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Role of Capture fisheries to livelihood and food security in Ethiopia: a review study

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Abstract

Poverty, hunger and malnutrition affect 25 millions of people in Ethiopia. The challenge is to find suitable and sustainable technologies which ensure them physical, social and economic access to sufficient, safe and nutritious food at all times: a situation referred to as food security. Many scholars, researchers, development agencies and policy-makers argue that capture fisheries, contributes to food security in many parts of the country including those living far from fish production areas. However little is known and not much literatures were documented on its importance to food and nutrition security to the society.

1. Introduction

Despite the promising economic growth in recent years, Ethiopia remains one of the poorest countries in the world. It is a country with a predominantly rural structure. Over 60 million people reside in rural setting, depending on crop farming, livestock rearing and extraction of various products from forests, vegetation and water resources for livelihood (Mulugeta L.2011). Ethiopia is the richest country with natural and manmade water bodies. It is home to 14 major rivers, 25 major lakes and 14 major reservoirs **(Gashaw T. and Wolf T, 2014).** Despite the presence of these aquatic resources, food security is still the major problem in the country **(WFP, 2020).** Studies show that about 25% of the population which is equivalent to around 25 million people have food security problem, 31 percent of the population are undernourished that is getting < 2,550 Kcals per adult equivalent per day **(ISS 2017; WFP 2020; MDH 2019).**

To overcome this problem the country has taken different measures in the last ten years (in the GTP I and GTP II periods) which brought remarkable results. One of the measures taken was giving attention to the issue with developing a strategy that was implemented to improve the livelihood and ensure food security of the citizens. And fish was taken as a means to ensure this issue. Ethiopia is a land locked country since 1993 which makes it merely dependent on capture fishery for fish production in the country. While, the potential of fish production from inland capture fishery sector has been estimated to be 95,000 ton per year it was only 59,000t that was produced in 2020 which is less than by 39,999 tons from the potential. The difference of the actual production from the potential can be reason out by different authors that it was because of climate change and manmade disasters on the water bodies.

In spite of the high diversity of fish species around 200 species few are commercially important. Namely, Tillapia, African catfish, Barbus, Nile perch, Common carp. Tilapia species averaged > 50%, Catfish about 20%, Barbus (12%) & Nile Perch about 9% of total production over the last decade. a considerable amount of Nile perch is caught in large rivers, as well as in Lakes Chamo, Abaya and in part of Turkana lake **(MoA, 2019).** Though preferred by consumers but increasingly becoming scarce, because of several reasons; natural and manmade disasters.

The contribution of capture fishery sector to the livelihood of fishers at different Lakes has been documented by different authors at different time. But still has not been documented to show the national contribution along its value chain comparing with different sectors. So, this study is engaged to synthesize the capture fishery sector's contribution to the livelihood and food security along its value chain at national level. Therefore the document can help the policy makers to have a sight on the value of the capture fishery sector and for further study in the sector.

2. Capture fisheries production in Ethiopia

Ethiopia is a land locked lowest income country located in the horn of Africa. In Ethiopia, the main source of fish is inland fresh water capture fishery as the country is lacking access to marine fish sources. Aquaculture is also another source of fish supply for consumption in the country. But it is still at an infant stage and is contributing insignificant amount of fish production in the country. It contributes less than about 1 percent comparing to the inland capture fishery production in 2016 **(Fao stat 2019;** Olaganathan Rajee and Alicia Tang Kar Mun 2017**).** Of course fish products have been supplied to the market through import for consumption in the country which may have significant contribution in alleviating food and nutrition

insecurity. But this report does not have the tendency to take it as part of the study. Because the imported fish data base was not categorized as per the need of this study.

So according to some studies **(Gashaw T. 2014; Alebachew 2016)** it is believed that the production from fresh water capture fisheries in Ethiopia is dominated by seven lakes (chamo 29 %, Ziway 19 %, Tana 17 %, Abaya 8 %, Koka 7 %, Langano 7 % and Hawasa 7 %). However, environmental degradation, combined with overfishing has affected capture fisheries in all major lakes and rivers. This has resulted in reduced yields in terms of quantity and size and the loss of some commercially important species **(FAO 2015; Table 1).**

According to MoA and FAOFishStat data, fishery production from inland capture fishery in Ethiopia has shown a steady increase since 2009/10 with a peak at 59,001t in 2020. In 2016 the production was 45,500 mt which is still below the potential of fish production from natural and manmade fresh water body's fish production per annum. Taking species wise, the production shows Tilapia takes the lion share in production (53 percent) while African cat fish, Barbus, Nile perch, Common carp and others contribute about the 19 %, 12 %, 9 %, 3 % and 4 % on average of the production in the country during 2009 to 2018.

