

# ESTABLISHMENT OF A COMMERCIAL CATFISH AND TILAPIA FARM AT KUCHI KUCHI KAU, KARU LGA NASARAWA STATE NIGERIA

**BY GMSJNN FARMS LIMITED**



This project is the outcome of a group efforts to whom credit and technical responsibility goes. This project is based on an assignment which was given to course participants and supervised by Dr. Abdel Rahman El Gamal as a part of "Fish Culture Development" Training course. This annual course is organized by the Egyptian International Centre for Agriculture - (EICA). Names of the team members and countries as well as pictures are shown in the following slide

**2011**

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## EXECUTIVE SUMMARY

The Commercial Fish Farming Estate project is designed to meet the requirements for the establishment of a Fish Farm in Kuchikau, Karu Local Government Area of Nasarawa State. The main economic significance of the proposed project is its contribution towards narrowing down the fish demand-supply gap deficit in Nigeria as *well* as the supply of proteins and micronutrients for feeding the teeming population of Nasarawa state, Abuja City and Nigeria at large. The fish farm estate project aims specifically at Table-fish size and Fingerlings production to boost the domestic fish supply in the country and for export purposes too. The cost benefit analysis above has shown that 90 tons of table fish and 0.5 million fingerlings are realizable in six months of production with a net profit of about **NGN10.0m**. This implies that about **NGN20.0m** is realizable annually from two production cycles **with a return on investment (ROI) of 100%** which signifies that the project is very much **Feasible, Viable and Profitable**.



# FISH SUPPLY AND DEMAND IN NIGERIA

Fish constitutes about 41% of the total animal protein intake by the average Nigerian hence there is great demand for fish in the country. Nigeria requires about 2.66 million metric tons of fish annually to satisfy the dietary requirement of its citizens (150 Million). Regrettably, the total aggregate domestic fish supply from all sources (capture and culture fisheries) is less than 0.7 million metric tons per annum. Nigeria has to import about 0.7 million metric tons of fish valued at about \$500 million annually to augment the shortfall. This massive importation of frozen fish in the country has ranked Nigeria the largest importer of frozen fish in Africa . The huge sum of money spent by Nigeria annually in fish importation could be used to invest in fish farming. Nigeria can substitute fish importation with domestic production to create jobs, reduce poverty in rural areas where 70% of the population lives and ease the balance of payments.





## FISH SUPPLY AND DEMAND IN NIGERIA CONTD

A review of the various food production systems reveals aquaculture (fish farming) as an important strategy in the global fight against hunger, malnutrition and poverty, particularly in the developing nations including Nigeria. Aquaculture is considered as the provider of the direly needed high quality animal protein and other essential micronutrients because of its affordability to the poorer segments of the community in addition to the provision of employment opportunities and cash income. The Food and Agriculture Organization of the United Nations (FAO) classified aquaculture as the World's fastest growing food production sector for nearly two decades globally; the sector has shown an overall average growth rate of 11.0% per year since 1984, compared with 3.1% for terrestrial farm animal meat production. Nigeria has the capacity to attain the desired fish self-sufficiency within a short of time if the numerous aquaculture potentials (land 1.7 million Ha and water, 14 million ha), which abound the nation is adequately utilized. These potentials are estimated at about 2.5 million metric tons of fish annually.

## FISH SUPPLY – DEMAND PROJECTION IN NIGERIA (2000 – 2015)

Year	Projected Population (Million)	Per Capita Fish consumption (Kg)	Projected Fish Demand (Tons)	Projected Domestic Fish Production (Tons)	Fish Supply Gap Deficit (Tons)
2000	114.4	13.5	1,430,000	467,098	962,902
2001	117.6	13.5	1,470,000	480,164	989,836
2002	121.0	13.5	1,512,500	507,928	1,004,572
2003	124.4	13.5	1,555,000	522,627	1,032,373
2004	128.0	13.5	1,600,000	536,918	1,063,082
2005	131.5	13.5	1,643,750	552,433	1,091,317
2006	135.3	13.5	1,691,250	567,949	1,123,301
2007	139.1	13.5	1,738,750	583,872	1,154,878

