

CONTRIBUTION OF WOMEN TO AQUACULTURE DEVELOPMENT IN RWANDA

¹Agbebi, Funmilola, ²Kibogo, Andrew, ³Ngirinshuti, Leonce, ⁴Mindje, Mapendo

¹ College of Agriculture, Animal Sciences and Veterinary Medicine, University of Rwanda
Musanze, funmiaquaconsult@gmail.com

² College of Agriculture, Animal Sciences and Veterinary Medicine, University of Rwanda.
Musanze

³ College of Agriculture, Animal Sciences and Veterinary Medicine, University of Rwanda.
Musanze

⁴ College of Agriculture, Animal Sciences and Veterinary Medicine, University of Rwanda.
Musanze

ABSTRACT:

Rwanda is one of the sub-Sahara African countries that have made greater strides in promoting gender equality and empowerment of women across all sectors including agriculture, aquaculture sub-sector in particular. Until recently the country has been more or less self-sufficient as regards to food supplies. Now, however the estimated rate of population increase is greater than the rate of increase of food production. Women make up 53% of the population and participate in Agriculture more than men. With 83.6% of women participating in aquaculture sub- sector and highly engaged in this as independent fish farmers in cooperatives, wage farmers and unpaid family labor. Overall, study carried out in Rwanda indicated that women in the age group of 15-60 years spend one-third of their time in agriculture including aquaculture, while men spend only 19% of their time in agriculture. 54% of their time in diverse leisure activities and on paid work, against 18% of women's time in this last category. Women use about 30% of their time for domestic activities while men spend only 4% of their time on such tasks. It has been proven that women play an important role in aquaculture production activities in Rwanda and their participation is notably something so common that it is taken for granted without always realizing the heavy burdens imposed on women. Increase in number of women and disadvantaged groups actively involved in fish farming organizations and service provision in fisheries sector with more off –fish farming jobs like fish processing, packaging and marketing are hold by women. Women play a vital role in aquaculture sub- sector development in Rwanda; however, they are still facing many challenges that need to be addressed such as lack of access to credits from financial institutions, less technical skills aquaculture production systems, unaffordable fish feed (pellets) since these are imported, insufficient supply of fingerlings by Rwanda Agriculture Board, that can't satisfy the demand for restocking among others.

Key words: Women, Aquaculture, Development, Rwanda

INTRODUCTION

In 2009, nearly 45 million people world-wide were directly engaged, full-time or part-time, in the fishery primary sector (FAO fishery database). In addition, about 135 million people were estimated to be employed in the secondary sector, including post-harvest activities. While comprehensive data are not available on a sex-disaggregated basis, case studies suggest that women comprises up to 30 percent of the total employment in fisheries, including primary and secondary activities (Raney, 2011). Information provided to FAO from 86 countries indicated that in 2008, 5.4 million women worked as fishers and fish farmers in the primary sector (MINAGRI, 2011). Women rarely engaged in commercial offshore and long distance capture fisheries because of the vigorous work involved and also because of women's domestic responsibilities and/or social norms. Women are more commonly occupied in subsistence and commercial fishing from small boats and canoes in coastal or inland waters. Women also contribute as entrepreneurs and provide labour before, during and after the catch in both artisanal and commercial fisheries.

For example, in West Africa, the so called "Fish Mamas" play a major role (Hammadur and Naoroze, 2007). They usually own capital and are directly and vigorously involved in the coordination of the fisheries chain, from production to sale of fish (Raney *et al.*, 2011). Studies on women in aquaculture, especially in Asia where aquaculture has a long tradition, indicates that the contribution of women in labour is often greater than that of men although there is almost a complete absence of macro-level aquaculture-related sex- disaggregated data. Women are reported to constitute 33 percent of the rural aquaculture workforce in China, 42 percent in Indonesia and 80 percent in Viet Nam (Raney *et al.*, 2011). The most significant role played by women in both artisanal and industrial fisheries is at the processing and marketing stages, where they are very active in all regions. In some countries, women have become important entrepreneurs in fish processing; in fact, most fish processing is performed by women, either in their own household-level industries or as wage laborers in the large-scale processing industry (MINAGRI, 2011).

