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Present And Anticipated Future Problems Facing The Fisheries Sector In Nigerias And The Ways Forward For Profitable And Sustainable Aquaculture In The Country

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ABSTRACT

Nigeria offers the largest market for fisheries products in Africa. Fish production from capture fisheries in spite of its being expensive and risky in the coastal line regions of Nigeria has been erratic and on the decline in recent years, resulting in increase in poverty and nutritional deficiency. Aquaculture production remains the best option to bridge the gap between the total fish demand and total domestic production in the face of high cost of production input and unstable government policy. This study enumerate the factors affecting aquaculture production in Nigeria with emphasis on fish seed, disease, education, production and management , feed and feeding ,government policy, veterinary care and, breeding, infrastructure and suggested way forward for profitable and sustainable aquaculture in the country.

INTRODUCTION

Aquaculture is the husbandry of aquatic food organisms. The need arose from the decrease in supply from ocean fisheries as a result of over-fishing, habitat destruction and pollution. One of the ways to bridge the gap between the reduced fish supply and increased world food fish demand is through aquaculture. Unlike Asia, Africa has little aquaculture tradition and has been affected by a number of external problems that have prevented proper management and development despite investment. Aquaculture has been demonstrated as a cheap source of protein (FAO, 1983). FAO (2002) reported that an estimated 840 million people lack adequate access to food; and about 25% of these are in sub-Saharan Africa. As the population grows and puts more pressure on natural resources, more people will probably become food insecure, lacking access to sufficient amount of safe and nutritious food for normal growth, development and an active and healthy life (Pretty, 1999). A number of countries in sub-Saharan Africa are characterized by low agricultural production, widespread economic stagnation, persistent political instability, increasing environmental damage, and severe poverty. Given this situation, it is therefore pertinent to provide the poor and hungry with a low cost and readily available strategy to increase food production using less land per caput, and less water without further damage to the environment (Pretty et al., 2003).

In Nigeria, aquaculture development has been driven by social and economic objectives, such as nutrition improvement in rural areas, generation of supplementary income, diversification of income activities, and the creation of employment. This is especially true in rural communities, where opportunities for economic activities are limited. Only in recent years has aquaculture been viewed as an activity likely to meet national shortfalls in fish supplies, thereby reducing fish imports .According to Ekunwe and Emokaro (2009) Statistics indicate that Nigeria is the largest African aquaculture producer, with production output of over 15,489 tons per annum, this is closely followed by Egypt without put of about 5,645 tones. Only five other countries: Zambia, Madagascar, Togo, Kenya and Sudan produce more than 1,000 tones each. Ekunwe, and Emokaro (2009) further showed that Nigeria imports about 560,000tonnes of fish estimated at about $400 million annually while annual domestic fish supply in Nigeria stands at about 400,000 tonnes. The fisheries sector accounts for about 2% of national G.D.P, 40% of the animal protein intake and a substantial proportion of employment, especially in the rural areas; the sector is a principal source of livelihood for over three million people in Nigeria. Nigeria is blessed with diverse natural and manmade freshwater bodies ranging from streams, rivers and lakes to reservoirs of various sizes with abundant plant and animal resources particularly fin fish the most prominent among the net works in Nigeria is the Niger – Benue system, while Lake Chad and Kainji are the most important with regards to fish production. Ita et al., (1985) surveyed the inland freshwater bodies in Nigeria and assessed their potential fish production. Ita and Sado (1985) revealed that Nigeria is blessed with an estimated inland water mass of 12.5 million hectares capable of producing about 512,000 metric tons of fish annually. However, Ita (1993) indicated that Nigerian inland water bodies are currently producing less than 50% of their estimated potential fishery yields. The over exploitation of the limited resources has resulted in a sharp decline in Inland rivers and lakes fish production from 213,996 metric tons in 1998 to 181,268 and 194,226 metric tons in 2000 and 2001 respectively. This paper is aimed at assessing the current management practices in inland capture fisheries and the challenges it poses to fish production and suggest ways in which the management of capture fisheries could be improved so that the decline in domestic fish production from this sector could be reversed.

