area (Source: MLFD).

District	No. of groups Fishing Supported	No. of groups sampled	No. of beneficiaries in sampled groups	No. of benef. in district '	Valid Response	% of response in sampled groups	% of response in district
Bagamoyo	47	20	747	829	40	13%	5%
Muheza	5	5	94	168	25	27%	15%
Mkuranga	10	10	147	237	19	13%	8%
Total	62	35	988	1234	84	15%	7%

3.4 Data collection and analysis

Two methods of data collection were used, Primary data were collected through a designed questionnaire based survey. Literature was reviewed to identify poverty indicators for the design of the questionnaire. The questionnaire was categorized into 6 sections namely, socio-economic characteristic of the beneficiaries, Food/nutrition, Education, health and Income (Appendix 1). The District Coordinators administered the questionnaires to individual members of the sampled groups.

Secondary data was obtained from review of various documents (books, journals and reports). Some of the reports were obtained from different sources such as Project Reports, Ministry of Livestock and Fisheries Development reports, other technical reports from other institutions and information on the respective LGAs.

The data collected from the beneficiaries were coded and analysed using Statistical Package for Social Science (SPSS) computer programme. Descriptive analysis was used to analyse the data and presented in the form of frequency tables, percentages, charts and graphs. Mann-Whitney U test was used to test the related samples with dependent variables at confidence level of 95% ($\alpha= 0.05$).

3.5 Limitations of the study

Some challenges were encountered especially in data collection as most of the groups supported by the projects are found in remote areas, and some villages are islands which can only be accessed by boat depending on the level of tide. Also some respondent's despite being informed were not available within their locality due to other commitments like fishing and farming activities. Data collection was done in the months of December 2012 and January 2013 which is a farming season.

4 RESULTS

4.1 Response Rate

The study managed to assess a total number of 35 groups which account for 57% of the total supported sub projects in the study area. The response rate (No. of beneficiaries that answered) was 27% in Muheza, 13% in Mkuranga and 13% in Bagamoyo. The total number of questionnaires returned from the respondents was 84 or 15% of the sampled groups amounting to 7% of the total beneficiaries in sample area (Table 5). As the total beneficiaries of fishing groups in all areas were 4,000 the total valid responses rate was 2.1%.

Table 5: Sample size and response rate (Source: MLFD).

District	No. of fishing groups Supported	No. of groups sampled	No. of beneficiaries in sampled groups	No. of benef. in District'	Valid Response	% of response in sampled groups	% of response in District
Bagamoyo	47	20	747	829	40	13%	5%
Muheza	5	5	94	168	25	27%	15%
Mkuranga	10	10	147	237	19	13%	8%
Total	62	35	988	1234	84	15%	7%

4.2 Socio-economic characteristics

Majority of the respondents (75%) were made up of men. About 73 of the respondents were aged between 21-50 years accounting for 87% of the total population sampled. Fishing is physically demanding and people above the age of 50 rarely have physical stamina required (Appendices 2 & 3). Most of the respondents (70.2%) were married followed by 19% who were single and 8.3% widowed (Appendix 4). The study shows that few females were head of households. The household size of the respondents ranged between three and eleven people with an average of 7.

Most of the respondents (47.6%) had elementary education (primary level education which is up to standard seven), 17.8% and 3.6% attained secondary and vocational education respectively. The remaining 31% were illiterate (Appendix 5).

The majority of the respondent (30%) sampled from the study areas were from the Zaramo ethnic group. They are mostly found in Bagamoyo and Mkuranga districts. The Mdingo group were 19%, followed by Mdengereko (11%) while 6% were the Zigua group. Other remaining ethnic groups contribute to less than 5% of the population sampled in the study areas (Figure 6).

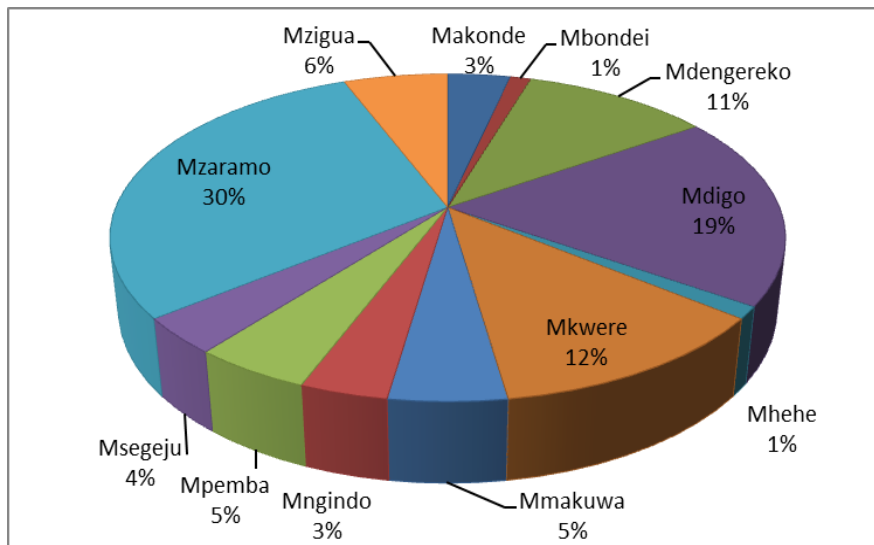


Figure 6: Representation of ethnic groups in the study.