Table 1:- Overview of practical options for reducing vulnerability in fisheries

impact area	potential responses
reduced yield	Access higher-value markets; shift/widen targeted species; increase fishing capacity/effort*; reduce costs/increase efficiency; diversify livelihoods, exit fishery
increased yield variability	Diversify livelihoods; implement insurance schemes; promote adaptive management frameworks
change in distributtion	Migrate fishing effort/strategies and processing/distribution facilities; implement flexible allocation and access schemes
increased dangers of fishing	Weather warning systems; improved vessel stability/safety/communications
social disruptions	Support existing/develop new local management institutions; diversify livelihoods

3. The role of capture fisheries in food and livelihood security in Ethiopia

As we know, food is one of the three basic needs for human being. And, food security at household level can be considered as the availability and accessibility of food at affordable price (FAO, IFAD, UNICEF, WFP and WHO. 2020). So the government is the one who is responsible to satisfy this for the countries citizens. That is why Ethiopian government takes the agriculture sector as the engine to ensure individuals food security (WFP, 2020). The main direct uses of fish and fish resources in Ethiopia are as a source of food. But the fisheries sector can host numerous amounts of women and youth along its value chain so, it is used as a source of employment and source of income for the participants from production till the consumption stage of the value chain.

Fisheries sector can also play an important role to ensure a stable supply of fish, providing income and employment opportunities, earn foreign exchange. Among these, the constant stable supply of fish is by far the most important element directly linked to food security issues (Kawarazuka N. 2010). Unlike to the staple foods experienced in Ethiopia fish has a potential to ensure the food and nutrition security simultaneously. A small amount of it is so enough to cover the need to satisfy nutrition security.

The role of fish in food security can be defined as a situation in which all households have both physical and economic access to adequate amount of fish for all members and where households are not at risk of losing such access. For this as the other world Ethiopian government is taking fish as one of the means to ensure food security of the population. Capture fisheries play important roles in ensuring food security. There are three dimensions implicit in this definition: availability, stability and access. However, as some studies performed at different major lakes revealed the fact that capture fisheries threat now and in the future that may bring about the decrease in the supply of fish by the capture fishery was the climate change as the result of depletion of food stock. So, this may have effect on the sector not to have optimal impact on ensuring the food security of fish producers in the sector in particular and nationally in general.

Fish has a long history as a source of food in Ethiopia. Large amount of fish has been consumed by the people during the fasting time and by the people who live in big cities around production areas and towns (like Ziway, Arbaminch, Hawasa and Bahirdar).On the other hand the inland capture fishery can host huge number of women and youths that brings about income for the actors along its value chain. Different studies at different major lakes and rivers of Ethiopia revealed this fact that capture fishery host tremendous amount of women and youth at

production, processing and trade level along its value chain. That implies that, this is the other way of capture fishery role to ensure food security in the country.

A number of recent studies, most of which are reviewed in this paper revel a strong association between fish and fishermen and women and youths livelihood a long its value chain in Ethiopia. However the national statistics on the contribution of the fishier sector to the national GDP has been undermined and has no recent data. Now there is great interest by the Central Statistics Agency of Ethiopia (CSA) to include fish as one commodity in data collection by the office with the crop and other livestock commodities after the platform held in Ethiopian Institute of Agricultural Research.

Based on Gordon A, Sewmehon Demissie Tegegne and Melaku Tadesse. 2007. Capture fishery in lake Tana fisheries are the primary benefisheries while women and youth in post harvest processing are significantly benefited in improving their livelihood. On the other hand according to Kidanie Misganaw and Addis Getu 2016 which was undergone in the same lake, data from the sample respondents (The study was conducted from October 2012-June 2013. Both primary and secondary data sources were used. In this study, random sampling techniques were employed to select fishers. A total of 95 fishers were interviewed: from each landing site (‘Infranze 33”, “Delgie 27” and “Goregora 35”), the majority of respondents in the three districts ranked fishing as first priority source of income for the family and followed by income generated from animals and animal products. Trading and labour although are less important as source of income, trading appears relatively important. Analysing the livelihood of the respondents gave an overview of the status and the relevance of fisheries in contributing to the livelihood of the fishers. Of the sampled fishers fishing, crop production, animal husbandry, petty trade and causal labourer contributed 60%, 21%, 12%, 2% and 5% of fisher’s livelihood, respectively. That means capture fishery sector is contributing primarily to the livelihood of the fish producers than the others livelihood activities.