Present and Anticipated Future Problems Facing Fisheries in and Aquaculture Over Fishing

Fish resources are susceptible to environmental and man induced stresses and can deteriorate rapidly, particularly when environment and man act concurrently to limit production. Multi species fisheries react to fishing pressure. Welcomme (2001) was of the opinion that increasing effort involves progressive reduction in the size of the species caught. Reduction in size is associated with changes in mortality rates, growth rate, production and number of species comprising the catch; biomass and catch per unit effort (CPUE) both falls. The combination of falling biomass and rising productivity means that yield remains stable over a large range effort. This close association of effort and length of the fish caught implies that the fishing can be managed entirely on the basis of control of length both in terms of the assessment of the status of the fishery and through promotion of mesh or fish size limitations. However, many cases are documented where fishing and environmental pressures have together produced such a collapse. In Lake Kainji, Seisay and du Feu (1997) observed a reduction in mean sizes (that is, mean length and weight) in fish species and changes in species composition due to both recruitment and ecosystem overfishing. Eyo (2004) reported a massive poaching of juvenile fishes on Lake Kainji by foreign fishermen who utilize gill net and beach seines (Dala) less than 3 inches as stipulated by the Inland waters decree. He called for a new act, which would regulate the fishing culture on Nigerian freshwaters, which suffered massive overfishing in recent times. According to the author, those reckless fishermen have reduced the population of fish in the lake from about 35,000 metric tons to less than 10,000 metric tons at present.

Unorthodox and Obnoxious Fishing Practices

This is a very bad fishing method, which is not good for the conservation of the aquatic resources. It is also a very old method used in harvesting fish in Nigeria. The use of poisons and dynamite for fishing has been prohibited in Nigeria since 1992.But the artisanal fishermen still

shock fish Fishing poison These involves the use of synthetic chemical and Ichthyotoxic plants, in Nigeria Inland waters. The synthetic chemicals include Gamalin 20, Aldrex 40 as well as Didimacs 25, Atranex, Fenthion etc. These chemicals, which are usually in liquid forms, are simply poured on the water surface ponds, rivers and lakes to narcotize and kill fish. ichthyotoxic plants commonly used and their active ingredients in Nigerian Inland waters are well. Described by Udolisa et al., (1994) and in Lake Kainji basin by Reed et al., (1967). The appropriate plants- parts (bark, leaves or roots) are collected from surrounding bushes. Prepared,appropriate plants- parts (bark, leaves or roots) are collected from surrounding bushes prepared and poured into water The neurotoxin or suffocating effects eventually result in the fish floating belly .up on the surface, where they are collected with scoop nets or clap nets. Most poisons affect oils of the fish and the flesh is generally safe to eat (Welcomme, 2001), although where synthetic chemicals are used residues may accumulated in the fish flesh to toxic levels. Because poisons are indiscriminate, many other benthic organisms may be severely damaged. Often these organism and small fish, which are not desired, are much more vulnerable to the effect of poisons than the target fish. Fish poisons take 'place mainly in the dry season. Between November and April in waters less than two metres deep (Udolisa and Lebo, 1983). Explosives, this involves the use of locally made dynamites and hand grenades along riverbanks and mining paddocks. Fishing with explosives is extremely dangerous and destructive, indiscriminately killing all species within the radius of action of the explosion. The dead and dazed fish are then picked up with hands and scoop net. Human victims of self-made explosives can take months or even years to recover. Electro fishing Fish otherwise unobtainable can be narcotized using electricity so that they cannot escape and can thus be easily taken.