## FISH SUPPLY – DEMAND PROJECTION IN NIGERIA (2000 – 2015) – Cont.

Year	Projected Population (Million)	Per Capita Fish consumption (Kg)	Projected Fish Demand (Tons)	Projected Domestic Fish Production (Tons)	Fish Supply Gap Deficit (Tons)
2008	143.0	13.5	1,787,500	600,613	1,186,887
2009	147.1	13.5	1,838,750	617,353	1,221,397
2010	151.2	13.5	1,890,000	634,560	1,255,440
2011	155.5	13.5	1,943,750	652,606	1,292,143
2012	160.0	13.5	2,000,000	671,492	1,328,508
2013	164.4	13.5	2,055,000	689,958	1,365,042
2014	169.1	13.5	2,113,750	709,683	1,404,067
2015	174.0	13.5	2,175,000	730,248	1,444,752



# INTRODUCTION

## **1.0 Terms of Reference**

The main objective of carrying out this study is to establish a viable Commercial Fish Farming Estate at Kuchikau, Karu Local Government Area of Nasarawa State. This project report therefore assesses the project site with the ultimate view to recommend a viable fish farming system and to provide fish farm plans with technical and managerial inputs.

## **1.1 Project Conceptualization**

The Commercial Fish Farming Estate in Kuchikau, Karu Local Government Area of Nasarawa State has been conceptualized out of a zealous anxiety to contribute to animal protein supply in Nasarawa State, Abuja City and Nigeria at large. Moreover, the need to conserve foreign exchange hitherto expended on a massive importation of frozen fish further informed the project concept. The project has been motivated by the following considerations:

- The large population growth in Nasarawa state and the Federal Capital Territory and its neighboring States, the alternative sources of animal protein (beef) relative to fish as well as the upsurge in economic, social and industrial development resulting in improved standard of living and feeding habits are clear evidence of huge demand for fish in the country.



# INTRODUCTION (CONTD)

- The scarcity of foreign exchange and its concomitant effects on fish importation is apt to aggravate the insufficient supply situation and readily lends credence to the proposed project.
- The need for modern commercial fish farming and integrated farming methods.
- The details of current practices employed by Nigerian fish farmers vary considerably. However, fish farming is very important and most fish farming practices is still largely on a subsistence level. The main advantage of the modern commercial fish farming system is its emphasis on large units of production, labor saving, effective management of factors of production and higher output per hectare.
- It is however very important to bear in mind that the principal challenges of modern fish farming in the Nigerian context are related to changing climatic conditions, timely availability of necessary inputs, public policies on agriculture as well as security. It is however imperative that management be constantly be aware of these problems such that the fish farming system and operating methods are tailored to overcome them, if high yields are to be maintained on sustainable basis.