The study by Abebe Ejigu Alemu and Hossein Azadi 2018 around tigray regions shows us that, fishing household heads were relatively younger than the non-fishing household heads implying that the sub-sector is attracting the youth, contributing to the employment opportunity and engagement of the growing part of the rural community. This may be considered as an opportunity for the increasing young labor force in the rural areas who are largely landless. And also this analysis clearly indicates the importance of fish to the food security and nutritional

needs of most fishing families. 95% of the fishing households consume fish at household level in contrast to the 34% non-fishing households, which is statistically significant at the 1% level. This implies how fish is contributing to the households' food security and nutritional requirements.

The survey result again reveals that fisheries constitute 36.61% and of which 20% were cooperative fisheries and the rest (16.61%) were individual fisheries. Cooperative members contributed on average Birr 1202.42 and they obtained annual dividends which is worth, on average, Birr 4562.38. They also earned on average Birr 2822.58 annually from working in the cooperative. It is the source of food for the fishing households contributing to the household food security. All cooperative members consumed fish, on average, 13.56 (approx. 14) days in a month implying the contribution of fish to the rural households in the district.

According to the study held on by SOS SAHEL ETHIOPIA and National Fishery and Aquatic Life Research Center in 2015 in lake Hawasa revealed the fact that fishery serves as a means of income and livelihood for large number of legal and illegal fishermen and their associates. The same study indicated that the fish from the lake is one of the main sources of animal protein for the low income community in the local community. The same study again in lake hawasa in 2015 described that the fishery sector in Ethiopia serves as a means of income for over 15000 primary fishers, for 20000 people in ancillary activities and for 32000 subsistence fishers. And also nationwide, there are about 67400 people directly engaged on the fishing while additional 337000 people are also indirectly dependent on the fishery sector.

The study by Ignatius Mberengwa and Zelalem Bacha in 2011 in lake ziway -This study assesses the role of fishery in livelihood security of fishing communities in and around Lake Ziway. It is based on a sample of 125 households randomly selected from seven landing sites of the Lake. Focus group discussions, key informant interviews and personal observations were used to collect data for the study. The study results show that fishing technology on Lake Ziway is artisanal in nature and makes use of traditional rafts and wooden manual boats. The majority of the fishermen are part-time who are also engaged in multiple activities such as cereal production and livestock rearing to sustain their livelihoods. The study also shows that fish contribute to livelihood security by both serving as a major food item and by providing cash income ultimately used for the purchase of a variety of goods and services.

Table 1:- Rank of contribution of major livelihood activities in lake ziway

Activities	Rank in contribution to households livelihood security					
	First rank		Second rank		Third rank	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Cereal production	52	41.6	54	45.8	2	2.8
Fishing	71	56.8	43	36.4	7	6.6
Livestock	2	1.6	15	12.8	85	80.2
Petty trade	-	-	3	2.5	3	2.8
Others	-	-	3	2.5	8	7.6

Sourse : Mberengwa and Zelalem Bacha in 2011

As we can depict from the table 1 fishing has a first rank in contribution to household livelihood security.

Table 2:- Incomes of sample households from the various activities (in Birr)

Household's source of income	Minimum	Maximum	Mean
Farming	800.00	15500.00	5518.93
Fishing	300.00	40000.00	5940.83
Livestock and livestock products	150.00	11020.00	3199.80
Petty trading	1000.00	4800.00	2180.00
Chicken keeping	30	1200.00	294.80
Services (wage, salary etc)	500	8400.00	2342.85

Source: Sourse : Mberengwa and Zelalem Bacha in 2011

From table 2 one can safely say that the capture fishery plays an important role in the attainment of livelihood security of households of the study area.

Case study by Mesay Y. et.al 2020. The study was conducted to share the experience of promoting fish production and marketing from the Tendaho Reservior of Afar region, Ethiopia. And according to the result from this study the majority 83% of fishermen were on average 25 years old. This indicates that the sector has been attracting young and unemployed pastoralists and agropastoralists into capture fishery sector which is inline with the target of livelihood diversification and employment creation in the region.

