

THE ROLE OF WOMEN IN SUSTAINABLE AQUACULTURAL DEVELOPMENT IN DELTA STATE

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ABSTRACT

The role of women in sustainable aquacultural development in Delta State was reviewed. Women have been involved in both artisanal and aquacultural fish production in the State. Out of 2,533 fish farmers managing cluster fish farms located in different areas of the state, 291 (11.5%) are women. Statistics show that the artisanal fish production was estimated at 30,000 m³ tons/year. Aquaculture fish production was estimated at 28,693.2 m³ tons/year. This amounted to an estimate of 58,693.2 m³ tons of fish production in the state, as of 2009. With a demand of 70,000 m³ tons of fish/year in the state, a shortfall of 11,306.8 m³ tons/year of fish supply has been estimated. There is, therefore, an urgent need for improvement in aquacultural development in the state. Women's involvement in sustainable aquacultural development in the state is low. More women should be encouraged to participate more fully in fish production as this can help improve fish production figures. Information regarding other activities of women in fish preservation and marketing should be properly documented. The Youth Empowerment Through Agriculture (YETA) in the state should recruit more women to participate in the aquacultural programs. Women should also be empowered through education and training, political, and economic empowerment by way of having access to loans to enhance their roles and full participation in sustainable aquacultural development in the Delta State.

Keywords: *women, roles, sustainable aquaculture, Delta State*

INTRODUCTION

Aquaculture is the rearing of aquatic products under controlled environment. The rearing of fish has become important because fish is a cheap and major source of animal protein consumption for Nigerians, especially natives living in coastal communities. Fishing has become a way of life and the primary occupation of the coastal dwellers that depend on it for their livelihood and subsistence. A gradual decline in capture fisheries production has rapidly widened the gap between the demand and supply of fish, especially coupled with a continually growing population. This has resulted in various projects of sustainable development in aquaculture of which women have been active participants. Shalesha and Stanley (2000) reported that women perform important functions in the fisheries of most African and Asian countries. In Nigeria, women have been observed to participate in capture fisheries as is the case of Ijaw women in the Niger Delta (Ajayi, Ajinle, Omolise, Bolade and Omotoyo, (1989) and the Nupe women along the Niger Benue River basins (Wakoma, 1991). Fish has been identified as one of the widely distributed animal proteins in Nigeria due to the activities of women (Obakin, 1996). Alamu (2000) also observed that women in the Kainji Lake area engaged in post-harvest activities, like processing, preservation, and marketing.

The domestic role of the woman in improving her family's health through more nutritious food and to increase her family's meager income has encouraged more women to be involved in homestead small-scale aquaculture. Rural women, in particular, who live in poverty, with no purchasing power, and who suffer from malnutrition due to low protein intake has taken the lead in small scale aquaculture for improvement of their social status and economic power. Gupta (1990) reported that in Bangladesh, rural women engage in subsistent aquaculture, which has helped in improving the quality of their families' lives. So, in poor rural communities, aquaculture can be an integral component of development, contributing to sustainable livelihoods and enhancing social well being. Aquaculture has, therefore, contributed significantly to food security, income generation, trades, and improved living standards in many developing countries.

The FAO (1986), through its fisheries and aquacultural sector projects, initiated a world conference on fisheries management to enhance the role of women in the fisheries sector. Also, the United Nations, in 2004, urged governments to consider the developing and issuing of strategy changes necessary to crminate constitutional, legal, administrative, cultural, behavior, social, and economic obstacles to women's full participation in sustainable development and public life.

The Delta State is located in southern Nigeria and is a part of the Niger Delta, which has been reported by Awosika (1995) as Africa's largest delta and the second largest delta in the world, with one third of the area made up of wetland coastline spanning about 450 km. The Delta State, with its many rivers, creeks, natural ponds, and swamps, is a fisheries resource zone. This paper reviews the role of women in sustainable aquacultural development in the Delta State. Government involvement in enhancing the role of women is also highlighted.