Rwanda as a land-locked country with an estimated population of 11.5 million and a surface area of 26,338 sq. km of which 1,390 is water surface. There are 24 lakes including three shared lakes (i.e. Kivu with the Democratic Republic of Congo (DRC) and Cyohoha and Rweru with Burundi. (Nile Basin Initiative, 2011). The National fish production is estimated at 13,000 tons of which capture fisheries contribute 9,000 tons and aquaculture 4,000 tons. Rwanda is currently by far a net importer of fish from neighboring Uganda and Tanzania. However, it is important to note that Rwanda also re-exports most of the imported fish to the DR Congo. Fisheries and Aquaculture sub- sectors provide about 200,000 jobs (both direct and downstream jobs) though it is not a traditional enterprise (MINAGRI, 2011). The sector which is managed largely through local governments and cooperatives falls under the Ministry of Agriculture and Animal Resources (MINAGRI). On the whole however, fishing in Rwanda has remained artisanal characterized by smallholder fishers (Schmidt and Vinck, 2008). Therefore there is a need to reorganize the fishers and farmers not only into cooperatives but viable fish production units with consideration for attaining economies of scale and accessing regional supply chains.

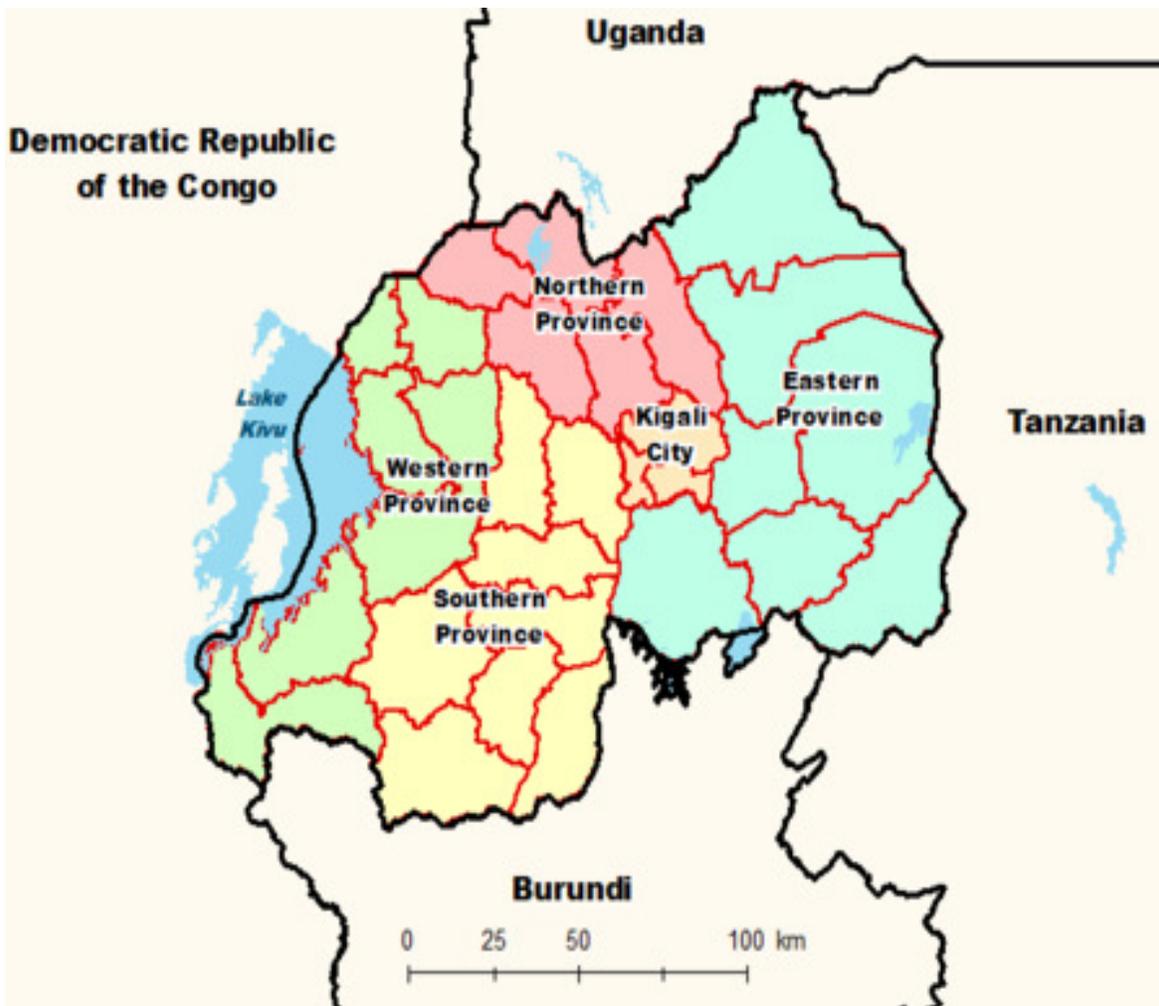


Figure 1: Map of Rwanda showing the boarder countries (PAT)

Rwanda is one of the sub-Saharan African countries that have made greater strides in promoting gender equality and empowerment of women across all sectors including agriculture and aquaculture sub-sector in particular (Schmidt and Vinck, 2008). Until recently the country has been more or less self-sufficient as regards food supplies. Now, however the estimated rate of population increase is greater than the rate of increase of food production (MINAGRI, 2011).

In Rwanda, women represent nearly 54% of the population; 38% of them head their household. The genocide and the war in 1994 are at the root of this situation and they participate in Agriculture more than men. Widows account for 80% of households headed by women. Tradition continues to put women at a disadvantage in terms of their access to land, credit, health-care, participation in local development and decision-making.