In terms of main activities, most of the respondents (72.3%) were mainly involved in fishing activities. Others made their living from agriculture (12.0%), seaweed farming (2.4%), petty trading (4.9%), animal husbandry (2.4%) and food vending (6.0%) (Appendix 6). Common fishing gears used in the area were purse seine which was the gear of choice in Bagamoyo. Gillnets, shark nets and traps were predominantly used in Muheza and Mukranga districts.

4.3 Savings

Before the project, 74% of the respondents did not have a saving account but, in December, 2012 majority (89%) had saving account and most of them felt that their savings has been improved (Appendix 7&8). Also there was an increase of 75% of the respondents who have joined local micro-finance institutions, the Village Community Banks and Serving and Credits Cooperative Organizations (SACCOS) that are found within their area for accessing credit (Appendix 9).

4.4 Food/Nutrition

The project has positively affected the nutritional status of the respondents. Before the project about 53.6% of the respondents were getting three meals per day and 40.6% were able to afford two meals per day while 6% were getting only one meal per day. After the intervention, 92% of the respondents can afford three meals per day, an increase of 38.4% while those who can afford two meals per day decreased to 32.5 (Figure 7).

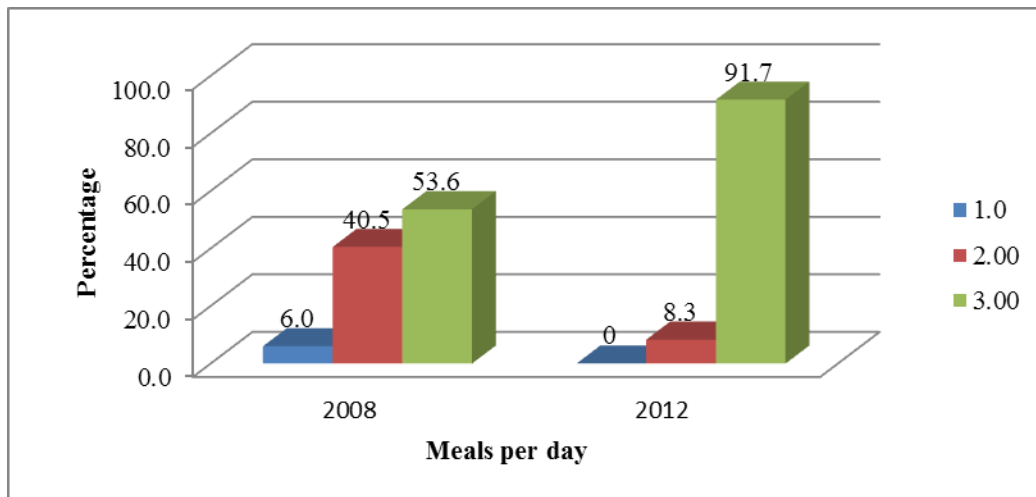


Figure 7: Number of meals had by respondents 2008 and 2012.

4.5 Education

The project has helped parents to pay for their children's educational needs and there has been a significant improvement ($\alpha= 0.05$) in payment of school fees. Sixty-six percent of the respondents were able to pay for school fees before the intervention; after the intervention, 82% can pay for their children's school fees. Payment of School fees by installments decreased from 63.1% before the intervention to 35.7% after the intervention. Figure 8 provides a summary of the result.

