Clement Atewe Ighodaro/Uongozi Journal of Management and Development Dyanamics Vol. 26(1) (2015) 147-168

The Potential of Aquaculture fisheries on Economic Diversification of Nigeria

Clement Atewe IGHODARO, Ph.D

Senior Lecturer, Faculty of Social Sciences, Department of Economics & Statistics
University of Benin - Benin City, Nigeria

ABSTRACT

The study examines the potential of aquaculture fisheries on economic diversification of Nigeria using desktop (review study) approach. Nigeria's over reliance on crude oil for its wealth and the fall in the price of crude oil in the international market is the main issue which makes the diversification of the economy highly desirable. Diversifying the economy to other sectors like agriculture, particularly, the aquaculture fishery production deserves attention. Taking a cue from the model of China and Norway, aquaculture fishery if well developed in Nigeria can provide job opportunities as well as investment opportunities in feed mills, equipment manufacturing, among others.

Key words: ***Aquaculture, Economic Diversification, Fish production***

1. Introduction

The current socio-economic challenges facing the Nigerian economy call for a wide range of ways to improve the livelihoods of the citizenry and their families, as well as other inhabitants of the country. One of the possible measures is to diversify the economy by exploring the potential of the aquaculture fisheries production which can help to avert the risks associated with over-dependency on the oil sector and to take advantage of new opportunities in the inclusive blue growth.

Aquaculture fishery production contributes to food nutritional security, helps to develop rural communities through the provision of employment, income, reduction of vulnerability and farm sustainability (Dyck and Sumaila, 2010). The main product of aquaculture fishery is fish for human consumption but other products can also be developed to generate extra income from fisheries. Example of such products are fish skin, heads, liver, bones, which may be used to make animal feed, fertiliser, and highly specialised products such as pharmaceuticals. Although, aquaculture is relatively a new area, fish farming is one of the fastest growing agricultural enterprises in Nigeria. By its contribution to the Gross Domestic Product, which is considered huge, fishing has significant impact on the nation's economy in terms of employment generation, poverty alleviation, foreign exchange earnings and provision of raw materials for the animal feeds industry.

Economic diversification is when a country has different sources of income that are not positively related to one another. South

Korea is an example of a country that is better diversified because the country gets its income from different sources like manufacturing, automobile, Hi tech industries and financial services (Shayah, 2015). Economic diversification is widely seen as one of the pathways out of the "resource curse" for developing countries that are abundant in natural resources (Gelb, 2010).

Diversifying the economy to other sectors like agriculture, particularly, the aquaculture fishery needs attention. Economically, aquaculture fisheries has potentials to provide job opportunities as well as investment opportunities in feed mills, equipment manufacturing, processing, packaging and the provision of raw ingredients for research and education (Okechi, 2004). Fish continues to be one of the most-traded food commodities worldwide (FAO, 2014). Aquaculture fishery has made promising impact on the Nigerian economy. The contribution of the fishery sub-sector to GDP at 2001current factor cost rose from N76.76 billion to N162.61 billion in 2005 (Central Bank of Nigeria, 2005). In 2007, the contribution of fishery to GDP was 6.6% in 2008, 6.2% in 2009, and 6.0% in 2010; in 2011, 5.9% (Central Bank of Nigeria, 2011).

In the recent past, Nigeria spends about N100 billion on fish importation annually and fish demand for consumption in Nigeria stands at over 2.66 million tonnes per annum, while the present importation rate is over 750,000 metric tonnes (Oota, 2012). With importation of more than 750,000 metric tonnes of fish, more than US$600 million[1] are spent in hard currency and thousands of jobs are exported (USAID, 2010). Nigerians are large consumers of fish and it remains one of the most

consumed in terms of animal protein. However, only about 20% of such demand is met locally. With many rivers and water bodies in Nigeria, the sector has great potential for aquaculture fisheries which can be considered as one of the sub-sectors of agriculture the country can diversify into. The main objective of this paper is to establish the potentials of aquaculture fisheries on economic diversification of Nigeria using the desk top approach (review study). The objective will be achieved by providing answers to the following research questions:

1. What are the economic potentials of aquaculture production in Nigeria?
2. What lessons can be learnt from the success stories of aquaculture fisheries in other countries?

