https://www.eejournals.org Open Access
EURASIAN EXPERIMENT JOURNAL OF HUMANITIES AND SOCIAL SCIENCES (EEJHSS) ISSN: 2992-4111
©EEJMMS Publications Volume 4 Issue 1 2023

The Role of Aquaculture in improving the Livelihoods of Rural Communities

Olu R. U. S.

Department of Education Kampala International University Uganda

ABSTRACT

Aquaculture contributes to the livelihood of the poor through improved employment and income. Due to its smallholder operating size, free from high advanced-technology machinery, rural aquaculture is labour intensive. Based on this, villagers who do not have access to land can at least earn a living by providing manpower to other aquaculture farms. It is believed that aquaculture is one of the fastest ways for the poor to earn a living meanwhile, in that, it serves as a valuable foreign exchange for national development. Aquaculture helps the nation in earning valuable foreign exchange, increases food production level, and helps in diversifying the economy which results in job creation in the countryside. Small scale aqua farming also assists the remote population to be self-sufficient without relying much on imports. Yet, more proportion of these gains goes to the non-poor rather than the poor due to the imbalance in resources allocation in the current stage. Therefore, this paper concludes that there is need for government policies to implement holistic strategies which include the poor in the aquaculture development as part of their national development to ensure that entire population of the country would be benefited. Also, institutional and infrastructure aid are urgent in need from the government for diversification of production and trade, execution of ethical aqua farming techniques and development of backward and forward linkages, with resource-poor household as the main target.

Keywords: Fish, Livelihood, Aquaculture, Community, Poverty

INTRODUCTION

For the past centuries, aquaculture has been introduced in many parts of developing countries, such as Africa and Asia, with the objective to open up opportunities for the local rural communities to improve their standard of living and a way to escape from poverty [1]. It is believed that aquaculture is one of the fastest ways for the poor to earn a living meanwhile, it serves as a valuable foreign exchange for the national development. On top of that, aquaculture has slowly integrated as a vital part of rural livelihood when it turned out as the solution for intensifying population pressures, environmental degradation or loss of access, the decline in catches from the wild fisheries [2]. While the global wild capture diminished at the rate of more than 0.5 million tonnes per year, aquaculture has been growing at roughly 2.5 million tonnes annually between 2004 and 2011. According to [3], rural aquaculture is generally explained as 'aqua farming practices in extensive to semi-intensive scale with relatively low production cost and technologies'. Targeting low-income consumer groups, this small-scale household activity adopted off-farm agro-industrial inputs and organic fertilizer, without relying on any formulated feed to supply low-value production. Aquaculture development is often part of the rural development program since most of the aquaculture was widely promoted in rural areas. It is absolutely not an easy task to establish a successful aquaculture industry, not to mention in a rural context where access to resources is pretty limited. Till today, there are plenty of real life cases, happened in mostly Africa and some other underdeveloped countries, where introduced aquaculture have failed. A typical example for this would be the cage culture of carp in Bangladesh. The cage culture was officially introduced to Bangladesh during the 1980s in the Kaptai Lake [4]. The carp industry soon collapsed due to the inability of local people to inject capital cost and inputs to afford cages. The reasons behind an aquaculture failure might be the lack of access to capital and resources, vulnerability, and aversion in villagers to take the risk [5]. The absence of technical skills and knowledge in operating fish farms by the local villagers are also an important obstacle to

overcome. The insufficient financial support from the government and the villagers has put rural aquaculture to a more difficult spot [4]. Although most of the time aquaculture farms operated by the rural communities are in the mission of improving the life standards in terms of alleviating poverty and securing food availability, a successful aquaculture does not guarantee the earlier terms nor comes along with all the benefits. Without careful management, rural aquaculture might also be a weapon that threatens the poor. In other words, aquaculture carried out by the rural communities does bring negative consequences as well besides the positives to the villagers. Hence, the aim of this paper was to examine the effects of aquaculture on rural communities.