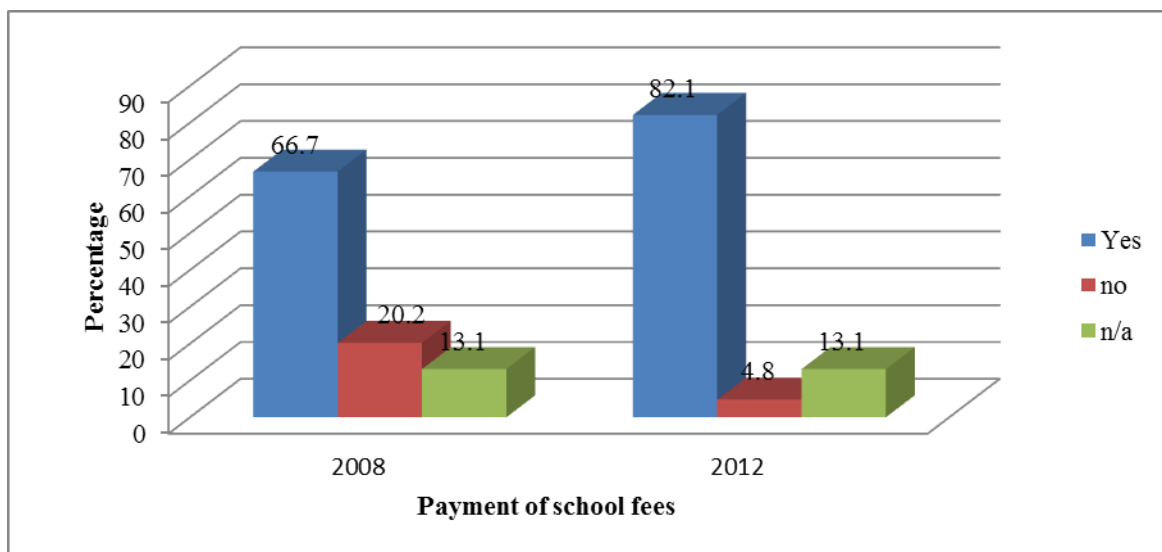


Figure 8: Ability of the respondents to pay for their children's school 2008 and 2012.

4.6 Health

Ability of respondents to pay for health care services of their families improved after the intervention of the project (Figure 9). There has been an increase in proportion of respondents from 38% before the project to 94% after the project seeking health care when they are serious sick.

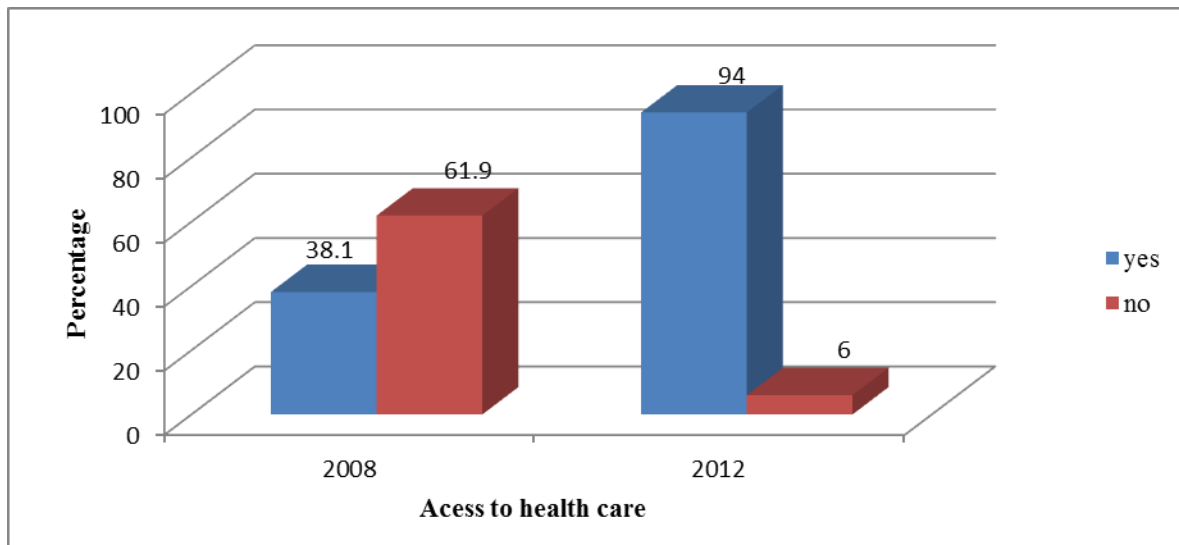


Figure 9: Respondent seeking health care when they are seriously sick in 2008 and 2012.

Payment for the cost sharing of health services like user fees and buying of drugs has improved. Majority (94%) of the interviewed respondents were of the view that they can now afford the cost of primary health care. Before the intervention only 19% could meet the cost. The Mann whiney test indicates that there is a significant improvement ($\alpha = 0.05$) in relation to the payment of the cost of primary health services before and after the intervention (Figure 10).