It is estimated that 41.9%-52.3% of women are illiterate, although there is little gender disparity in education at the primary and secondary level. With 83.6% of women participating in aquaculture sub-sector and highly engaged in this as independent fish farmers in cooperatives, wage farmers and unpaid family labor. Overall, study carried out in Rwanda indicated that women in the age group of 15-60 years spend one-third of their time in agriculture including

aquaculture, while men spend only 19% of their time in agriculture 54% of their time in diverse leisure activities and on paid work, against 18% of women's time in this last category (Schmidt and Vinck, 2008). Women use about 30% of their time for domestic activities while men spend only 4% of their time on such tasks. It has been proven that women play an important role in aquaculture production activities in Rwanda and their participation is notably something so common that it is taken for granted without always realizing the heavy burdens imposed on the women. Increase in number of women and disadvantaged groups actively involved in fish farming organizations and service provision in fisheries sector with more off-fish farming jobs like fish processing, packaging and marketing are held by women (Nwabueze, 2010).

In Rwanda, Women bear many children and they are the primary nurturing parent. Thus bearing and rearing children along with agriculture activities contribute to women's heavy work load. Rwanda popularly referred to as 'The Land of Thousand hills' and due to the hilly terrain of the country, aquaculture ponds are in the valley and the access paths are steep. Traversing these hill paths with the manure for the fish pond is both a difficult and risky task. Rwanda women farmers accept the challenge of personal risk and difficult physical labor to participate in aquaculture production.

The contribution of women to Rwanda development is well recognized locally, regionally and at international level at large. However, females' role in development of some sectors including aquaculture subsector is undermined at some extent and not acknowledged, therefore, this paper aims at filling this knowledge gap by identifying the contribution of women in aquaculture development in Rwanda. This paper will be very useful for policy makers in making informed decisions and Ministry of Agriculture and Animal Resources, Rwanda Agriculture Board (RAB) and academic researchers in and outside the country.