Following Section 1, section 2 provides the background of aquaculture fisheries in Nigeria, section 3 considers literature review, and section 4 provides recommendations while section 5 is the conclusion.

[1]US$1:00 = N151.25 as at October, 2010

2 Backgrounds of Aquaculture Fisheries in Nigeria

In Nigeria, there are an estimated 12,478,818 hectres of inland water bodies made up of reservoirs, lakes, rivers, ponds and perennial swarms (Ita, Sado, Balogun, Pandogari and Ibitoye, 1985) as cited in (Sikoki, 2013) and some 741,509 hectares of brackish waters, most of which are suitable for aquaculture fisheries.

At present only about 5,476 hectares of these waters are utilized for fish culture (Sikoki and Oyero, 1994). Nigeria can take advantage of these natural resources with respect to aquaculture fisheries production. The bulk of fishery activities in Nigeria are carried out by small-scale fish farmers, perhaps this made the sub-sector accounts for an average of 4.87% of the Gross Domestic Product between the year 2000 and 2004 (Central Bank of Nigeria, 2004).

The Nigerian fishery sector is characterized by a rich resource base, made up of offshore waters between the 30 mile territorial limit and the 200 mile Exclusive Economic Zone (EEZ). Others are coastal waters adjacent to the country's 853-km coastline and a continental shelf varying in width between 2 and 12 miles off the coast from the western to the eastern borders. Also, rivers in the Niger delta; inland waters associated with the rivers Niger and river Benue; their tributaries and flood plains. There are also natural lakes and wetlands; reservoirs impounded for various purposes including irrigation, water supply and hydroelectricity power generation; purpose-built ponds, among others (FAO, 2007).

The Nigerian fishery sub sector of agriculture can be classified into artisanal, industrial and aquaculture. The industrial fishery

involves the utilization of large fishing boats with in-board engines and mechanically operated gears while the artisanal employs small, traditional and largely un-motorized craft and simple hand operated gears and is labour intensive (Ekpo, 2012b). According to the National Agricultural Extension and Research Liaison Services, (2006), aquaculture is a relatively a new development in Nigeria. It is the art and science of controlled rearing of fish in ponds, farm and in some instances natural water body from hatchlings to matured size, where feeding, fertilisation reproduction and harvesting are controlled.

Aquaculture fishery development in Nigeria 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. Nigeria's fish supplies come from four major sources (in order of importance, namely): Importation (56%), inland, estuaries, and coastal artisanal fishery (37.6%) industrial trawl fishery (2.6%) and aquaculture (3.8%) (*Nigeria-Fisheries Report 2013)*. Though, aquaculture plays low, if well developed it stands a chance to be an important activity for diversification of the Nigerian Economy. This is especially true in rural communities, where opportunities for economic activities are limited. Only in recent years has aquaculture fisheries been viewed as an activity likely to meet national shortfalls in fish supplies, thereby reducing fish imports (Adedeji and Okocha, 2011).

Out of the total fish supply (in tonnes) in Nigeria between 2000 and 2004, Nigerian aquaculture fishery supply were 25,720 (2.51%) in 2000; 24,398 (2.15%) in 2001; 30,664 (2.57%) in 2002 30,677 (2.61%) in 2003 and in 2004, 43,950 (3.98%)

respectively. This development however contradicts the fact that Nigeria is blessed with abundant varieties of aquatic resources (Williams, 2006). Ekunwe and Emokaro (2009) documented that Nigeria imports about 560,000 tonnes of fish estimated at about $400 million annually while annual domestic fish supply in Nigeria stands at about 400,000 tonnes. According to FAO (2014), with almost 2 million people engaged in the fisheries and aquaculture sector, Nigeria ranks first followed by Morocco which has almost 1.4 million and Uganda, almost 1 million people. With respect to processors, more than one million people in Nigeria are engaged in this followed by about 500,000 people in Morocco, about 420,000 in Uganda and in Ghana about 385,000) people. This implies that a well developed aquaculture fishery in Nigeria can boost the economy through diversification.