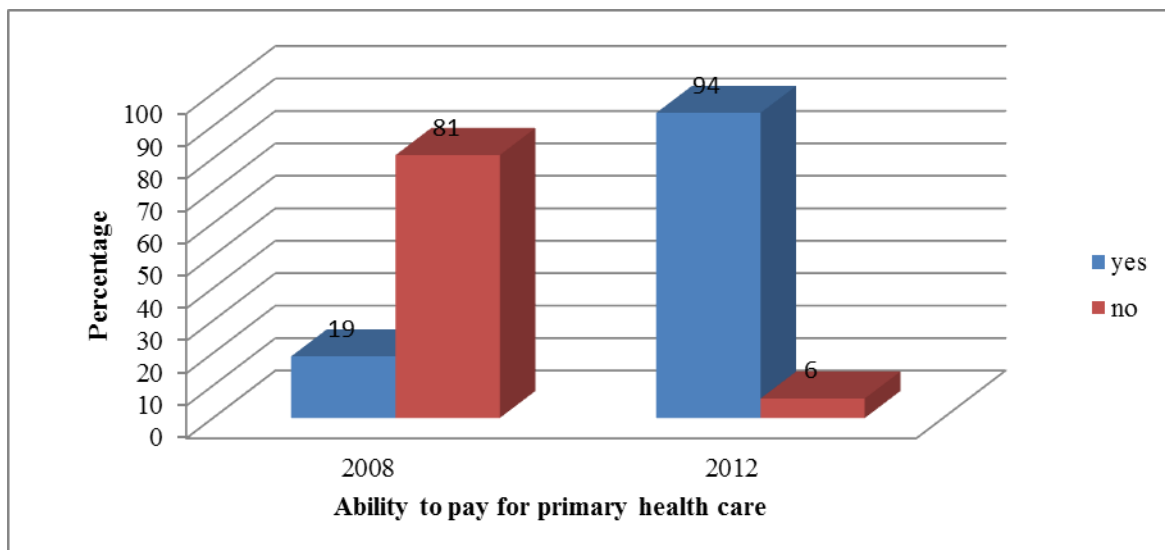


Figure 10: Ability of the respondents to meet the cost for health care 2008 and 2012.

4.7 Income

The findings suggest that, the mean income of respondents on monthly basis before the intervention was 72 US\$. After the intervention, there was a significant improvement in income to artisanal fishers ($\alpha = 0.05$). The mean income per month in 2012 was 107 US\$ (Figure 11).

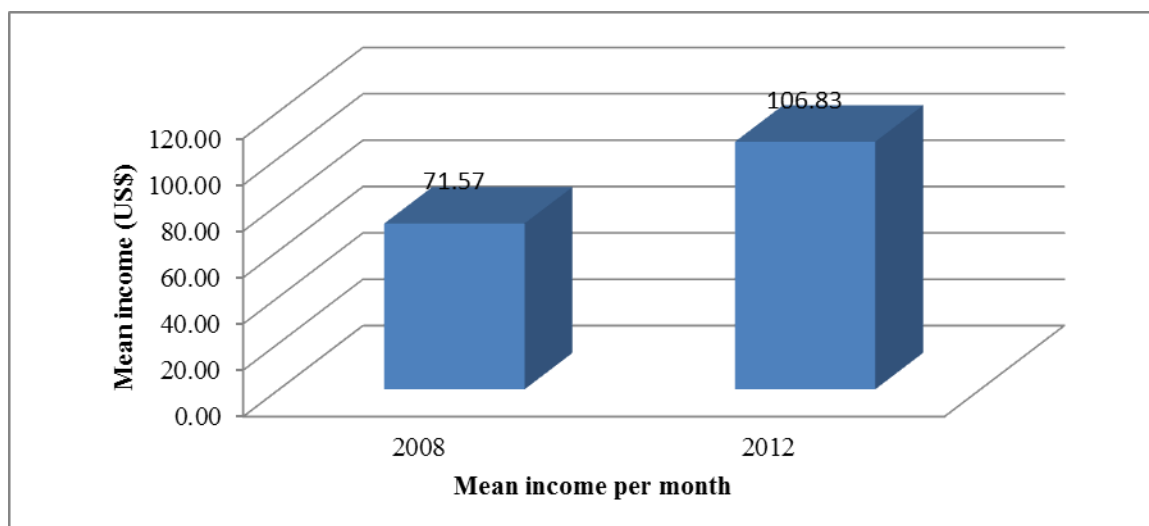


Figure 11: Mean monthly income of the respondents 2008 and 2012.

In Tanzania as a whole the mean GDP per capita in 2008 was 1300 USD and in 2012 it was 1700 USD. The growth in GDP per capita was therefore 30.8% while the mean income of respondents grew by 49.3%. Still the mean annual income of respondents in 2012 was only 75.4% of the annual GDP in Tanzania (Table 6).

Table 6: GDP per capita and mean annual income of beneficiaries 2008 and 2012 (Source: CIA, 2012).

	2008	2012	% increase
GDP per capita Tanzania	1300	1700	30.8%
Mean annual income of respondents	858.84	1281.96	49.3%
Income as % of GDP per capita	66.1%	75.4%	

5 DISCUSSIONS

The last statistics for Tanzania that could be used for comparing the results of the study is the 2007 National Household Budget Survey by the National Bureau of Statistics, there is no equivalent official report on which to compare field findings after completion of the project given that the results for the 2012 survey have not yet been published. The findings of this study therefore cannot be compared directly to other relevant statistics after the intervention. The sample size is also relatively small, with a valid responses rate of only 2.1% of total beneficiaries.