Tasks by Gender in Aquaculture Production in Rwanda

In general aquaculture is labor intensive and demands physical and organizational skills to harvest a profitable output. Rwanda women and men share responsibilities in the aquaculture production system. Men perform tasks requiring tools that are owned by men and which are perceived to be physically hard such as digging the pond and harvesting. Even in women-only groups, men are asked to assist in these tasks. Similarly women are responsible for specific tasks. Women are exclusively responsible for collecting household waste for feeding the fish and participate extensively in collecting compost materials to enrich the pond nutrient level. Women's exclusive responsibility for composting has important implications for training them in appropriate resource use techniques; particularly in Rwanda where the compost is important organic matter for soil enrichment. Some view aquaculture production as being in competition with agriculture production for manure and land. Women need to be educated in the judicious use of available resources to balance aquaculture and agriculture productivity. But a different picture emerges in the consumption sphere, where women are exclusively responsible for the cleaning of fish and where necessary the processing of fish. While women either are responsible for or assist in most tasks in the production sphere, in the consumption sphere women are exclusively responsible for all tasks.



Figure 2: Women feeding the fish and engaging in pond preparation with their fellow men

Potentials of women in aquaculture in Rwanda

According to Food and Agriculture Organization of the United Nations, "In those countries where an aquaculture sector has been established, women have rapidly become involved in aquaculture at every level. Not only have they expanded their traditional fisheries roles in marketing, processing, and credit, but they have become active in farming (production) itself" (Nash, Engle, and Crosetti, 1987). Rwanda has very good potential for increased aquaculture productivity which if commercialized in approach and linked to sectors such as tourism together with an enabling policy can stimulate increased fish production for both local and regional markets (Aganyira, 2005). However, lack of a central fisheries management agency and limited private sector investment and participation has led to severe destruction of the resource to levels which are less than 10% of the estimated production potential.

Given the current state of the fisheries and aquaculture sector and the demand for fisheries resources there is need to put in place strategies and measures that will ensure that Rwanda can fully and sustainably utilize her resources to meet the high animal protein demand, while tapping the inherent nutritional security found only in fish. With the projected 16 million people by 2020, the country will need 112,000 tons of fish annually if the population is to catch up with the average fish consumption in Sub Sahara Africa. With growing elite and urban population, as well as increased health challenges, demand for fish is real and has to be addressed now before the water bodies completely lose their biological potential for fisheries production. There is need to halt the collapse and restore the natural fisheries productivity and production to sustainable and economic levels and grow the contribution of the fisheries sector to the national economy. The current plan calls for a new management dispensation and a paradigm shift from open common access with no clear responsibility and ownership for fisheries resources base to commercial fisheries and aquaculture business.

Role of women in post harvest activities in Rwanda

Modern and appropriate fish processing and product development is not yet visible in Rwanda. The only fish processing methods in use are traditional smoking and sun drying on lake beaches which is generally done by women (MINAGRI, 2011). Women have been involved in Small scale smoking that is mainly practiced on the Nasho basin lakes and other group of women is being involved in sun drying of *L. miodon* on Lake Kivu (Aganyira, 2005). The low level of fish

processing and products development could be attributed to the artisanal nature of the fisheries and lack of fish to process by women in Rwanda. The small amount of fish caught on the lake are all sold right at the lake side with nothing left to sell in urban centres and this selling exercise is generally dominated by females. It was found that the small quantities of Isamabaza (*L. miodon*) landed in Rusizi and Nyamasheke were weighed and immediately bought by small female traders who packed them in basins and carried for sale in Bukavu across the border in Democratic Republic of Cong (DRC). The same scenario prevailed in Rubavu District where most of the fish caught on the Rwanda side are sold by businesswomen in Goma. This kind of undefined marketing can be a loophole for loss of revenue if there were substantial quantities of fish. But it is also an indication of availability of a regional market for fish which is good opportunity for most females who wish to venture in selling fishes (Shirajjee *et al.*,2010)



Figure 3: Some fish ponds (source field study)