According to FAO (2005a), the federal government of Nigeria has made efforts to encourage aquaculture fishery production. Examples are granting of zero Value Added Tax to Pisces related drugs, feeds and accessories, granting of loans at interest rate below the benchmark to fish farmers through cooperatives. Various national programmes and projects have also been put in place in this regards. Examples are Aquaculture and Inland Fishery Project (AIFP), National Accelerated Fish Production Project (NAFPP), Fishing Terminal Projects (FTP), Fisheries Infrastructures Provision/Improvement (FIP), among others.

According to Sikoki (2013), there are many by-products that can be got from fish through aquaculture fishery production. These include fish glue (made by boiling the skin, bones and swim bladder of fish. The glue is highly valued for its use in many products such as illuminated manuscripts and Mongolian war

bow); fish oil (fish oils are highly recommended for their Omega – 3 fatty acid content); and fish emulsion (This is a fertilizer emulsion that is produced from the fluid remains of processed fish for fish oil and fish meal). The private sector can harness these opportunities as it can lead to higher income through export. Apart from the by-products, Ayinla (2007) posits that several investment opportunities abound in aquaculture fisheries. Some of these are production of fishing equipment, establishment of modern fish farms, fish processing for exports, among others. These can lead to self employment and income generation. Therefore, aquaculture fishery if fully developed has great potential of diversifying the economy of Nigeria.

The aquaculture sector has potential to create employment in the country. For example, the Nigerian Trawler Owners Association (NITOA) has been involved in industrial fishing activities in Nigeria. With combined fleet of about 130, the association employs about 9,000 Nigerians directly by venturing into fish and shrimp culture to further boost local fish supply and increased foreign exchange earnings for the country (Vanguard, 2016). Recently, floating fish feed extrusion plant was commissioned in Lagos by Akin-Sateru Farms Limited established in 1979. The floating fish feed production plant has the capacity to produce 12 tonnes of extruded floating fish feed. This means that the mill if well developed and maintained will supply local farmers who hitherto relied on importing extruded fish feed into the country.

There are also opportunities in fishing net production if the sub-sector is well developed. Some industries involved in this are the Nigerian Fishing Net Industries Ltd, located in Ikoyi, Lagos

in South –South Nigeria; Fred Merit Group Nigeria Limited located in Onitsha North, in Anambra State involved in agricultural equipment, machinery; Stanley Anaele Fishing Enterprises, located in Borokiri Town, Port Harcourt, Nigeria involved in general agriculture and fisheries; Stretch Fibres Nigeria Limited located in Trans Amadi Layout Port Harcourt, Rivers, Nigeria, involved in Fishery and its equipment; and among others His Grace Fisheries Nigeria Limited located Port Harcourt, Rivers State, Nigeria. The company is service provider on aquaculture solutions, fish farming and fishery services.

Nigeria as a maritime country with a coastline of 853 km, surface area of continental shelf of 46,300 km2 and an Exclusive Economic Zone, EEZ, that covers an area of 210,900 km2, is richly blessed. Also, the several freshwater lakes, rivers, reservoirs, dams and floodplains, the total surface area of which is about 12.547million hectares, support aquaculture fisheries development and agriculture. Nigeria has perennial rivers (Niger, Benue, Oshun, Akwa Ibom, Cross River among others) natural lakes like (Chad) and manmade lakes like kanji. Nigeria has over 14 million hectares of inland water surface, out of which about 1.75 million are available and suitable for aquaculture (FAO, 2000).

3. Literature Review

Several studies have been done on fisheries and aquaculture generally and to the best of my knowledge, specifically few on aquaculture fisheries. With respect to aquaculture fisheries management in China, Hishamunda and Subasinghe (2003) opined that aquaculture fishery industry has developed in China. Complementing this, Fang (2007) posits that the 11th Five Year

Plan of 2006 to 2010 had specific objectives related to the development of China's aquaculture industry, particularly fisheries. The country was able to increase the quality and quantity of the country's aquatic products and increasing employment opportunities for farmers, conserving fisheries as a result of the plan. In addition, research and development and innovation changed the face of the aquaculture industry in China (Hishamunda and Subasinghe, 2003). According to the authors, the research led to the identification of the genetic composition of fourteen different fish species with their data stored. Also, more than one hundred fish diseases were identified and the necessary vaccines developed.