Majority of the beneficiaries sampled were men with large families and high dependence ratio of 7 which is larger than the national average of 5 in 2007, according to national household budget survey (NBS 2007). This could be due to the small sample size in this study. Large households have negative impact on the household in terms of food security and

reduction of poverty. They are more vulnerable to income insecurity due to increases in expenditure to meet the necessary needs (Mangora and Shalli 2006).

A good number of respondents were married with few female-headed households. This agrees with the findings of previous surveys by Mangora and Shalli (2006) and HBS (2007) which found males to be the main household heads responsible for their families. In comparison with Household Budget Survey of 2007 figure (28.5%) on literacy level, this study shows an overall increase in literacy level among the fishers in the study area. As Harrison (2010) notes, low level of education means that skills are not developed and individuals are limited on what they can be employed to do, which can also lead to limited aspiration and development of new thoughts among the individuals.

Most of the respondents in the study area relied on fishing activities for their livelihood with few involved in agriculture, food vending and petty trade. Common fishing gears used were purse seine which dominated in the Bagamoyo district. Gillnets, shark nets and traps were mostly used in Muheza and Mkuranga districts. Before the intervention the common fishing gears used in the same areas were ring nets, beach seine, dynamite fishing and spears (TCMP 2003). This shows that there was an improvement in fishing practices using modern fishing gears acquired from the project.

It appears that the project's financial support to individuals and the initiation of village community banks enhanced income of the targeted groups. Consequently, they have been able to accrue savings making them eligible to access small micro economic credit schemes like Village Community Bank (VICOPA) and SACCOS. About seventy percent of the respondents in the study area joined these groups to access credit. The funds seem to have played a great role in supporting group members to invest more and diversify livelihood activities and ultimately reduce poverty among the individuals. Surveys conducted by Torell *et al.* (2007) and WWF (2010) indicate that, both men and women are actively participating in saving and borrowing of funds from these credit schemes, and women are observed to experience economic independence and benefits like buying food, clothes, payment of school fees and other household needs as well as investment in business and acquisition of assets. It has been observed that saving schemes and access to credit have positive impact on small scale fishers and fish workers by providing access to capital and assets in their area (FAO 2005).

Food is among the basic needs that support people's life. Food security exists when all people at all-time have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preference for an active and healthy life (Ruane and Sonnino 2010). The findings of the study reveal that there is an indication of improvement on the number of meals consumption by the respondents. During the survey when the respondents were asked on the number of meals they take per day before and after the intervention, majority of them witnessed an improvement on the number of meals they could afford per day from two to three meals. The National percentage for Tanzanian living in rural areas who can afford three and two meals per day is 49.8% and 48.9% in 2007, which is the available statistics (NBS 2007). Therefore, there is an indication of improvement on meals consumption to the project beneficiaries compared to the national average survey of 2007.

Increase in income to project beneficiaries has also resulted in their improvement of the household to meet the basic needs and payment for their children's educational needs

including school fees. Access to education improves human capital in terms of skills, competence and knowledge which improves the efficiency of labour.

With regard to health services, the country has both government and private hospitals which provide health services in rural and urban areas. About 80% of the population has physical access to health services and 90% of households are living within 10 km from a dispensary. However, there is still disparities between urban and rural areas (FAO 2008). Nevertheless, the findings indicate that there has been an improvement of the respondents accessing health services. In this regard most of the respondents seek health care when they are seriously sick and they are able to meet the cost of primary health care such as user fees, buying of drugs and transport cost.

Based on the findings of the questionnaires and project implementation reports, empowering of community groups to access modern fishing gears, better fishing vessels, storage facilities and training has resulted in improvement of their income. This has enhanced their efficiency and catches of large fish from distant fishing grounds which fetch higher price than small species that are available in inshore waters. This high price realized was not only as a result of big sizes of fish caught but also resulting from improved handling of the catch while at sea. (MLFD 2012a). By availing better designed fishing vessels, the project is seen to have partly offloaded fishing pressure from the near shore waters to the distant fishing grounds. It needs to be seen if the offloading of fishing pressure from inshore waters to more distant fishing grounds is sustainable in the long run. This largely depend on the sustainability of outcomes of components i and ii of MACEMP which are the long term sustainable management of the EEZ and coastal management, including addressing potential conflicts between industrial and small-scale fisheries.

The project also facilitated group capacity to resource user groups (Beach Management Unit-BMUs) intended to get the local communities to participation in management of the fisheries resources and became instrumental in conflict management among fishers. This has contributed towards achieving the objectives of component one and two of the projects which aimed at sustainable management and utilization of the fisheries resources.