Effect of Aquaculture on the Livelihood

Aquaculture contributes to the livelihood of the poor through improved employment and income. Due to its smallholder operating size, free from high advanced-technology machinery, rural aquaculture is labour intensive. Based on this, villagers who do not have access to land can at least earn a living by providing manpower to other aquaculture farms [6]. Rural aquaculture creates an 'own enterprise' employment, where the entire family devotes to the business. Occasionally, during harvesting season or net changing period, extra hands are needed from casual or occasional laborers. Aquaculture then creates job opportunities for illiterate women to earn side income for their household. According to the recent study of Number of fishers and fish farmers in selected countries, it is reported that every single individual who get involved in this sector, has three family members to support financially. This phenomenon can be clearly seen in a country like China, whereby more than 100,000 of citizen employed in fisheries, contribute 3.7% of the nation GDP. Nevertheless, this statement is debatable as employment effect created by household aquaculture is not consistent and might not be significant in upgrading the livelihood of the rural communities. For instance, in Bangladesh, it was argued that less than 1% of the total hired labour were employed by aquaculture industry, whereas aquaculture sector in the Mekong Delta of Vietnam contributed employment to roughly 37% of their local well-renowned university. A recent follow-up study carried out by [7] has discovered that after the rise of the integrated farming of prawn industry in Bangladesh over the decades, some closely linked sectors has also developed. These include seed industry, feed industry, fertiliser trading and prawn marketing. With the establishment of these fish farming related network, it has opened up more opportunities for employment upon the limited aquaculture field.

According to [8], the Bangladesh farmers have received approximately, a US$125 increase in their average annual net income after integrating aquaculture in their rice farm. Rice farmers in Bangladesh are often considered as the poorest of the poor. But rearing fish or prawn in the rice field has turned out as a win-win solution for the farmers as they are able to add an extra income besides from the rice production with least other resources invested. The other excellent resources Bangladesh could provide are wild post-larvae, low-lying rice field, warm climate, fertile soil and abundant labour. [8] have reported that after the farmers' income has increased, they reflected stronger purchasing power than before and have better access to the resources, which includes sanitary, transportation, housing, health services, and communication technologies, all are credited to integrated farming. The successful aquaculture in Bangladesh has significantly improved the living standards of the locals. Apart from Bangladesh, striking examples of sustainable aquaculture in ranching the rural communities' livelihood could also be seen in Pacific Islands and Territories (PICT). In Fiji, sandfish or better known as Beche-de-mer was cultured by the locals after trained by the experts. Due to its high value in the Asian market and its ecological behaviour that inhibits inshore waters, sandfish is an easy target for fishers and later ended up as over-harvested [9]. Hence, culturing sandfish in remote rural areas like Fiji not only benefits the locals but also contributes to the conservation as well. Sandfish is an easy species with short larval phase and requires no specialised technology or refrigeration in the entire process of harvesting, processing and storage. Combined with Fiji's traditional management, sandfish culturing provided long-term opportunities for the local communities, which later branched out to education, health, food, so on and forth. Similarly, pearl culture is integrated as a sustainable development for the rural communities when it was brought over to Mafia Island Marine Park (MIMA), Tanzania under Worldwide Fund for Nature (WWF) initiatives. Local participants were able to have a 6 times growth in their average household income with the culturing and valuable products made [10]. Whereas in Cook Island, pearl farming industry has contributed US$18 million, which equivalent to 20% of the country's gross domestic product.

Impact of Aquaculture on Food Security

Food security is the situation where all the people existing, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life [11]. Aquaculture in small farmer system in rural areas provides a high quality of animal protein and essential nutrients, especially for nutrition vulnerable groups, such as pregnant and lactating women, infants, and pre-school children. In fact, almost half of the child deaths around the globe are linked to malnutrition. In numerical reading, it is around 3 million young lives every single year [12]. It was proven that after supplied with sufficient needed

nutrition which can be found in fishes, such as vitamin B12, calcium, and potassium, unfortunate cases like child blindness and infant mortality has substantively decreased [8]. In rural aquaculture context, most of the time farmers' household tend to eat the small fish which fails to meet the market size and left the bigger one which can fetch higher prices [8]. Occasionally, some rural communities do practice by giving out fishes as a type of payment to labourers working in the farms. These small fishes are eaten together with their head and bones, added more micronutrients, vitamins and mineral that could not be found in larger fish [8]. Indirectly, the practice of collecting 'free fish' from fishponds has contributed as the main nutrient source to the poor families in rural areas, and helped in reducing malnutrition among young children. The contributions of aquaculture to food security to the public health enhancement were clearly illustrated in Pacific Island Countries and Territories (PICT) through diversification of tuna farming. Apart from the economic gains, the tuna resources are impressive in a way that they assisted in resisting the high and rising prevalence of non-communicable disease (NCDs) of the regional people over the region [13]. NCDs such as heart disease and obesity could happen among the poor. This was due to their high dependency on imported and processed foods as their net food production per capita which often severely destroyed by extreme natural climate disaster. In the midst of raising nutrition and health implication, tuna farming managed to provide stable food supply and fulfil food security of the poor in all three utmost dimensions: stabilised food availability, provided the villagers sufficient access to it and ability to utilise it. Locally-canned tuna turned out as an affordable high quality and non-perishable food source for the remote inland residents, helping them to achieve self-sufficiency without dependent on imported goods which are subjected to fuel prices fluctuations that added more pressure to the low economic status group population. Additionally, aquaculture by rural communities helps in increasing the availability of fish in both local rural and urban markets.