In Vietnam, the Fishery sector represents an important source of economic growth, employment, nutrition, and foreign exchange In recent years, the sector has undergone a dramatic transformation through the establishment of the Directorate of Fisheries (D-Fish), born out of the former Ministry of Fisheries (MoFi) recently established in the Ministry of Agriculture and Rural Development (MARD). In addition, the sector has ten year strategy 2011 - 2020 worth USD2.9 billion and a sector master plan for five years (DERG and CIEM, 2010).

Gordon and Pulis (2010) carried out an analysis of aquaculture as a Livelihood alternative in the coastal districts of Western Ghana. They estimated the number of fish farmers in Ghana to be as high as 2000 and most of them are more or less small holder subsistence operations. New investors, both local and foreign, are expressing interest in the sector because of the availability of proven technology and high market prices for fresh fish.

European Union (2011) harped on the diversification of fisheries areas and observed that many fishery areas are located in or in close proximity to attractive coastal cities and tourist destinations. Diversification of the fisheries areas include among others, activities related to by-products from fishing; opportunities linked to the environment and the green economy, including data collection and research; conservation; clean-up services and combating pollution; activities related to tourism, covering the provision of accommodation, food; social services such as care, leisure services and skills acquisition.

The key to success in fish farming in Norway is fish health. The country has had from the mid - 1980s a system based upon veterinary control, originally performed by the county veterinarians, and from 2004 by the Norwegian Food Safety Authority. The veterinarians and the aqua-medicine biologists not only address diseases and treatment, but also provide advice on site locations. In addition, all major universities are directly or indirectly connected to the education of personnel to the aquaculture sector. The Norwegian success is based upon close cooperation between authorities, farmers, research and educational institutions as well as representatives of civil society (The Norwegian College of Fishery Science, 2012).

According to Ramesh (2013), over the last three decades, China has gradually replaced sea captured fish production to aquaculture fishery, largely due to quotas imposed by government, seasonal ban on marine fishing and a zero growth policy on fishing fleets and sea based fishing. In addition, Chinese fishermen have been reallocated by these measures to

stop fish production by capture and to become employed in producing fish through aquaculture fishery.

In Angola, fisheries sector plays a significant role in the economic diversification of the country as well as support the implementation of policy on foreign dependence. This has implication to cover domestic consumption needs and produce surpluses for export (Neto, 2015). According to the author, in 2014, the annual fish production stood at 442,000 tons with per capita consumption standing at 18.5 kilograms per year. As part of the national diversification of economic policy, the Action Plan for the Development of aquaculture in Angola was approved in 2014 (All Africa, 2015).

The Ministry of Agriculture and Fisheries Wealth (2011) as cited in Prins (2014) opined that in an attempt to further diversify the economy of Oman beyond hydrocarbons, aquaculture fisheries was identified as a key pillar for regional economic policy because of its value chain. It provides jobs especially in post-harvest activities such as quality control, processing and marketing of the fish. Most of the research projects conducted on aquaculture fishery is open for collaboration with foreign experts in the field. According to Barrett and Houston (2014), Gabon signed a five-year fishing treaty with the European Union (EU) on December 3, 1998. This Treaty allowed for an annual catch of 9,000 tonnes of tuna by a fleet of 75 European large fishing boats within Gabon's 19.2 km limit. This was to tap on the benefits of fishing in the country. In the three years, a total of 178.2 million CFA francs were got annually or 534 million CFA francs from the European Union.