Fig 4: Cropping in a pond

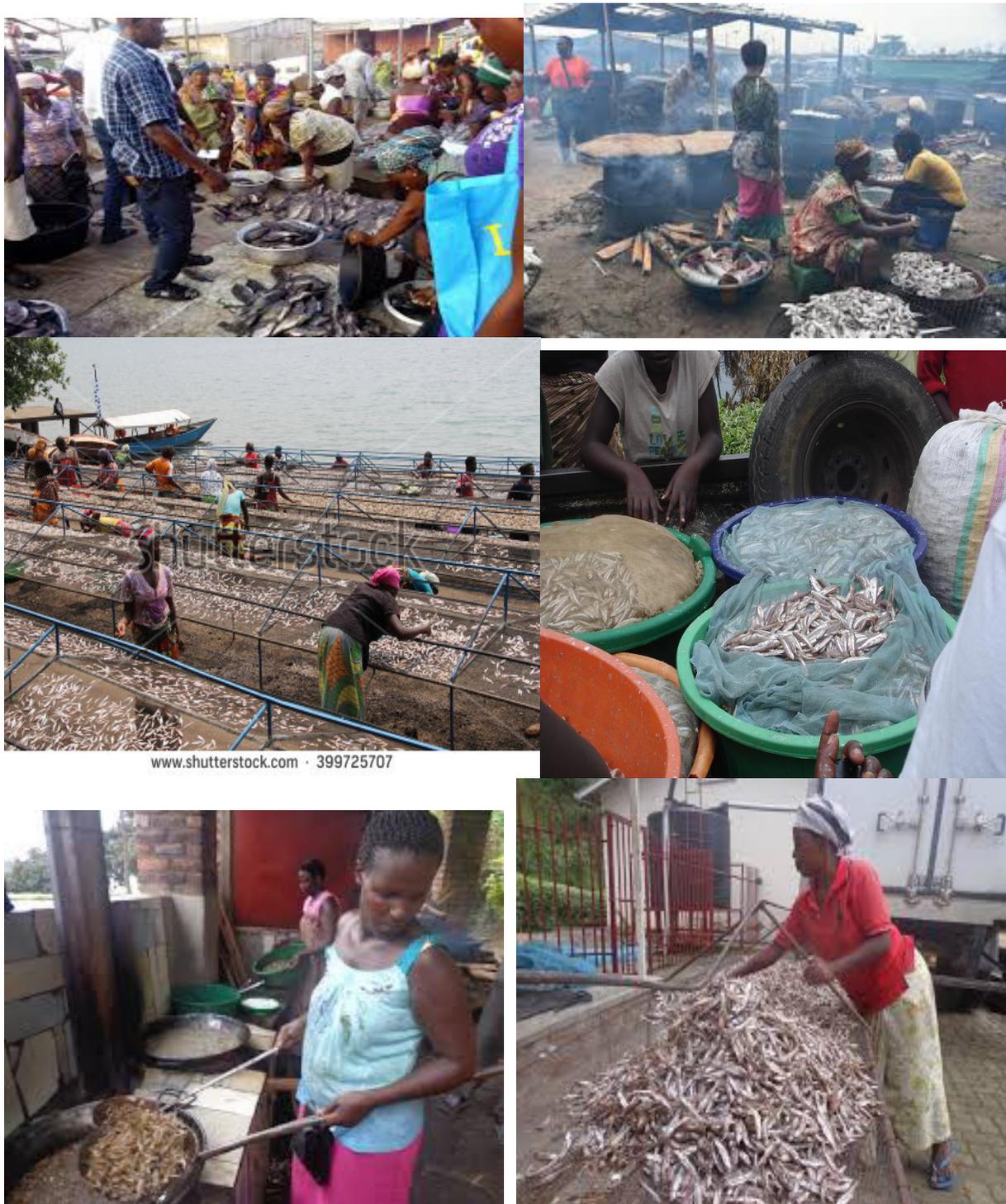


Figure 5: Female folks engaged in fish post harvest activities (source MINAGRI, 2015)

Major constraints faced by women in aquaculture activities in Rwanda

A number of constraints and challenges faced by females engaged in aquaculture to the development of the sub- sector in Rwanda were identified (MIGEPROF, 2008). These include

High level of illiteracy among women, which hinder acquisition of information Lack of sensitivity to and respect for gender roles and responsibilities, Lack of land ownership, thus limiting access and control over resource, 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 and Inability of most women to procure a loan (MINAGRI, 2011).