# INTRODUCTION (CONTD)

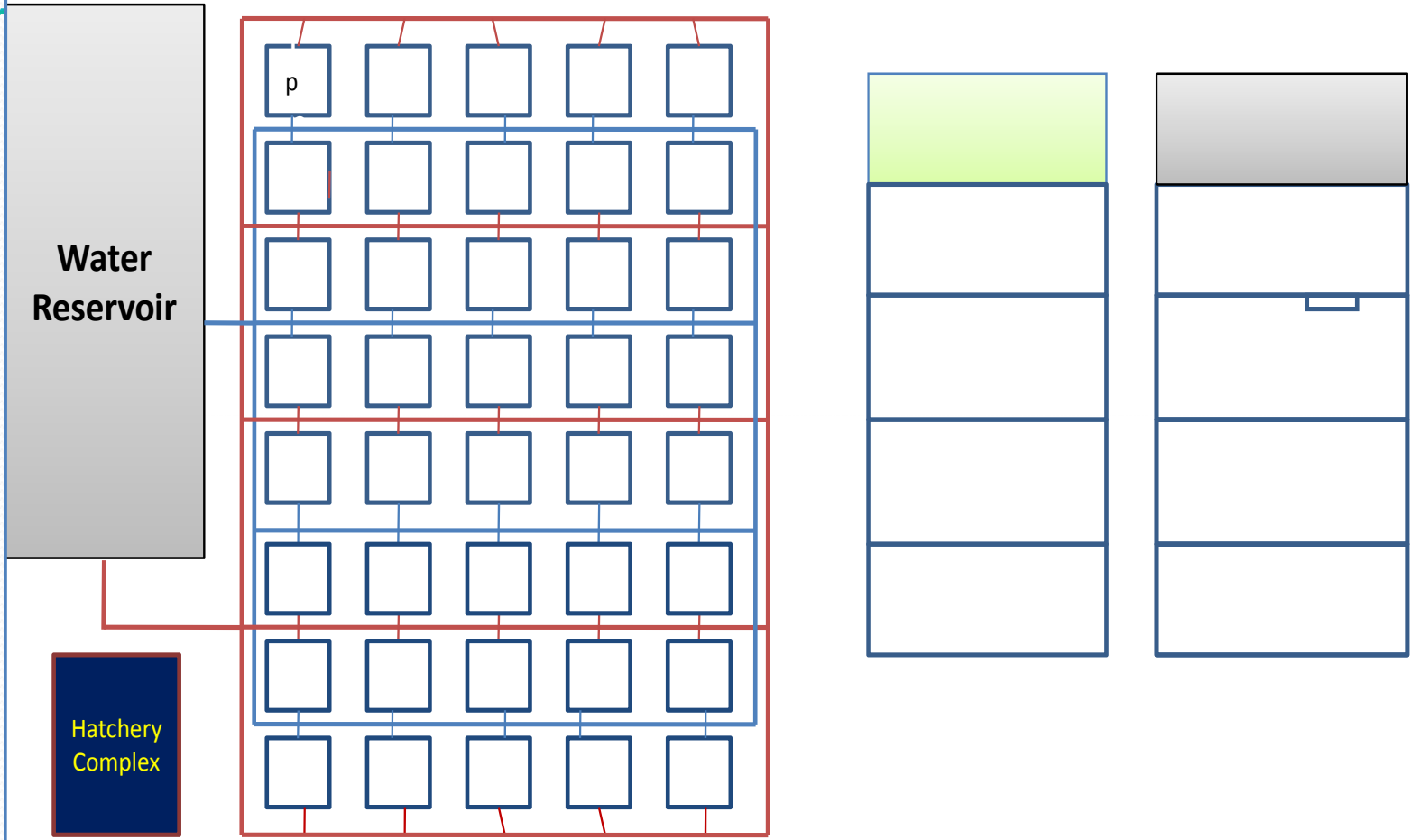
## **1:2 Marketing Strategy**

In arriving at a set of marketing strategies for marketing of farmed fish produced by this project, a number of strategic options were considered. It is however, our strong view that the adoption of a well-articulated marketing strategy is imperative, especially in the areas of distribution, pricing, promotion and public relations. This will definitely create a market niche for itself. Fish is of great demand in Nasarawa State and the Federal Capital Territory Abuja hence markets are readily available within the project locality, neighboring states as well as the entire country at large.

## **1.3 Channels of Fish Supply**

It is our utmost view that the most effective channel for marketing the fish products is to establish a direct link with the owners of cold stores/rooms dealing with fish and fisheries products. Such outlets could be utilized for selling the farmed fish. Another channel option is to establish link with well-established hotels, restaurants, schools, and guesthouses for the evacuation of the harvested farmed fish. The third option is to sell fish directly to the local markets within Nasarawa State and Abuja as well as all the neighboring States (Niger Benue, Kaduna, Plateau, Taraba and Kogi). Our investigations also showed that local food vendors located within and around Kuchikau town and its environs would be too willing to purchase fish on daily basis. This channel should be pursued vigorously. Private individuals should be encouraged to make small purchases from time to time. Farmed fish may also be processed (value addition), stored and sold at convenience while brood stock fish and fingerlings will be sold to farmers at affordable costs.