Inadequate Information Base

A major problem is the current lack of accurate, reliable and timely basic data from the fisheries. Current data collection systems lack planning and transparency. Data formats vary widely and are often not amenable to effective stock assessment or monitoring of fisheries management regimes currently in place. At the national level a lack of comprehensive biological and economic statistics is a major constraint to effective fisheries management. This is compounded by a lack of awareness or application of the precautionary approach principle currently being adopted by other countries. The current state of overfishing in our water bodies is not unique: the history of marine fisheries is full of incidences of overfishing and stock collapses resulting in failure of fishing industries and bankruptcies. It can be argued that the primary objective of fisheries management and planning of fisheries development is to avoid over investment. When limited background data is available, the precautionary approach should replace the 'optimistic' approach taken by investors in the fishing sector. Knowledge and understanding about the real underlying ecosystem dynamics of fish stocks are crucial to informed decisions. For stocks targeted by small-scale/artisanal fisheries that provide livelihoods for hundreds of thousands of people and food for many more, the information systems in place throughout the Region are particularly poorly developed. This is largely due to the general difficulty of obtaining information from diffuse and widespread sources, including from the communities themselves, particularly where fish products do not enter the formal economy. The standard methods used for small-scale fisheries statistical systems (census/frame surveys, stratified sampling programmes, etc.) are lacking. Thus even the key parameters such as catch, fishing effort, price and participants in the fisheries are largely unknown.

In addition to the fact that tropical fisheries are inherently difficult to manage because of the diversity of species harvested, issues for effective management center on the insufficiency of data upon which to initiate a substantive programme of fisheries management. Management for targets of maximum or optimum sustainable yield, however, must await an improved database of catch and effort.

Need for Effective Management

Fisheries management policies are not currently well defined, and are not based on reliable scientific information. There are inadequate human and financial resources for administration of the sector. Modern guidelines such as the Code of Conduct for Responsible Fisheries is not yet part of national legal frameworks. The adoption of the precautionary approach has considerable implications for fisheries management agencies and the fishing industry. Scientific advice to fisheries managers should allow for uncertainty in both the understanding of the state of the stocks and the effects of future management actions. When less is known, fisheries management agencies should be more cautious. This requires a management approach less focused on and influenced by short-term considerations, and more concerned with long-term sustainability of fisheries resources and the environment.

Overfishing, due to over-capacity and ineffective application of controls, is the major problem facing most of our rivers and sea. High prices for fish attract new entrants to the fisheries, leading to uncontrolled effort expended on the resources.

Additional attention will need to be paid to management of migratory species that traverse international borders; this will require regional management. Destruction of important coastal habitat (landfill of mangroves, filling in of back reef lagoons, etc.) will need to be reduced since this translates directly into reduced recruitment to exploited populations.

Socio-economic factors also need to be considered in establishing objectives for the management of fisheries. Unfortunately, all desirable objectives cannot usually be met simultaneously, and one of the main roles of fisheries management agencies in a precautionary approach would be to derive trade-offs between competing objectives in consultation with interested parties. Whichever approach is taken, it will be necessary to quantify objectives and trade-offs if they are to be translated into measurable factors such as the level of fishing mortality. The more limited the available information about a fishery, the more cautious managers should be in opening the fishery to exploitation.

Shore Infrastructure

Lack of adequate shore facilities is a major constraint. Inadequate or absent landing jetties, service facilities including workshops, ice and cold storage facilities, spare parts and fuel facilities handicap fishing communities .

The road infrastructures are very poor causing difficulties in delivering quality products to consumers. The physical deterioration of existing onshore infrastructure, through natural and human damages, presents enormous difficulties for future rehabilitation and intervention.

Communication, Training and Public Awareness

A common feature is the lack of effective communication between those formulating fisheries policy, and the fishing industries and communities who are ultimately affected by the management measures imposed. This results in poor understanding of the need for, and agreement with, management measures. Considerable opportunity therefore exists for increasing the involvement of rural communities in the development and implementation of appropriate management measures for coastal living marine resources. This trend of a 'bottom-up' approach to fisheries management is being used increasingly throughout the world.

Public awareness of the need for a balance between fisheries and environmental protection and conservation requires urgent attention. Many of the undesirable activities currently practiced (such as use of explosives, dumping of used gear at sea, poor fish handling practices leading to lower value products, etc.) could be reduced considerably if more physical and financial means were provided to national authorities in order to facilitate improved extension and training services and public awareness campaigns.