The mountainous topography of the country is another constrain as this limit the pond size. Land is another factor. In Rwanda, women have no right to land except through the men, hence no permanent tenure due to cultural norms and lack of property right. So also labor is another inhibiting factor. Women depend on the male for the hard labor of pond digging, cutting grasses while they do the cleaning of the pond in addition to household chores and child care. They have no direct access to credit unless with the approval of a male family member. Also in terms of production process, there are inadequate fingerlings, they don't really have the technical knowledge of aquaculture due to their low level of education, they have to borrow tools for men and they also depend on men for harvesting. In terms of marketing, they have limited market access so also there are inadequate extension agents to train them.

The other challenges hindering the women in aquaculture are those ones that affect generally the entire sub-sector in the country such as: Fishing cooperatives that are geared towards harvesting with no inputs into the fisheries, lack of private sector investments in the sub-sector, lack of interest in fisheries and aquaculture at the district level hence low rating of the sector. There is very little local leadership support to fisheries and aquaculture development in almost all the districts in Rwanda since the higher number of women is not encouraged by officials. Lack of institutions for management of research and advisory services to help interested females in sub-sector, poor linkage of aquaculture and other agriculture production systems, insufficient human resource generally female whom are more in population to steer the sector, significant high post harvest losses of the little fish harvested from the lakes, lack of aquaculture technologies and innovations, insufficient advisory services, lack of fisheries and aquaculture inputs including seed, feed, gear, equipments and others at the local market.

Strategies to empower women for sustainable aquaculture development in Rwanda

The main motivating factor for their participation in aquaculture is to provide food for their families, in particular to feed their children. Such a motivation should be capitalized to encourage women to participate in aquaculture training, integrating techniques of soil conservation and water resource management for achieving sustainability. Major constraints to carrying out this strategy are lack of extension staff to train the women in aquaculture and the lack of information content on appropriate resource use. A suggested strategy is to use the 'train the trainers' strategy' whereby the literate women who live in the local production area will be train in other to assist other women on a regular basis. Such a measure would be cost-effective since the women will be in the local area and it would in part eliminate the need for extensive development infrastructure. Further, women with the knowledge of aquaculture can assume a place of importance in the local community. These women can assist in sustaining the aquaculture efforts of other women farmers. Also, Women folks play a crucial role in

Aquaculture sub sector in Rwanda, however, their contribution will be significantly achieved if they are empowered in different ways such as empowerment through credit facilities within fish cooperatives, empowering fish farmers specifically women through education and training and economic empowerment (Schmidt and Vinck, 2008). Women's access to tools can be increased by providing tools on a credit basis for women. Alternatively, women's groups can be provided a set of tools to be used under the management of the group leader. Women have the knowledge and the key responsibility for feeding the fish by utilizing household wastes. The aquaculture scientists can work with them to identify the nutritional quality of various local greens and food wastes as fish feeds.

Conclusion and recommendations

Women play a vital role in aquaculture sub- sector development in Rwanda; however, they are still facing many challenges that need to be addressed such as lack of access to credits from financial institutions, less technical skills aquaculture production systems, unaffordable fish feeding (pellets) since these are imported, insufficient supply of fingerlings by Rwanda Agriculture Board, that can't satisfy the demand for restocking among others. Based on findings on the fisheries sub sector in Rwanda, the following recommendations are suggested:

Women Fish Farmers (Technology Adopters) that is 'train the trainers' method should be introduced where the few educated ones among them should be selected and train so that they can train the rest of the women at the village level.