AQUACULTURAL DEVELOPMENT IN DELTA STATE

Delta State has been actively involved in aquaculture and fishery development. The government has been involved in artisanal fish production, including marine/brackish fishing and fresh water fishing (Table 1). The figures represent aquaculture and fishery harvest as of 2009. Aquaculture fish production in the state is presented in Table 2.

Table 1: Artisanal Fish Production

Fishing Activity	Production
Marine/Brackish	10,000m ³ tons
Freshwater	20,000m ³ tons
Total	30,000m³ tons

Source: Department of Fisheries (2010)

Table 2: Aquaculture Fish Production in Delta State.

S/N	LGA	Cluster Farms	No of Ponds	Number of Farmers		Fish Production
				Men	Women	
1	Uvwie	Agadaga	225	38	10	16,105,600 kg/yr
2		Crusader	21	15	5	
3		Uku Close	62	33	7	
4		Eruvwum	58	30	10	
5		Ugborioke	3,200	255	60	
6		Ekpan	6,500	1,420	80	
7	Isoko South	Irri	30	6	0	48,000 kg/yr
8	All L.G.A.	Yeta (2008)	642	193	21	1,027,200 kg/yr
9	All L.G.A.	Yeta (2009)	945	252	63	1,512,000 kg/yr
10	Family Support Programme FSP/Others				35	10,000m ³ kg/yr

Source: Department of Fisheries (2010)

Out of 2,533 fish farmers managing cluster fish farms located in different areas of the state, 291 (11.5%) are women. Uvwie Local Government Area (L.G.A.), as of 2009, had a total production of 16,105,600 kg/yr. Isoko South had 48,000 kg/yr total fish production. The Youth Empowerment Through Agriculture (YETA) scheme of the state government, in all 25 L.G.A's in the state, produced 1,027,200 kg/yr in 2008 and 1,512,000 kg/yr in 2009. The total fish production recorded in the state, as of 2009, amounted to 58,693.2 m³ tons/yr (Table 3). The total fish demand for the State has been estimated at 70,000 m³ tons per year. This brings about a shortfall of 11,306.8 m³ tons/yr. It should be noted, however, that catfish production is the major aquaculture fish produce in the state.

In all of these, women have played important roles in aquaculture fish production. Apart from fish farming, women have been involved in fish processing and preservation as well as marketing. In most parts of the state, women are engaged in post-harvest preservation of fish. Fish marketing is also done by women, as has been noticed in most fish markets. The roles of women, mainly in processing and marketing, have been reported elsewhere by several authors (Ajayi, *et al.*,

1989; Clucas & Ward, 1996). The report from aquaculture activities in the Delta State shows that more men are involved in capture and culture fisheries. Women could probably be more involved than men in processing, preservation, and marketing of fish products in the state. The state government has also given out loans to fish farmers, including men and women fisher folk. The artisanal fishery sector cannot be left out. Loans have been given out to various fishermen co-operative societies in the state to assist their members in procuring out board engines and canoes, all equipped with fishing gadgets, such as nets, paddles, floats, and other inputs. Well known individual fisher folks in the state have also benefited from government loan schemes. The State Fishery Loan Advisory Committee has also disbursed loans from the ECOWAS fund, Artisanal fish production projects, and other such projects in the state. Women have benefited from such loan acquisition in the state. From the present report, women have been carried along in the aquacultural development of the Delta State. However, the participation of women can be enhanced to achieve full participation of women in all sectors of aquaculture and fishery production in the state.

Table 3: Aggregate fish production (Aquaculture and Artisanal) and demand in Delta State

S/N	Details	Metric Tons	Metric Tons
1	Total Fish Demand		70,000
2	Fish Production		
	Uvwie	16,106	
	Isoko South	48	
	Yeta	2,539.2	
	Family Support Programme	10,000	
	FSP/Others		
	Artisanal Fishing	30,000	
	Total	58,693.2	58,693.2
	Shortfall		11,306.8

Source: Department of Fisheries (2010)