Suberu, Ajala, Akande and Adeyinka (2015) attempted to establish how diversification of the Nigerian economy helped for sustainable growth and economic development. The authors concluded that in pursuing new sectors and products, policy maker in Nigeria must be careful not to neglect their traditional economic bases. Aquaculture falls within this economic base. Similarly, Anyaehie and Areji (2015) considered how economic diversification can lead to sustainable development in Nigeria. The authors found that generated revenue from oil is not effectively invested on diversification of the economy to develop a robust and stable economy. They concluded that Nigeria should pragmatically address the challenges of poor industrialisation to diversify her economy because a diversified economy will stabilise Nigeria's economy against the vagaries of oil market, and provide opportunities for the satisfaction of needs and aspirations of her population.

Uzonwanne (2015) examined economic diversification in Nigeria in the face of dwindling oil revenue. The author found that Nigeria' over dependency on oil has contributed to the poor management of human capital/resources which has led to the migration of many talented citizens of the country in search of better life. From the literature, while most studies for Nigeria harped on diversification and economic growth, relatively few studies examined how the aquaculture fishery subsector can help to diversify the economy, particularly, Nigeria.

4. Recommendations

Efforts to improve on economic growth strengthen non-oil sector growth and opportunity for diversification would increase if the economic potentials of aquaculture fishery in the Nigerian

economy are fully developed. This can be accomplished if the following recommendations are considered:

The model of China should be explored because the aquaculture fishery sector has been significantly developed in China. The country developed the 11th Five Year plan for the period 2006 to 2010 as well as invested in research. This led to the identification of several fish diseases. Nigeria can do same in order to develop the aquaculture fisheries sector. Therefore, in line with the policy framework of the present administration (Mohammadu Buhari) of Nigeria, the National Institute for Fresh water Fishery Research (NIFFR), New Bussa, Nigeria is designing a master plan to strengthen value chain operation towards self sufficiency in fish production in Nigeria. It is recommended that the Master Plan should have a time frame and an action plan. Each activity in the action plan should be taken seriously.

The Universities of agriculture or fishery institutes should be well developed and connected to all other universities in Nigeria. For example in Norway, most universities are directly or indirectly connected to the education of persons and to the aquaculture sector. This means that there should be close link between fishery institutes/universities of agriculture and the conventional universities. The federal government should strengthen the various fishery research institutes effectively and promote the use of property right and patent law in fishery research. Extension services should also be promoted to meet the needs of aquaculture fishery and other stakeholders.

In addition, the activities of the aquaculture fisheries sector are well documented in Norway whereas this is not significantly the

case in Nigeria. This implies that if the aquaculture sector can be well developed and can help in the diversification of the economy, data base of the sector must be developed and well documented as this will offer an opportunity for thorough analysis of the sector if need be.

There should be close connection among the aquaculture fishery industry, farming industry, the regulatory authorities and researchers/educational institutions. Together they can form a network which, in spite of perceived conflicts and setbacks, can create an entirely new industry particularly, along the coastal region of Nigeria. This can offer direct employment of persons and other support industries.

It is important to set up manufacturing base for the aquaculture fishery equipment in Nigeria in order to conserve foreign exchange as well as keep costs down. Such equipment should be targeted at local fish farmers. Market development in this regards should be closely monitored in order to have short response time to market demand changes.

The federal government of Nigeria can sign aquaculture fishery Treaties with private sector or foreign companies within a given period of time to help invest in the sector as was done in Gabon in 1998. This would help to role in foreign exchange rather than majorly rely on crude oil.

5. Conclusion

This paper considered the potential of aquaculture fisheries on economic diversification of Nigeria using desk review. The potentials for the development of the aquaculture fishery in Nigeria appear not to be beyond the aquatic resources of the

country. Aquaculture fishery can help to provide jobs through the aquaculture fishery value chain and fish exports if well developed. Aquaculture fisheries development through good management and good governance is essential so that the sector if considered can also help to meet local demand for fish as well as contributes to reducing food insecurity and poverty. The potential of aquaculture to the diversification of the economy of Nigeria can become realised if the federal government can strengthen the various fisheries research institutes effectively and promote the use of property right and patent law in fisheries research as well as promote extension services that meet the needs of aquaculture fishery in Nigeria. The models of countries like Norway, China and Gabon can be explored.