Extension Agents – (Technology Disseminators). These are salesmen of ideas. There should be an increase in the number of the agents so that their impact will be felt at the village level.

Government Ministry Representatives – (Technology Planners). Adequate importance should be giving to aquaculture at the government level so that a more positive impact in this sector will be felt down to the local villages since they are the main producer

Researchers – (Technology Developers). Institutions of higher learning in Rwanda should be adequately equipped for research; training and technology input transfer in the field of aquaculture so that the impact will be felt downstream through the extension agents to the rural women. Fisherwomen should be encourage to form cooperative societies and being empowered through this means rather than working on individual basis for easy access to loan from the bank. Fish demand is likely to remain high due to increasing human population; large quantities of fish from the proposed production systems will necessitate processing to avoid post harvest losses. Consumers have increasingly recognized the health and nutrition benefits of eating fish. Fish is comparatively low in calories, fat and harmful forms of cholesterol, and comparatively high biological value protein, vitamins, and Omega-3 fatty acids which are necessary in the prevention of heart disease and others. The most immediate aspect of this plan shall be to make fisheries production in the country market led based on ensuring and guaranteeing the quality and safety of the fish and fishery products traded locally and regionally. Given that the country is major route for fish to Eastern DRC, measures should be put in place to provide a good platform for support for fish exports which is generally dominated by women.

Acknowledgement

Women in International Development, Oregon State University, USA whose article 'Rwanda women in aquaculture: context, contribution and constraints' provided in-depth background knowledge into the study.

REFERENCES

- Aganyira K. (2005). Aquaculture: A Tool for Sustainable Development in Uganda (a case study of Kigoowa catholic Women's Development Association in Kampala District). Dissertation for the Award of MSc Degree at Norwegian University of Science and Technology, 131pp.
- Ahmed K., Sadeka H. and Sultana S. (2012). Participation of Women in Aquaculture in three Coastal Districts of Bangladesh: Approach Towards Sustainable Livelihood. *World Journal of Agriculture Sciences* 8(3) 16pp.
- Angral C., Gupta K. and K.K. (2014). Role of Women in The Development of Fisheries in Jammu District of J&K. *Research Journal of Animal, Veterinary and Fishery Sciences* Vol 2 (8).
- Hammadur R.M. and Naoroze K. (2007). Women Empowerment through Participation in aquaculture: Experience of a large Scale Technology Demonstration Project in Bangladesh. *Journal of social Science* Vol.3 (2). 8pp.
- Ministry of Agriculture and Animal Resources, Republic of Rwanda (2010). Master Plan for Fisheries and Fish Farming in Rwanda. 99pp.
- Ministry of Gender and Family Promotion Republic of Rwanda (2008). National Gender Policy. 34pp.
- Nash, Colin.E.; Engle. Carole.R. and Crosetti, Danatella. (1987): Women in Aquaculture. Proceedings of the ADCP/NORD Workshop on Women in Aquaculture, Rome FAO Nile Basin Initiative (2011): One river, one people, one vision, 20Pp
- Nwabueze A.A. (210). The Role of Women in Sustainable Aquaculture Development in Delta State. *Journal of Sustainable Development in Africa*. Vol. 12(5). 10pp.
- Raney T., Anriquez G., Croppenstedt A., Gerosa S., Lowder S., Matuscke I., Skoet J. and Doss C. (2011). The Role of Women in Agriculture: Closing the Gender Gap for Development. Report for Food and Agriculture Organization of the United Nations, 48pp.
- Schmidt U.W and Vinck M.M.J. (2008). Aquaculture Development in Rwanda. Feasibility of Small scale rural Fish Farming. (<http://www.fao.org/docrep/006/P3718E/P3718E00>).
- Shelly A.B. and Costa M.D. (2000). Women in Aquaculture: Initiative of Caritas Bangladesh. 11pp.
- Shirajee S., Salehin M.M. and Ahmed N. (2010). The Changing Face of Women for small – Scale Aquaculture Development in Rural Bangladesh. 8pp.