The rich nutrition found in small fishes has played a vital role in fulfilling the nutritional requirement of the rural poor. Unfortunately, due to habitat degradation and overfishing, the catches are declining and rural poor are forced to switch to large-sized fish species which they reared in their rice farms. Thus, it can be said that aquaculture development in rural areas does not guarantee food securities, but alleged inequity and imbalance in the supply of good quality nutrition. However, the issue could be minimised through appropriate government legislation via elimination of market monopolies and proper resource distribution. For an example in Vietnam the government has launched the Cooperative Law on year 2003 with the objectives of giving out support for shrimp farmers, which includes funding assistant of VND 2 (USD $112359) billion start-up capital loan with 12% interest rate per annum and technical training on shrimp farming [14]. Besides, Vietnamese government also set up series of programme, such as Shrimp Aquaculture Export Promotion Program that loosens restriction on land conversion policy to align with the shrimp aquaculture industry. The assistance from the government has effectively helped rural communities to overcome financial and technical constraints they are facing in starting up aquaculture.

CONCLUSION/RECOMMENDATION

Summarily, aquaculture helps the nation in earning valuable foreign exchange, increases the food production, and later in diversifying the economy and results in job creation in the countryside. Small scale aqua farming also assists the remote population to be self-sufficient without relying much on imports. Yet, more proportion of these gains goes to the non-poor rather than the poor due to the imbalance in resources allocation in the current stage. Therefore, there is a soaring need for government policies to implement holistic strategies which include the poor in the aquaculture development as part of their national development to ensure that entire population of the country would be benefited. Also, institutional and infrastructure aid are urgent in need from the government for diversification of production and trade, execution of ethical aqua farming techniques and development of backward and forward linkages, with resource-poor household as the main target.

REFERENCES

1. Edwards P. Aquaculture, poverty impacts and livelihoods. Overseas Development Institute. 2000, 56.
2. Halwart M, Funge-Smith S, Moehl J. The role of aquaculture in rural development. Review of the State of World Aquaculture, FAO, Rome. 2003, 47-58.
3. Edwards P, Demaine H. Rural aquaculture: overview and framework for country reviews. RAP Publication (FAO). 1997.
4. Edwards P, Little D, Demaine H. Rural Aquaculture. CABI. 2002, 129-184.
5. An evaluation of small-scale freshwater rural aquaculture development for poverty reduction. Asian Development Bank. 2005, 39-65.
6. Ahmed M, Lorica MH. Improving developing country food security through aquaculture development—lessons from Asia. Food Policy. 2002; 27(2):125-41.

7. Ahmed N, Garnett ST. Sustainability of freshwater prawn farming in rice fields in southwest Bangladesh. Journal of Sustainable Agriculture. 2010; 34(6):659-79.
8. Ahmed N, Garnett ST. Integrated rice-fish farming in Bangladesh: meeting the challenges of food security. Food Security. 2011; 3(1):81-92.
9. Hair CA, Pickering TD, Mills DJ. Asia-Pacific Tropical Sea Cucumber Aquaculture: Proceedings of an International Symposium Held in Noumea, New Caledonia. Australian Centre for International Agricultural Research. 2011-2012, 15-17.
10. Troell M, Hecht T, Beveridge M, Stead S, Bryceson I, Kautsky N et al. Mariculture in the WIO regionChallenges and Prospects. WIOMSA. Book Series. 2011; (11):8-59.
11. Schmidhuber J, Tubiello FN. Global food security under climate change. Proceedings of the National Academy of Sciences. 2007; 104(50):19703-8.
12. UNICEF Statistics. 2015, 14. http://data.unicef.org. 50. Yap WG. Rural aquaculture in the Philippines. RAP Publication. 1999; 20:82.
13. Bell JD, Allain V, Allison EH, Andréfouët S, Andrew NL, Batty MJ et al. Diversifying the use of tuna to improve food security and public health in Pacific Island countries and territories. Marine Policy. 2015; 51:584-91.
14. Ha TT, Bush SR. Transformations of Vietnamese shrimp aquaculture policy: empirical evidence from the Mekong Delta. Environment and Planning C: Government and Policy. 2010; 28(6):1101-19.

Olu R. U. S. (2023). The Role of Aquaculture in improving the Livelihoods of Rural Communities. *Eurasian Experiment Journal of Humanities and Social Sciences (EEJHSS).* 4(1): 1-4.