THE ROLE OF WOMEN IN POST-HARVEST ACTIVITIES

Women have been reported to be more involved in post-harvest activities than men. Tetty and Klousseh (1992) reported that women are more involved in the trade of fish smoking. F.A.O. (1977), while observing that labor utilization patterns differ from region to region, noted that women, generally, are responsible for fish processing and marketing. Both in extensive and semi-intensive production systems, fish are sold as fresh fish. Post-harvest activities only commence when fish products are unsold. Fish is, then, necessarily preserved either in cold storage facilities, which are inadequate in most rural communities where the fish ponds are located, or preserved as dry products, that is, smoked fish, which is destined for remote or distant markets. Most fish preservation methods, such as smoking, drying, and even fermentation are performed by women near or inside the house and are often considered as domestic activities, enabling them to combine these activities with other domestic chores. In the Delta State, marketing of fish provides most rural women their only source of income. In some cases, restricted time budgets and social and cultural factors limit the ability of the woman to participate fully in fish marketing.

GENDER ISSUES HINDERING WOMEN PARTICIPATION IN SUSTAINABLE AQUACULTURAL DEVELOPMENT

Women play a major role in aquaculture production around the world, both as laborers and as managers of the production process. Previous studies have shown that women are generally responsible for daily pond maintenance and fish feeding (Low, 1985). Recently, more women have been found to be involved in aquaculture. However, the degree of the involvement of women in fisheries enterprises has been ignored (Chakrott, 1981). Special efforts have not been made to integrate women into aquacultural extension and training programs (Acharya and Benneth, 1982). However, in the light of the role of women in subsistence production, it is important to make technical information and advice available to women involved in fish food production in order to increase fishing output (F.A.O., 1986). The overall goal, in terms of women and sustainable development, is gender mainstreaming of all policies incorporating a gender perspective. Although women have been proved to be competent in adopting new aquaculture technologies, their role is very much restricted and often ignored. There is gender bias in many aquacultural activities. To ensure that women utilize their full potentials in profitable activities, like aquaculture, it is necessary to provide capacity building support to rural women. Many of the agricultural programs and policies lack strategies for women. This is because the participation of women in aquacultural development is influenced by cultural and societal issues, which include:

- Lack of sensitivity to and respect for gender roles and responsibilities.
- High level of illiteracy among women, which hinder acquisition of information
- Lack of land ownership, thus limiting access and control over resources
- Adequate data on women involvement/participation in aquaculture is not available
- Government policies and programs are always not gender sensitive
- Women are excluded from gaining access to information and decision-making processes, which men participate and dominate generally in trainings and cross-visits.
- Agencies aimed to improving the status of women by increasing their skill acquisition schemes are not in place.
- Inability of most women to procure a loan.

EMPOWERMENT OF WOMEN FOR SUSTAINABLE AQUACULTURE DEVELOPMENT

The Delta State government, in line with the Federal Government of Nigeria directives, had earlier established various strategies of agricultural empowerment to alleviate and eradicate poverty through agriculture, such as food security projects, generation of employment, wealth, and rural development in the state. This has not yielded much effect because poverty and hunger are still pervasive in both rural and urban areas. Women are the worse hit. It is very important to empower women to turn around fish production in Nigeria through redressing the empowerment programs to incorporate women through various ways, such as the following.

EMPOWERMENT THROUGH EDUCATION AND TRAINING.

Training of women has been trained through the Delta Microcredit program by using consultants from the Nigerian Institute of Oceanography and Marine Research (NIOMR). Also, in place are regular visits and training by the Agricultural Development Program (ADP) extension agents as well as by the officers of the Department of Fisheries of the State Ministry of Agriculture. Between 2007 and 2009, the State Ministry trained 450 people, comprising of 343 (72.2%) males and 57 (12.7%) females, in aquaculture. The state government has carried out training and empowering

various categories of unemployed youths, between the ages of 18 and 40 years, to engage in agriculture. The Youth Empowerment Through Agriculture (YETA) program has aquaculture as one of the major areas of training. In 2008, 448 youths were trained, of which 214 (47.8%) were trained in Aquaculture/Fisheries. Twenty Five (11.7%) of the 214 who benefited from the training were women. Of the 500 youths trained in 2009, 315 (63.0%) were trained in aquaculture/fisheries (Table 4). 25 (11.63%) women took part in the training in 2008 and 85 (26.98%) in 2009. The proportion of women who participated in the training increased slightly by 60 (15.3%) in 2009, compared with the previous year. Mobilization of Rural Women for Sustainable Agriculture (MORWSA) organized training for women in aquaculture between 2005 and 2009, with 510 participants. Though the state government has laudable programs in aquacultural developments, the proportion of women to men involved in the programs is still very low.