Access to Affordable Credit

This is a major problem underpinning fishing activities. The high interest rates and difficult repayment terms required by banks often put credit lines beyond the reach of fish farmers. In Nigeria this has Nigeria this has resulted in an inability to purchage ase fishing materials such as nets, hooks and boats by fisher men.

Poorly Developed Market Systems

Monopoly activities by a few large traders or 'middlemen' tend to stifle the rational development of the market, due to vested interests. No ice production or cold storage facilities exist outside the urban areas. The problems facing Nigeria artisanal fisheries are exacerbated by the remoteness of the fishing villages and the inadequacy of government institutional capacity. Fishing effort is limited due to lack of trained technicians (boat builders, engineers, and refrigeration specialists), chronic shortage of spare parts, fuel supply, and working capital.

Ways Forward for Profitable and Sustainable Aquaculture in Nigeria

Maintaining the contribution made by fisheries and aquaculture to food security, employment, national economic development, and recreation. Depending on geography, access to markets and affordable technology, the contribution of fish to food security comes not only from fish produced for direct local food consumption, but also from aquatic products of all types which can be sold domestically or exported for funds, as well as those which generate income through recreation, tourism, and employment. Access to all potential contributions is not automatic and specific interventions are required to achieve full access.

Strengthening the base for fisheries management and aquaculture development

The decisions concerning management and development options could be more rationally based and informed if the base for fisheries management and aquaculture development is been Strengthen. This requires a multifaceted approach in that;

1. There is consultation with data users so that they get the data required for their work.
2. There is an appropriate data collection mechanisms and data management system.
3. There is a national commitment to provide data, and
4. FAO and non-FAO regional fishery bodies and other appropriate institutions and organizations are involved in regional assessments

institutions and organizations are involved in regional assessments concerning trends in fisheries;

Improving governance and more effective conflict resolution

As fishery resources become scarcer the intensification of regional fishery conflicts should be anticipated; promoting national capacity building and the strengthening of regional institutions; developing objective performance indicators relevant to governance; encouraging coherent management approaches and better collaboration among regional institutions to address emerging issues of common concern.

Facilitating greater transparency in fisheries sector decision making at all levels

Such transparency, which is now being called for widely in many international fisheries instruments, has the benefit of promoting greater acceptance of decisions when stakeholders have been consulted and involved.

Improving access to, and the dissemination of good quality and timely information

Good quality and timely information in the most appropriate formats should be disseminated, this will help to support responsible fisheries and aquaculture and trade.

Reducing by-catch

This can be done through the use of more selective gear and fishing operations, and innovative and value-added processing and market development for species currently discarded and expanding and promoting uniform quality criteria for internationally traded fish and fish products. In the interests of food security and the best utilization of limited resources, the prevention of post-harvest losses should be pursued as a matter of high priority;

Promoting cooperation in fish trade

This is done with a view to avoiding disputes and imposition of sanctions; minimizing the impact on international fish trade on those groups most vulnerable to food insecurity; and integrating coastal area planning and management more effectively.

Artisanal and small-scale fisheries in the country should be promoted, traditional or community-based management practice should also be fostered as this is most appropriate means of management. This approach builds on customary and traditional practice using the concept of territorial use rights in fisheries (TURFs). In fisheries where there are thousands of fishers, hundreds of fishing communities and a plethora of landing points, contemporary management through the use of local institutions and traditional practice is the most viable option for achieving sustainability in artisanal and small-scale fisheries.

In commercial and industrial fisheries, advances in fisheries management through individual transferable quotas (ITQs), which provide greater incentives for sustaining and optimizing economic performance of fisheries, have re-focused attention on quota management. ITQ management draws on biological, economic and financial considerations as part of an integrated management system approach. Several factors can be identified as being critical to the successful implementation of ITQ management systems: transparent management policies and the political will to take difficult decisions concerning management; legislation that is easily enforceable; efficient administration (particularly with respect to capacity for stock assessment, statistical collection and real-time analysis, and monitoring, surveillance and enforcement); and limited numbers of fishers and landing points. However, the introduction of ITQ management, which has been practiced to some extent in Australia and New Zealand, should be considered also in Nigeria on a fishery-by-fishery basis since it does not provide a universal panacea for the management of all fisheries.