A good scenario was observed in the following fishing groups Kigombe FADS, Pumziken, Kitongani and Umoja ni Nguvu of Muheza district, Uwamu No. 1&4, Sharks and Nyota njea of Bagamoyo district and Mwambao, Mwanzo Mgumu, and Dolphin of Mkuranga district which have managed to procure other fishing vessels and fishing gears using the profit generated from the initial capital. This has created employment to the individuals and investment in other economic activities that diversify their livelihoods. The average income for fishermen per month in Bagamoyo district in the year 2011 was 120-140 US\$ (TCMP 2011), which is higher than the minimum monthly wage in private and government sector which ranges from 48 to 100\$ (URT 2012).

Income/wealth generated through small scale fishery activities can make significant contribution to rural development in terms of employment and effect on food security multiplier effect (Béné *et al.* 2007). From the findings, the income of the respondents has improved after the intervention.

Improved yield, household income and access to resources have been observed to be key desirables for small scale fisheries outcomes in co-management (Evans *et al.* 2009). It is however, widely appreciated that, higher income can also emerge from complementary

project activities, like introducing microcredits or provision of training skills related to alternative income earning opportunities or from completely independent trends such as migration and remittances (Evans *et al.*, 2009).

As shown in Table 6, the GDP per capita in Tanzania increased by 30.1% from 2008 to 2012 (CIA 2012). Mean annual income of the respondents increased by 49.3%. Even though the respondents' income has improved after the project, it falls short of the GDP per capita for 2012 for the country as whole.

6 CONCLUSION

From this study, there seem to have an indication of improvement of livelihood in terms of income of the respondents sampled. This translated to better access of the basic needs such as primary health care, education and quantity of food intake by the households and reduced vulnerability among the respondents. Moreover, provision of better fishing vessels and gears as well as the initiation of resource user groups in coastal areas (Beach Management Units – BMU) has motivated the coastal communities to participate in management and conservation of the coastal resources for sustainable livelihood an aspect that could be attributed to MACEMP project.

The long term sustainability of offloading fishing pressure to more distant fishing ground depends on sustainability of the outcomes of component i and ii of MACEMP project including solving potential conflict of industrial and small-scale fisheries and allover sustainable management of marine resources in the EEZ.

The project also appears to have helped to link the beneficiaries with local microfinance institutions such as Village Community Banks (VICOBA) and SACCOS that were one of the initiatives of the project, which enabled them to access credit. This resulted in expansion to other alternative income generating activities alongside the direct project intervention. This diversifies livelihood activities resulting in poverty reduction, improvement of livelihoods and wellbeing of the beneficiaries.

However, given the limitations on this study, both the small sample size and the absence of comparative current data for household budget survey, it is not possible to associate the observed improvements to MACEMP project alone, other external factors might have contributed for the observed improvement as discussed above.

7 RECOMMENDATION

From the study findings, it seems that the strategy of promoting diversification livelihood activities by supporting communities through development projects and provision of sufficient funds has been beneficial. Similarly, there seem to be positive results from linking the beneficiaries with the micro financial institutions which provide financial capital, as well as improved training, especially on entrepreneurship and business skills. A successful intervention of this sort could therefore diversify livelihood activities and increase income among the beneficiaries, and hence reduce reliant on marine resources. Future studies evaluating sustainability of the MACEMP project impact are suggested.

Despite the increase in income, artisanal fishers are still facing the problem of selling their catch which is associated with poor infrastructure (market facilities and landing sites), shortage of power supply and unreliable feeder roads in their area. It is therefore, recommended to link the fishing group with other associations/fishing company to share information on marketing opportunities that could maximize profits from their products and reduce the effect of post-harvest loss.

Although CDD approach has been observed to be a relatively efficient approach to community, however, sub project cycle process and application procedures to access fund need to be reviewed as it takes long time and require extensive consultations with the communities through meetings, which observed to affect budgets and performance of the proposed projects due to inflation.