REFERENCES

All Africa (2015). Angola: Fisheries Sector Plays Key Role in Economic Diversification. Available in http://allafrica.com/stories/201505280225.html. Assessed 5th September, 2016

Adedeji O.B. and R.C. Okocha (2011). "Constraint to Aquaculture Development in Nigeria And Way Forward". *Journal of Applied Sciences Research.* 7(7), 1133-1140

Anyaehie, M.C. and A.C. Areji (2015). "Economic Diversification for Sustainable Development in Nigeria". *Open Journal Of Political Science*. 5, 87-94

Ayinla, O.A. **(**2007). Analysis of Feeds and Fertilizers for Sustainable Aquaculture Development in Nigeria. In M.R. Hasan, T. Hecht, S.S. De Silva and A.G.J. Tacon (eds). Study and Analysis of Feeds and Fertilizers for Sustainable Aquaculture Development. *FAO Fisheries Technical Paper*. No. 497. Rome: FAO. 453–470

Barrett, K and Houston, J.E. (2014). "Gabon: A Guide to Improving the Coastal and Inland Fishery Industries". *Journal of Food Distribution Research* 45(1), 8 – 13.

Central Bank of Nigeria (2004). *Annual Report and Statement of Accounts*. Abuja: CBN.

Central Bank of Nigeria (2005). *Annual Report and Statement of Accounts*. Abuja: CBN.

Central Bank of Nigeria (2011). *Annual Report and Statement of Accounts*. Abuja: CBN.

Chima (2013). *Local Fishery or Aquaculture Development in Nigeria*. Available at: Http://Martinslibrary.Blogspot.Com.Ng/2013/03/Local-Fishery-Or-Aquaculture.Html. Assessed 5th September, 2016

Development Economics Research Group, DERG and Central Institute for Economic Management, CIEN (2010). *The Fisheries Sector in Vietnam: A Strategic Economic Analysis*. Report commissioned by Royal Embassy of Denmark in Vietnam Fisheries Sector Programme Support (FSPS) II. December

Dyck, A. J. and Sumaila, U.R. (2010). "Economic Impact of Ocean Fish Populations in the Global Fishery" *Journal of Bioeconomics*, 12 (3), 227–43.

Ekpo I.E. (2012b). "Diversity and Condition Factor Of Fish Species Of Ikpa River At Nwaniba In Niger Delta, Nigeria". *FUTA Journal of Research in Sciences*, 1(1): 36-47.

Ekunwe, P.A and C.O. Emokaro (2009). "Technical Efficiency of Catfish Farmers in Kaduna". *Nigeria Journal of Applied Sciences Research*, 5(7): 802-805

Fang, X. (2007). "Export and Industry Policy of Aquaculture Products in China" in Global Trade Conference on Aquaculture: 29-31 May 2007, Qingdao, China,' Arthur, J., and Nierentz, J. (Eds), Food and Agriculture Organisation.

FAO (2000). *Information on Fisheries Management in the Federal Republic of Nigeria.* Available at: http://www.fao.org/fi/oldsite/FCP/en/NGA/body.htm. Assessed 11 November, 2016.

F.A.O. (2005a). *Increasing the Contribution of Small-Scale Fisheries to Poverty Alteration and Food Security*, F.A.O Technical Guidelines for Responsible Fisheries. 104, F. A.O., Rome, 79.

FAO (2007). *Building Adaptive Capacity to Climate Change. Policies to Sustain Livelihoods and Fisheries. New Direction in Fisheries.* A Series of Policy Briefs in Fisheries Development Issues. 08. FAO, Rome. 16

FAO (2014). *The State of World Fisheries and Aquaculture*. FAO of the United Nations.