Increased fish production Nigeria can be achieved through expansion, intensification, diversification, and better integration of fish production into existing land and water use schemes, but fish producers, as most rural people, often do not have access to credit. Capacity building through provision of training, extension, and advanced education to fish producers continues to be crucial for successful development. Both aquaculture and inland fisheries suffer from insufficient institutional support and legal and political recognition as legitimate users of resources. Many policy makers are not aware of the benefits and needs of these sectors. A major future task is therefore to increase participation of producers and relevant public authorities in the allocation and management of aquatic resources and land uses. Management of river or lake basins and of coastal areas must take account of fisheries and aquaculture.

Last but not least is the important trends that pose challenges to the post-harvest sector which include the following:

1.Tariffs on fish and fishery products have been reduced significantly more than those for agricultural products as a result of multilateral agreements. Further reductions are foreseen;

2.There has been an overall increase in food-borne diseases throughout the world and consumer pressure has forced many governments to impose stricter quality assurance requirements on the food supply. Although fish products are not identified as a major vector, the processing industry has had to respond to the challenge.

3.Governments and industry are adopting a new approach to the quality assurance and safety of fishery products based on an analysis and management of the risks rather than end product inspection, which has proved unreliable; and

4.FAO estimates that up to 20 mt of fish is wasted by being discarded at sea immediately after catch. In addition to the economic loss the issue of conservation is attracting increased attention.

CONCLUSION

The greatest threat to the sustainability of inland fishery resources is environmental degradation. Aquatic pollution, destruction of fish habitats, water abstraction and impacts on aquatic biodiversity are all increasing. These trends must be reversed. Other major issues to be addressed in inland fisheries include: The use, promotion and management of enhancements, particularly in small water bodies and reservoirs, while conserving biodiversity, The need to control access to resources and to increase community level responsibility for management ,The need for inland fisheries to be included in valuation and management of multiple uses of water resources, The growing importance of recreational fisheries and conflicts of resource allocation between food and sport and the need, which will increase through time in the light of the rapidly growing field of genetics and biotechnology, for international mechanisms to create coherent management and policy systems for the sustainable use and conservation of aquatic genetic resources.

The potential for further growth of aquaculture in the region is promising. Such growth could be realized through improvements in technologies and resource use, intensification, integration of aquaculture with other farming activities, and development of additional areas for aquaculture. However, aquaculture will face significant challenges including:

• Meeting growing demands for seed, feed and fertilizers, in terms of quantities and quality;
• Reducing production losses through improvement in fish health management;
• Increasingly severe competition with other resource (land/water/feed) users;
• Deteriorating quality of water supplies resulting from aquatic pollution;
• Successful integration of aquaculture with other farming activities, and promotion of small-scale low-cost aquaculture in support of rural development;
• Improvements in environmental management including reduction of environmental impacts and avoidance of risks to biodiversity through better site selection, appropriate use of technologies, including biotechnologies, and more efficient resource use and farm management; and
• Assurance of food safety and quality of products.

In order to face these challenges, the fisheries sector must develop the capacity to build and run effective quality assurance systems to comply with increasing stringent international standards of international markets as well as extending these to the domestic markets. Similarly, it should promote efforts to improve selective fishing gears to minimize by-catches of juveniles and non-target species and to develop technologies to make economical utilization of unavoidable by-catches. The implementation of the Code of Conduct for Responsible Fisheries could facilitate sustainable utilization of fishery resources and hence to overcome constraints in facing the above-mentioned challenges. In the long term, however, there is the need to develop national and regional fishery governance to ensure rational and effective fisheries management in our country Nigeria.

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