Table 4: Participation in Aquaculture/Fisheries in Delta State Youth Empowerment Through Agriculture (YETA) Program

S/No.	Local Government Area	Male		Females		Totals	
		2009	2008	2009	2008	2009	2008
1	Aniocha North	0	0	0	0	0	0
2	Aniocha South	5	5	0	1	5	6
3	Bomadi	13	12	1	6	14	18
4	Burutu	9	16	4	4	13	20
5	Ethiope East	6	10	1	2	7	12
6	Ethiope West	7	12	0	1	7	13
7	Ika North East	3	5	1	1	4	6
8	Ika South	5	7	0	1	6	8
9	Isoko North	6	11	1	4	7	15
10	Isoko South	9	10	1	4	10	14
11	Ndokwa East	6	8	0	3	6	11
12	Ndokwa West	7	7	0	3	7	10
13	Okpe	8	11	1	2	9	13
14	Oshimili North	3	5	0	3	3	8
15	Oshimili South	7	7	1	5	8	13
16	Patani	12	11	2	4	14	15
17	Sapele	3	9	1	4	4	13
18	Udu	12	12	0	1	12	13
19	Ughelli North	6	9	1	3	7	12
20	Ughelli South	7	9	0	3	7	12
21	Ukwani	7	8	0	3	7	12
22	Uvwie	14	13	2	6	16	19
23	Warri North	12	11	2	4	14	15
24	Warri South	11	9	3	10	14	19
25	Warri South-West	11	13	3	7	14	20
	Total	189	230	25	85	214	315

Source: Delta State Ministry of Agriculture and Natural Resources (2010).

Education and entrepreneurial skills should be given to more women fish farmers. Women should be given the right to education in order to equip them with the necessary skills and knowledge that will make them compete favorably with men well as enabling them to organize their business in such a way that will yield better profits. If a good percentage of women are properly educated on the elements of sustainable development and their desirability, then such women will be properly equipped to transmit values that could enhance sustainability development to their children (Ogbuigwe, 1996).

EMPOWERMENT THROUGH CREDIT FACILITIES

Empowerment through credit facilities has a limited application in scope in the Delta State because of high costs of credit. However, the State Ministry of Agriculture has access to credit facilities via the ECOWAS Fund Accelerated Artisanal Fish production project to assist fish farmers. Also, the Ministry provides loans, occasionally, to agriculturist in the state. Women in Agriculture (WIA) approves some credit facilities specifically for women in-cash and in-kind through the State Agricultural Development Program (ADP). The state government, through the Delta State Agricultural Procurement Agency (DAPA), has disbursed loans for fisheries production.

Efforts should be put in place to achieve a credit facility which has a low interest rate to women. Presently, the level of interest rates for agricultural loan in commercial banks is 20%. This is not feasible to establish viable projects in aquacultural production, with at least a gestation of 3-4 years. Agricultural banks and rural developments should focus its attention on the empowerment of women with a reduced interest rate of about 6%.

EMPOWERMENT THROUGH THE NIGER DELTA COMMISSION (NDDC);

NDDC carries out empowerment programs, such as training and provision of credit facilities, to both women and men involved in aquaculture. The NDDC and the Ministry of Agriculture and Natural Resources have similar empowerment goals for sustainable developments and should work together to achieve their set objectives. Emerhi, Nicolas and Wolf (2001) noted that the NDDC was initiated by the Nigerian government for a speedy global transformation of physical and social development of the Niger Delta Zone to enhance equity, prosperity, and tranquility.

