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COMMENTARY

SUSTAINABLE FISH PRODUCTION IN AFRICA

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ABSTRACT

Fish farming is today considered an important source of production for meeting world's increasing demand for protein. Fish is an important source of good quality protein required in human diet. It has the highest level of easily metabolisable high quality protein, fats, vitamins, calcium, iron and essential amino acids when compared with other sources of animal protein such as poultry and beef. Fish consumption is highly relished among people of all classes and ages in that the fish is less tough and more digestible when compared to beef, mutton chicken and bush meat. This is due to the greater ratio of muscle protein to connective tissue protein in relation to other animals. Fish possesses excellent amino acid balance with high digestibility percentage of about 87 – 98% compared to 87 – 90% recorded for beef and poultry. In addition, fish is very important to the developing world population as it is the major source of cheap high quality animal proteins which are very vital for healthy development. Fish production is relatively inexpensive when compared with other sources of animal protein such as cattle, pig and poultry. In view of the facts that most of the health related problems in developing world such as abnormal development, reduction in human productivity, high incidence of infant mortality, malnutrition and diseases have been attributed to low intake of good quality animal protein, this has made production of fish very imperative to the good health of the nations in the developing world. Fish farming has a lot of potentials to sustainable development. Fish as a source of rich food for the poor can play a crucial role in improving the food security and nutritional status of the millions of the people in Africa and other developing part of the world. The present low level of fish production in Africa can be increased sustainatially by adapting a technological shift from extensive to intensive system of production as is the trend in developed countries.

Key words: Aquaculture, Fish Production, Sustainable, Africa

INTRODUCTION

Aquaculture Venture (fish farming) is gaining popularity as a means of augmenting fish protein supply, particularly in Africa where the prizes of alternative meat protein sources are soaring and catches from capture fisheries is dwindling[1]. High revenues and advantages of investment diversification have attracted many fish farmers into the industry at tremendous pace. The importance of fish farming becomes obvious when viewed against the background of fish demand and supply in Africa. Fish is an important source of good quality protein required in human diet. It has been documented that fish has the highest level of easily metabolisable high quality protein, fats, vitamins, calcium, iron and essential amino acids when compared with other sources of animal protein such as poultry and beef [2]. Fish consumption is highly relished among people of all classes and ages in that the fish is less tough and more digestible when compared to beef, mutton, chicken and bush meat. This is due to the greater ratio of muscle protein to connective tissue protein in relation to other animals. Fish possesses excellent amino acid balance with high digestibility percentage of about 87-98% compared to 87-90% recorded for beef and poultry [2]. In addition, fish is very important to the developing world population as it is the major source of cheap high quality animal proteins which are very vital for healthy development. Fish production is relatively inexpensive when compared with other sources of animal protein such as cattle, pig and poultry (their productions are very expensive due to low level of technology and poor pasture lands). In view of the facts that most of the health related problems in developing world such as abnormal development, reduction in human productivity, high incidence of infant mortality, malnutrition and diseases have been attributed to low intake of good quality animal protein, this has made production of fish very imperative to the good health of the nations in the developing world. Fish as a source of rich food for the poor can play a crucial role in improving the food security and nutritional status of the millions of the people in Africa and other developing part of the world. Africa where there are developing nations to a large extent, protein deficient countries as the average animal protein consumption per person of 3.25g per day is still far below the FAO and WHO recommendation of 35g per person per day [3].

The yearly shortfall in demand and supply of fish coupled with high cost of possible substitute for fish such as meat and beef shows that there is steady and market for fish in Africa[4]. With the present condition in Africa fish production, it provide opportunity market that is large enough to absorb more new entrants ready to engage in commercial fish farming. There is therefore a lot of prospect for fish farming in Africa; fish culture can serve not only as a means of improving nutrition of African but as a way of reducing poverty and improving foreign exchange earning of the country. This potential market is an incentive to proposed investment in fish farming. The demand for fish especially in the urban areas has become outrageous. This has therefore led to the rise in price of this essential commodity. Fish as we know is extensively eaten in every household. Some people prefer taking fish to meat because of its high proteinous contents and medicinal values [1]. It has been undoubtedly

proven that fish consumption regulates heartbeat, thereby preventing heart stroke. This is because of the rich **"Fish Oil"** in the body of the fresh fish [2].

The extent to which developing countries faces protein shortage is alarming and calls for radical changes. Fish is an important source of animal protein and its fat content is low in cholesterol. Africans has vast areas of land suitable for culture both freshwater, brackish and marine fish species. The yearly shortfall in demand and supply of fish coupled with high cost of possible substitute for fish such as meat and beef shows that there is steady and market for fish in Africa. With the present condition in Africa fish production, it provide opportunity market that is large enough to absorb more new entrants ready to engage in commercial fish farming.

There is therefore a lot of prospect for fish farming in Africa; fish culture can serve not only as a mean of improving nutrition of African but as a way of reducing poverty and improving foreign exchange earning of the African countries.