Gelb, A. (2010). Economic Diversification In Resource Rich Countries. 1, 2, 4

Gordon, A. and Pulis, A. (2010.) "Livelihood Diversification and fishing communities in Ghana's Western Region", *WorldFish Center.* USAID Integrated Coastal and Fisheries Governance Initiative for the Western Region, Ghana. 69

Hishamunda, N. and Subasinghe, R.P. (2003). Aquaculture Development in China the Role of Public Sector Policies. FAO Fisheries Technical Paper, 427. Food and Agriculture Organization of the United Nations, Rome

Ministry of Agriculture and Fisheries Wealth (2011). *Investment Guidelines For Aquaculture Development in the Sultanate of Oman.* Available at: http://www.agroberichtenbuitenland.nl/golfstaten/wp-content/uploads/sites/26/2015/03/imgouy75ka6.pdf. Assessed 5th September, 2016.

National Agriculture Research and Liaison Services (2006). *Annual Report*. Federal Ministry of Agriculture, Abuja.

Neto, V.d.B. (2015). " Fisheries sector plays key role in economic diversification". *Angola Press News Agency*. Available at: http://cdn2.portalangop.co.ao/angola/en_us/noticias/economia/2015/4/22/Fisheries-sector-plays-key-role-economic-diversification,b8b9a52e-5087-41cf-8587-1d3fe34ca270.html. Assessed 6th September, 2016

Nigerian Fishery Report (2013). Fisheries in Nigeria, Ministry of Agriculture and Rural Developments, FMARD

Ita, E.O., Sado, E.K., Balogun, J.K., Pandogari, A. and Ibitoye, B. (1985). A Preliminary Checklist of Inland Water Bodies in Nigeria with Special Reference to Lakes and Reservoirs. Kainji Lake Research Institute, Kainji.

Okechi, J. K. (2004). *Profitability assessment*: A case study of African catfish *(Clarias gariepinus)* Farming in the Lake Victoria Basin, Kenya. Available at: http://www.unuftp.is/static/fellows/document/okechiprf04.pdf. Assessed 30th March, 2016.

Oota, L. (2012). Is Nigeria Committed To Fish Production? Available at: http://blueprintng.com/2012/07/is-nigeria-committed-to-fish-production/. Accessed 15th March, 2016

Prins, T. (2014). Aquaculture and Fisheries Development in Omar: The potential for collaboration with and possible business opportunities for the Netherlands. Available at: http://www.agroberichtenbuitenland.nl/golfstaten/wp-content/uploads/sites/26/2015/03/imgouy75ka6.pdf. Assessed 6th of September, 2016.

Ramesh, S. (2013). "Aquaculture: Evidence from China and Nigeria". *Developing Country Studies* 3(11), 30 – 51

Shayah, M.H. (2015). "Economic Diversification by Boosting Non-Oil Exports (Case of UAE)". *Journal of Economics, Business And Management,3(7)* 735-738

Sikoki F.D. & Oyero, J. (1994). *The Status Of Aquaculture in Nigeria.* Gratte Ciel Public Port

Sikoki, F.D. (2003). "Fishes in Nigerian waters: No place to Hide. Inaugural Lecture Series No. 100, University of Port Harcourt, Rivers State

Suberu O. J., Ajala O. A., Akande M. O., and O. Adeyinka (2015). Diversification Of The Nigerian Economy Towards A Sustainable Growth And Economic Development. *International Journal Of Economics, Finance And Management Sciences*. 3(2), 107-114.

The Norwegian College of Fishery Science (2012). Assessment Criteria for Norwegian Assistance to Aquaculture in Developing Countries. University of Tromsø, Norway. November

United States Agency for International Development (2010). *Best Management Practices for Fish Farmers in Nigeria*. USAID Markets Programme - Nigeria. 1 – 38.

Uzonwanne, M.C. (2015). "Economic Diversification in Nigeria in the Face of Dwindling Oil Revenue". Journal of Economics and Sustainable Development. 6(4), 61 - 67

Vanguard Newspaper (2016). *Special report on fisheries and aquaculture in Nigeria.* Available at: guardian.ng/features/special-report-on-fisheries-and-aquaculture-in-nigeria/. Assessed 10th November, 2016

Williams, S. B. (2006). *Policy issues in Africa's Fisheries and Aquaculture Development*. Keynote Speech at International Institute of Fisheries Economics and Trade, IIFET 2006 Policy Day. Wednesday 12th, July, 200