A study conducted by Tsegay T. 2017. in lake Hashenge in Tigray Region revealed the fact that The highest percentages of the livelihood activity were engaged in fishing and farming (45.95%). 32.43% of the respondents were participating in fishing activity only while 16.22% were engaged in fishing and trade. And also, providing a major protein source for the communities around the lake.

A study by Mr.Bikila Keno and Amanuel Zewdie in lake fincha in 2016. The study focused on the analysis of value chain- The case of Fincha Amarti Nashe reservoir of Oromia state, Horo Guduru Wollega zone, Ethiopia by sampling 158 respondents. And among the respondents 98.5 % depend on fishing, 79.2 % on livestock rearing. That means fish farming and livestock rearing were major sources of income for the majority of the households in the selected kebeles of Horro district. They took fish farming as the first major means of livelihood in the selected kebeles of Horro district. Similarly, grain trades, honey trading and other trading activities account 13.8 % .

4. Conclusion and implications

The above review of studies conducted across various sites in Ethiopia clearly shows that where ever lakes, reservoirs, and rivers exist, their income contribution is quite significant. Fishing plays important role in the livelihood security of the community through both direct consumption and income generation. Fish function as a source of household food consumption and hence significantly contributing to food security. It does this in two ways, one fish serves as a major food item to the beneficiaries and secondly it provides cash income which is ultimately used for purchase of variety of food items.

5. References

Abebe Ejigu Alemu and Hossein Azadi 2018. Fish Value Chain and Its Impact on Rural Households' Income: Lessons Learned from Northern Ethiopia. MPDI

Alebachew Tilahun, Adamo Alambo and Abebaw Getachew.2016. Fish Production Constraints in Ethiopia: A Review. World Journal of Fish and Marine Sciences 8 (3): 158-163, 2016.

Ethiopian Ministry of Agriculture 2019. Department of livestock and fishery statistics data base

Ethiopian Public Health Institute (EPHI) [Ethiopia] and ICF. 2019. Ethiopia Mini Demographic and Health Survey 2019: Key Indicators. Rockville, Maryland, USA: EPHI and ICF.

FAO. 2015. Climate change and food security: risks and responses

Gordon A, Sewmehon Demissie Tegegne and Melaku Tadesse. 2007. *Marketing systems for fi sh from Lake Tana, Ethiopia: Opportunities for improved marketing and livelihoods.* IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project Working Paper 2. ILRI (International Livestock Research Institute), Nairobi, Kenya. 49 pp.

FAOSTAT (2020). Capture fishery and Aquaculture production in Ethiopia.

FAO, IFAD, UNICEF, WFP and WHO. 2020. The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets. Rome, FAO. https://doi.org/10.4060/ca9692en.

Growth and Transformation Plan I of Ethiopia

Growth and Transformation Plan II of Ethiopia. Volume I main text.

Ignatius Mberengwa and Zelalem Bacha 2011. The role of fishery in livelihood security of fishing communities around lake Ziway, Eastern Showa Zone, Oromia Regional State, Ethiopia.JBAS.

Kawarazuka N. (2010). The contribution of fish intake, aquaculture, and small-scale fisheries to improving nutrition: A literature review. The WorldFish Center Working Paper No.2106. The WorldFish Center, Penang, Malaysia. 44 p.

Olaganathan Rajee and Alicia Tang Kar Mun 2017. Impact of aquaculture on the livelihoods and food security of rural communities. International journal of fisheries and aquatic studies.

Mesay Yami, Alemayehu Wube, Abebe Chefo and Yared Mesfin 2020. Supporting adaptive capacity of agropastoralists through fish production and marketing: the case of Tendaho Reservior. John Wiley and Sons Australia. Ltd.

Mr.Bikila Keno and Amanuel Zewdie, 2016. Socio-Economic and Profitability of Fisheries Enterprises the Case of Fincha Amarti Nashe Reservoir of Oromia State, Horo Guduru Wollega zone, Ethiopia. Industrial enginearingletters.

SOS SAHEL ETHIOPIA and National Fishery and Aquatic Life Research Center 2015. Current status, challenges and strategies for sustainable fishery of Lake Hawassa.

Tesfaye G. and wolf, M. (2014). The state of inland fisheries in Ethiopia: A synopsis with updated estimates of potential yield. Ecohydrology and hydro biology 14 (2014), 200-2019

Tsegay Teame 2017. Characteristics and Status of the Highland Lake Hashenge Fishery, Tigray, Northern Ethiopia. International journal of aquaculture and fishery sciences

WFP, 2020. Ethiopian country strategic plan (2020-2025). Apolicy brief.