AQUACULTURE IN AFRICA

Aquaculture has grown strongly in most regions of the world where the potential exists, except in Sub-Saharan Africa. In the entire African region, only Egypt has achieved the scale of change observed elsewhere. In spite of decades of investment and technical input, it has failed to thrive where expected, and in many cases remains precarious and marginal. However, aquaculture has grown in specific conditions and contexts, and in spite of the many current economic, demographic and social challenges in the region, a more **'positive perspective'** of market-led growth, and more realistic understanding of technical potential, linked with the possibilities of broader economic regeneration, suggests that future opportunities may be much more definite.

This realization has promoted considerable development investment and sectoral promotion at both regional and national levels. The availability of natural resources and the opportunities for entering valuable export markets have also led to private investment initiatives, often with external capital, in wholly foreign-owned enterprises, or joint ventures. In many circumstances, local private investment has also been considerable, often by artisanal farmers, community development association and local businesses, with expectations of diversifying household income, meeting local demand and possibly entering new markets. This has resulted in a range of outcomes in different locations that can be grouped as follows:

1. Areas where markets, resources and available technologies have combined to promote steady and substantial growth; there have been very few examples to date; within the African region as a whole, only Egypt shows this at a national level; otherwise, only small pockets of growth can be identified.

2. Areas which have had a long history of support for aquaculture, particularly for inland pond-based aquaculture, but which have grown very slowly if at all, with

setbacks not uncommon; this represents the condition in many countries of the region.

3. Areas where more recent initiatives have attempted to promote aquaculture, often on a very large scale, stimulated by significant natural resource potential, primarily for export; with variable results in highly competitive global environments - but positive prospects.

4. Countries where national policy is attempting to promote a more diversified and sustainable base for aquaculture, but with uncertain progress to date.

With growing urbanization, improved market integration and capture fisheries supply constraints, both small and large scale investors are gaining interest in aquaculture production. It seems plausible, for example, that where Inland fisheries are important, small-scale household based aquaculture will grow steadily in parallel with commercial enterprises which may be more targeted towards overseas markets. However, at least in the shorter term this will not be able to make up for stagnating capture fisheries supplies in domestic markets. Most marine aquaculture is likely to be targeted towards export markets and their direct contribution to local fish supplies will be marginal. The challenge therefore will be to identify strategies to grow the sector, and at the same time to foster conditions in which both earnings and domestic food supply can be enhanced. A number of examples are emerging of ways in which these aims might be realised. There is great potential to learn from these success stories and build the capacity of a wider spectrum of small and medium-sized enterprises to participate in these growth opportunities. To meet this challenge, it is essential that a sector-wide strategy be developed at national and regional levels by key stakeholders. Such a strategy should take a 'value-chain' approach, looking at the total value of aquaculture for sustainable socio-economic development and including economic, political, environmental, social, and human health value. This approach will also align aquaculture investment planning more closely with current development planning approaches and models. It will provide a framework for targeting immediate or near-term investments as well as setting out long-term opportunities and requirements. It will also establish the means for monitoring the effectiveness and impact of these investments.

CURRENT STATUS OF FISH FARMING INDUSTRY IN AFRICA

Aquaculture production in Africa generally is insignificant at the global level and accounts for only about 0.9% (407,571 tones) of the total global Aquaculture production [5], there is evidence of some sustained growth in African countries as Ivory Coast, Egypt, Ghana, Malawi, Nigeria and Zambia [6]. For instance, production increased from 60,000 tonnes in 1990 to 340,000 tonnes in Egypt and from 7,000 tonnes in 1990 to over 20,000 tonnes in 1998 in Nigeria [7]. However this progress is highly modest, almost insignificant, when compared to the domestic demand for fish. The level of development and rate of growth is rather slow. The high domestic demand for fish coupled with growing market for fish, the stagnation of Inland

capture fisheries and changing macro-economic environment in most of Africa [6] implies that investment in Aquaculture can be profitable in Nigeria.

FISH AND INTERNATIONAL TRADE

For many economically developing nations, fish are the first or second largest export commodity. Fish products generate foreign exchange and income, put at a price. These markets are often vulnerable to the market and trade demands of their customers from the developed world.The development of export markets have affected how traditional fishers view their vocation. Where once certain species were fished for food and to generate adequate income, these same species are now exported, as they are considered "exotic" in American, European or Japanese restaurants or valued for purposes other than food (as the case the Peal oysters). The transition from a subsistence to a market economy usually places pressure on national resources. Chronic over-fishing and other consequences confuse the balance that once existed between aquatic life and human beings. About 40% of live weight fish production for 2007 was exported, with developing countries accounting for almost 20% of exports. Total fish and fishery products exports for the year were US$51 billion, a 3.8% decrease compared with 2006. Net export trade from developing countries increased from US$10 billion in 2000 to US$18 billion in 2007, corresponding to a real (corrected for inflation) growth of 45% . In 2007, Africa produced 5% of the world's production of fishery products but supplied 0.2% of the fishery items in international trade. To remedy this situation requires major investments in facilities and technology. More than 90% of global trade in fish and fishery products consists of processed products (i.e., excluding live and fresh whole fish). Frozen and chilled fish/fish products make up the majority of exports. Although live, fresh or chilled fish represents only a small share of world fish trade owing to its perishability, trade is growing, reflecting increased demand.