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LIST OF REFERENCES

- Alkire, S., Bebbington, A., Esmail, T., Ostrom, E., Polski, M., & Ryan, A. (2001). *Community-Driven Development* (pp. 1–37). Washington DC, USA.
- Allison, E. H., & Ellis, F. (2001). The Livelihoods Approach and Management of Small-Scale Fisheries. *Marine Policy* 25: 377–388.
- Béné, C., Macfadyen, G., & Allison, E. (2007). *Increasing the Contribution of Small-Scale Fisheries to Poverty Alleviation and Food Security* (p. 125). Rome, Italy.
- Chambers, Robert and Conway, G. R. (1992). *Sustainable Rural Livelihoods: Practical Concepts for the 21st Century*. Discussion paper. Cambridge, UK.
- Chando, C. M. (2002). *Gender Roles in Fishery Planning and Projects: The Case Study of Coast Region in Tanzania*. Msc. Thesis. University of Tromsø, Norway.
- CIA (2012). World Factbook. *Central Intelligence Agency*. [February 28, 2013] <www.cia.gov>
- Evans, L., Cherrett, N., & Pemsil, D. (2009). Assessing the Impact of Fisheries co-Management Interventions in Developing countries: A meta-analysis. *Journal of Environmental Management* 92(8): 1938–1949.
- FAO (2005). *Increasing the Contribution of Small Scale Fisheries to Poverty Alleviation and Food Security. Technical Guidelines for Responsible Fisheries No. 10* (p. 79). Rome: Food and Agricultural Organization of the United Nations.
- FAO (2008). *Nutrition Country Profile, United Republic of Tanzania* (p. 48). Rome: Food and Agricultural Organization of the United Nations.
- Gustavson, K., Kroeker, Z., Walmsley, J., & Juma, S. (2009). A process Framework for Coastal Zone Management in Tanzania. *Ocean and Coastal Management* 52(2): 78–88.
- Harrison, P. . (2010). *Entrenching Livelihoods Enhancement and Diversification into Marine Protected Area Management Planning in Tanga, Tanzania* (p. 95). Nairobi, Kenya.
- January, M., & Ngowi, H. P. (2010). “ *Untangling the Nets* ” *The Governance of Tanzania’s Marine Fisheries* (p. 57). Johannesburg, South Africa.
- Jiddawi, N. S., & Ohman, M. C. (2002). Marine Fisheries in Tanzania. *Ambio* 31(7-8): 518–27.
- Lema, R. (2003). Community Participartion in the Tananzia Prawn Fishery Management Plan. A Paper presented at the Second Workshop of Capacity Building in Planning and Co-Management of the Tanzania Prawn Fishery Project.

Lyon, F. (2003). Community groups and Livelihoods in Remote Rural areas of Ghana: How Small-scale Farmers Sustain Collective Action. *Community Development Journal* 38(4): 323–331.

Mangora, M. M., & Shalli, M. S. (2006). Socio-Economic Profiles of Communities Adjacent to Tanga Marine Reserve Systems , Tanzania : Key Ingredients to General Management Planning. *Journal of Social Science* 4(2): 141–149.

MDC (2008). *Muheza district council, District Investment Profile* (p. 57). Muheza District Council, Tanzania.

Mkuranga District Council. (2012). *Mkuranga Distrcit Council Socio-Economic Profile* (p. 30). Mkuranga, Tanzania.

MLFD (2008). *Multi Sectoral Manual for Coastal Village Fund Sub projects* (p. 34).

Ministry of Livestock and Fisheries Development, Dar es Salaam, Tanzania.

MLFD (2009). *Marine Fisheries Frame Survey Report* (p. 36). Ministry of Livestock and Fisheries Development, Dar es Salaam, Tanzania.

MLFD (2011). *Annual Statistic Report*. (p. 70). Ministry of Livestock and Fisheries Development. Dar es Salaam, Tanzania.

MLFD (2012a). *MACEMP Achievements and Lessons Learnt* (p. 123). Ministry of Livestock and Fisheries Development, Dar es Salaam, Tanzania.

MLFD (2012b). *MACEMP Implementation Report* (p. 35). Ministry of Livestock and Fisheries Development, Dar es Salaam, Tanzania.

MNRT (1997). *The National Fisheries Sector Policy and Strategy Statement* (p. 31). Ministry of Natural Resources and Tourism, Dar es Salaam, Tanzania: Ecoprint.

NBS (2007). *Household Budget Suvery Report* (p. 111). National Bureau of Statistics, Dar es Salaam, Tanzania.

Ruane, J., & Sonnino, A. (2010). Agricultural Biotechnologies in Developing Countries and their Possible Contribution to Food Security. *Journal of biotechnology* 156(4): 356–63.

Semesi, A. (1998). Coastal Resource utilization and conservation issues in Bagamoyo Tanzania. *Ambio* 27(8): 635–644.

Semesi, A., Msumi, G., & Kivia, D. (2001). Coastal Resources of Bagamoyo District, Tanzania (Unpublished paper). *WIOMSA Book* WIOMSA. [January 2013] <<http://gridnairobi.unep.org>>

Sesabo, J., & Tol, R. S. (2007). Technical Efficiency of Small-scale Fishing Households in Tanzanian Coastal Villages: An Empirical analysis. *African Journal of Aquatic Science* 32(1): 51–61.

Sesabo, K. J. (2007). *Marine Resource Conservation and Poverty Reduction Strategies in Tanzania* (p. 113). New York: Springer Berlin Heiderlberg.

Sobo, F. S. (2012). Community Participation in Fisheries Management in Tanzania. *IIFET 2012 Tanzania* (pp. 1–11). Dar es Salaam, Tanzania.

TCMP (2001). *Tanzania State of the Coast 2001: People and the Environment*. Science and Technical Working Group. Tanzania Coastal Management Partnership, Dar es Salaam, Tanzania.

TCMP (2003). *Tanzania State of the Coast Report: The National Integrated Coastal Management Strategy and Prospects for Poverty Reduction* (p. 62). Tanzania Coastal

Management Partnership, Dar es Salaam, Tanzania. TCMP (2011). *Fisheries Value Chain Assesment Bagamoyo District, Tanzania* (p. 23). Tanzania Coastal Management Partnership, Dar es Salaam, Tanzania.