Also, a substantial part of the funding of the NDDC should be allocated to women for the purpose of investing them on aquacultural development. Such funds can enable the women to establish integrated fish farms, buy input and other facilities in aquaculture, and improve processing and storage equipments to reduce post-harvest losses. The government, also through this commission, should establish farms and employ and train women in aquaculture as a means of sustainable livelihood.

EMPOWERMENT THROUGH COOPERRATIVE SOCIETY

The co-operative societies are major empowerment strategies of practice throughout Nigeria. The empowerment of women through this means can be feasible if properly managed. In the Delta State, few fishermen cooperative societies are registered with the government. About 5,000 persons in these cooperatives have benefitted from the State Government Fisheries Extension and Assistance to Fishermen (Online Nigeria, 2003). Only a few women benefitted from this scheme. The state government, in 2003, under the Fisheries Extension and Assistance Scheme, disbursed loans to fishermen cooperatives. Efforts should be made to incorporate women into these fisheries cooperative societies and have fisherwomen cooperative societies to enhance the access of women to loan acquisition.

POLITICAL AND ECONOMIC EMPOWERMENT

Recently, the Mosogar fish hatchery was initiated for the production of over 5 million fish juveniles by the Nigeria Agip Exploration Company. There is also the current reactivation of the Delta State fish farm at Aviara in Isoko North L.G.A. This is to enable the production of both fish juveniles and table sized fishes. The Delta State, under SEEDs, recognized the importance of gender issues as a tool to:

- Promote the integration of women into the human development agenda and achieve their full participation in the socio-economic and political development of the nation.
- Reflect the different strategies for targeting and measuring the impact of macro-economic policies on women, men, children and the physically challenged, and the poor to guarantee a minimum level of economic security for them.
- Develop and provide gender-disaggregated data in measuring the incidence of poverty and reflect these in the state macro-economic report and brief.

These policies are in relation to women for improved sustainable development in the Delta State. Social and legal institutions should guarantee women equality in basic legal and human rights in access to or control of land or other resources, in employment, earning, social, and political participation. More women than men live in poverty. Economically, more women should be empowered in all spheres of aquaculture and fisheries in the state to alleviate poverty. Economic disparity should be made to cease because much of the unpaid work within families and communities fall on the shoulders of women and as such should not be discriminated against.

STEWARDSHIP OF NATURAL RESOURCES

Women are more vulnerable to effects of changes in the environment (Women Watch, 2008). Women in developing countries are usually in charge of securing water, food, and fuel and overseeing family health and diet. Therefore, they tend to put into immediate practice whatever they learn about nutrition in preserving the environment and natural resources. The responsibilities of women in households and communities make them stewards of natural and household resources. These roles position them well to contribute to livelihood strategies adapted to changing environmental realities.

CONCLUSION AND RECOMMENDATIONS

Women play vital roles in sustainable aquacultural development. The contribution of women in aquaculture has impacted positively on the social status and economic power of women. The woman's involvement in aquaculture has helped to increase her family's meager income, thereby contributing to sustainable livelihood and enhancing the social well-being. A full understanding of the role of women in sustainable aquacultural development is significant in assuring food security, income generation, trades, and improved living standards in many developing countries.

In the Delta State, women have not been fully involved in sustainable aquacultural development. From statistics, women have only about one tenth involvement in sustainable aquacultural development in the state. Full participation of women should be encouraged to achieve improved development of aquaculture and, hence, economic emancipation of women, which will eventually translate to better living conditions for Deltans. Women should be considered in planning and policy making, especially regarding aquaculture. It should be noted, however, that information on the roles of women in

aquaculture is limited as most private aquacultural ventures by women may not have been documented. There is a need to publicize the role women play in sustainable aquacultural development to encourage the participation of more women in aquacultural enterprise as this can alleviate poverty.

The government should institute development programs for rural women. Women in both rural and urban areas should be educated to fully participate in sustainable aquacultural development. Access to credit facilities at an affordable and feasible interest rate is needed by women in order to consolidate their position in aquacultural development, especially in the area of fish production.

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