FISH FOR ECONOMIC WELLBEING

At the most basic level, fish provide direct benefit to people in developing countries. They provide a livelihood and income for millions of the world's poorest people, and also contribute to the overall economic well being of many developing countries by mean of export commodity trade, tourism and recreation. The management of fish resources presents a ongoing challenge, but it vital, in order to continue to improve economic well being based on fish. The good news is that many fishing communities as well as non-governmental organizations (NGOs), are working to build local community networks and bolster their sense of empowerment, allowing them to challenge the elite.

MARKETS AND FOOD SECURITY

Domestic markets for fish are expanding; capture fisheries cannot meet this demand. The widening supply and demand gap for fish in most domestic markets in Africa offers growing opportunities for aquaculture production. There is immediate need to

assess the range of products, seasonality and price elasticity and substitution effects in these markets and to target aquaculture production, harvesting and marketing strategies accordingly. In many cases, aquaculture products are not differentiated from capture fisheries products and may therefore miss out marketing advantages and price premiums, particularly at producer level. Market information, marketing skills and logistics need to improve significantly for African aquaculture enterprises to fully utilize this area of opportunity. Urban markets are growing significantly and offer specific opportunities for small and medium-scale enterprises. Africa is the most rapidly urbanizing region in the world, and urban populations have an increased demand for fish. To meet this demand, small and medium-scale aquaculture enterprises need to emerge and rural producers should market their products increasingly in urban markets. Regional trade in fish products is well established at artisanal level, and aquaculture products increasingly enter these markets. There is immediate need to assess the current structure, volume and economics of fish trade between countries in the region, addressing in particular the "informal" trade of low value fish that appears to be a substantial sector supplying food to millions of people and providing very strong business opportunities for women entrepreneurs. Aquaculture products are increasingly entering these trade routes as processed or fresh products, in some cases to be further processed and re-exported in the region and beyond. These market opportunities need to be supported through better cross-border information systems, conducive regulatory and policy frameworks, and enterprise development support targeting women in particular.

Export markets for high-value aquaculture products are expanding and provide strong incentives for investment in African aquaculture production and processing. The emerging success of African aquaculture exports needs to be further supported through investments in policy, legal frameworks and support services. In particular, capacity has to be strengthened in the region for quality control to meet changing food safety and traceability requirements of import markets. .Public-private partnerships provide viable options for financing and implementing such initiatives. There are opportunities emerging for small and medium-scale enterprises to participate in aquaculture export trade at various stages in the production and marketing chain, and these needs to be supported through enterprise development and linking into niche markets. Options for labeling and certification schemes - including '**organic**' production - need to be assessed and experience from other sectors and regions utilized in order to gain a realistic and workable perspective on these instruments. Links with existing export marketing of capture fisheries products are being pursued by individual enterprises. There is also further need to improve information flow on markets, prices and standards to enterprises and investors in the region.Small-scale aquaculture can be integrated with crops, livestock and irrigation and thereby increase rural productivity and food security. Successful examples of integrated aquaculture, raising farm productivity and incomes by combining fish farming with crop, livestock and small-scale irrigation, are available from Southern Africa and can be scaled up and adapted more widely in the region. This will be a significant contribution to improving food security and reducing vulnerability among smallholder farmers and rural communities. More generally to achieve this, scaling up tools and approaches

need to be improved and linked with rural development agencies outside the aquaculture sector, such as NGOs. At a commercial level, options for further intensification of such integrated systems, in particular in combination with irrigation, need to be explored, as these are also likely to have valuable potential. Opportunities and viability of stocking of dams and small water bodies, in particular in food insecure dry regions, also need to be assessed and workable approaches developed. Aquaculture products can provide vital nutritional benefits to vulnerable populations at household and community level, and by linking aquaculture production to food security programs. The nutrition benefits from aquaculture - and fish consumption more generally - need to be fully documented and promoted through education and health programs focusing in particular on women as key decision makers. Benefits for vulnerable populations, including children, women and people affected by HIV and AIDS, need to be targeted and small-scale aquaculture production and marketing strategies and incentives adjusted accordingly. To spread food security benefits more widely, aquaculture needs to be linked better with food security, school feeding and other programs at national or regional level. Strategically, aquaculture development may be viewed as a long-term investment in food security by increasing levels of control and management of fish and aquatic resources.

CONCLUSION

The state of fish production from fish farming in Africa at present is at deficit though aquaculture production has increased from inception till date but still insignificant. Fish farming has a lot of potentials to sustainable development and can also serve as a booster to the economy if properly harnessed.In order to meet up with the growing demand for fish as a source of food and to increase the revenue generated through fish farming, Government in African nations need to facilitate policies that will increase production of fish.Therefore,the only viable and sustainable alternative that can bridge the gap between fish supply and demand lies in fish farming (aquaculture) both in small and large scale production of fish.

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