Torell, E, Kalangahe, B., & Munubi, R. (2007). *Integrated Coastal Management, Livelihood Development and Micro-Loan Strategies: The Case of the TCMP-FINCA Partnership in the Bagamoyo District of Tanzania* (p. 14). Rhode Island, USA.

Torell, Elin, & Mmochi, A. (2006). *Mkuranga Governance Baseline, Coastal Resources Centre* (p. 18). Rhode Island, USA.

UNDP (2011). *Human Development Report, Sustainability and Equity. A Better Future for All* (p. 185). United Nations Development Programme, 1 UN Plaza, New York, NY 10017, USA.

URT (2005a). *Environment and Social Assesment of the Marine and Coastal Environment Management Project (MACEMP)* (p. 110). United Republic of Tanzania, Dar es Salaam, Tanzania.

URT (2005b). *Marine and Coastal Environment Management Project (MACEMP) Project Implementation Manual* (p. 110). United Republic of Tanzania, Dar es Salaam, Tanzania.

URT (2008). *Millennium Development Goals Report* (p. 46). United Republic of Tanzania, Dar es Salaam, Tanzania.

URT (2012). *Employment and Earning Survey; Analytical Report* (p. 93). United Republic of Tanzania, Dar es Salaam, Tanzania.

URT President's Office. (2005). *TASAF II Operational Manual* (p. 81). United Republic of Tanzania, Dar es Salaam, Tanzania.

WWF (2010). *Strengthening Community Capacity for Fisheries Co-management (SCCaFCom) in Mafia and Kilwa districts: Evaluation Report* (p. 121). Dar es Salaam, Tanzania.

22 Do you see an improvement in the quality and quantity of food now as compared to before the project? Yes () No ()

Education

23. Are you able to pay for your children’s education?

Before Yes () No ()
 After Yes () No ()

24. How do you pay if yes

Before 1 = pay by instalment () 2= Full payment ()
 After 1 = pay be instalment () 2= Full payment ()

25. If no why?

1. Don not have enough money ()
2. Others specify.....

26. Is there improvement in ability to buy books?

After Yes () No ()

27. How has the support provided by MACEMP project helped you?.....

28. Would you say the fund has contributed to solving your financial problems?

Yes () No ()

29. If yes how much? Is there any assets you have invested apart from fishing?.....

Health

30. Do you seek health care when seriously ill?

Before Yes () No ()
 After Yes () No ()

31. Are you able to pay for the cost of health care?

Before Yes () No ()
 After Yes () No ()

32. Has there been improvement in healthcare when sick

Yes () No ()

Income

33. Has your income improved now as compared to before?

Yes () No ()

34. If yes how much were you making before **Average/month**?.....
 and how much are you making now (**Average/month**)?

35. Is there any group members joined VICOBA, SACCOS or any financial Institution?.....

Constraint

36. Is there any constraints of the intervention?

Appendix 2: Gender distribution of the respondents sampled in the study area.

Gender	Frequency	Percent
Male	63	75.0
Female	21	25.0
Total	84	100.0

Appendix 3: Age of the respondents sampled in the study area.

Age	Frequency	Percent
<=20	5	6.0
21-30	15	17.9
31-40	40	47.6
41-50	18	21.4
51-60	6	7.1
Total	84	100.0

Appendix 4: Marital status of the respondents sampled.

Status	Frequency	Percent
Single	16	19.0
Married	59	70.2
Divorced	2	2.4
Widow	7	8.3
Total	84	100.0

Appendix 5: Level of Education of the respondents sampled.

Education	Frequency	Percent
Illiterate/none	26	31.0
Elementary	40	47.6
Secondary	15	17.8
Vocational	3	3.6
Total	84	100.0

Appendix 6: Main occupation of the respondents sampled.

	Frequency	Percent
Fishing	61	72.3
Agriculture	10	12
Animal husbandry	2	2.4
Food vender	5	6.0
Petty trade	4	4.9
Seaweed farming	2	2.4
Total	84	100.0

Appendix 7: Savings of the respondent before and after inception of project.

	Before		After	
	Frequency	Percent	Frequency	Percent
yes	22	26.2	75	89.3
no	62	73.8	9	10.7
Total	84	100.0	84	100.0

Appendix 8: Rate of improvement in savings balance by the respondents after the intervention.

Rate of Savings	Frequency	Percent
very good	3	3.6
Good	52	61.9
Fair	19	22.6
Little	1	1.2
n/a	9	10.7
Total	84	100.0

Appendix 9: Respondents who had joined local credit schemes after the inception of the project.

	Frequency	Percent
yes	63	75.0
no	21	25.0
Total	84	100.0