# INTEGRATED FISH FARM ESTATE LAYOUT



Security Post

Training Hall

Fish Feed Center

Fish Processing Center

Fish Marketing Center

**KEY**  
Water Inlet  
Drainage  
Production Pond



# THE PROJECT

## 2.0 ASSESSMENT OF THE PROJECT SITE

- The following indices were employed by the consultants to fully assess the project sites with the view to determine its suitability for the purpose to which it was proposed:
  - Location of the project site
  - Topography of the entire site
  - Soil (edaphic) factors
  - Hydrology and hydrogeology
  - Vegetation cover
  - Accessibility of the project site
  - Title of land deeds
  - Sponsors of the Project and
  - The Consultants

### 2.1 Project Location

- The proposed Commercial Fish Farming Estate is to be located in Kuchikau, Karu Local Government Area of Nasarawa State. The site is excellent as it is very close to the main Dual carriage Way on Keffi-Abuja Express road signifying that, fish farming inputs can easily be transported at minimal cost. Furthermore, harvested farm products can easily be transported to the markets for sale. Weekly markets are numerous within the locality. The site is also motor able hence vehicles can easily reach the site to evacuate fish farm products. All these factors indicate that very little transportation cost would be incurred in evacuating the farmed products.

### 2.3 Topography

- The topography of the proposed site is generally flat with gentle sloping, which is quite suitable for establishing a commercial fish farm with minimum financial outlay. Generally land of this nature poses little or no constraint to integrated farming systems (FDALR, 1990)



## 2.4 Soil factors

- The textural and structural characteristics of the soil at the site vary from the Northern plank to the Southern axis. Whereas most parts of the Northern plank consist of loamy and sandy loam soil, the Southern axis composed of clayey soil, which is ideal for earthen pond development. However, the remaining part of the site with sandy loam soil could equally be utilized for establishing an indoor hatchery complex as well as concrete fish tanks of assorted sizes. This variation of the soil characteristics is expected in a conventional setting and does not pose any threat to fish farming.

## 2.5 Hydrology and Hydrogeology

- The proposed site is very close to a natural perennial river which can supply the much needed water requirement for the fish farm estate. Diverting the river into an earthen reservoir is very much feasible since the catchments areas are strategic. Industrial Water boreholes will also be constructed which are expected to provide back-up services to the farm especially in the dry season to ensure farm's operations on sustainable basis all year round.

## 2.6 Vegetation Cover

- The proposed project site falls within the Northern Guinea Savannah with light vegetation which has to be cleared to pave way for construction works in the farm. Elements of human activity were noticed in the proposed site as it has long been used for the cultivation of arable crops over the years. The farm has a well established mango plantation which will provide shade for the farmed fish.

## 2.7 Accessibility of the Site

- The proposed Fish Farming Estate is very much accessible as it is very close to the main road signifying that inputs can be transported to the farm easily with little cost while harvested farm product can easily be evacuated also.



## **2.8 Title of Land**

- Pentagon Farm hopes to acquire 5 hectares of land at the said location. Details of this is available under the financial analysis.

## **2.9 The Sponsors of the project**

- The Commercial Fish Farming Estate Project in Kuchikau, Karu Local Government Area of Nasarawa State would be financed partly by Pentagon Farm , Federal Ministry of Agriculture and Rural Development and Fidelity Bank Plc., at 30%, 30% and 40%.respectively.





## The Scope of the Project

- The Proposed Commercial Fish Farming Estate in Kuchikau, Karu Local Government Area of Nassarawa State consists of fifteen (14) Construction and installation of two (2) Standard Industrial Water Boreholes with overhead tanks
- Construction of an Indoor Hatchery Complex
- Construction of five (5) nos. Outdoor Concrete Nursery tanks
- Construction of twenty (20) nos. Concrete Production Tanks
- Construction and installation of a Feed Mill Complex
- Construction of Farmhouse, Staff Quarters and other supporting infrastructure
- Construction of Training hall
- Construction of Fish Processing Center and cold storage facility
- Construction of Fish Marketing Center
- Procurement of fish farming inputs, hatchery equipment and farm implements.
- Procurement of farm utility vehicles
- Procurement an electric generator
- Procurement Farm implements and equipment and
- Procurement and installation of twenty (20) 2.0 circular fibreglass tanks



The Fish Farm Complex will consist of twenty (20) nos. Concrete Production Tanks measuring 10m x 10m x 1.0m each and five (5) nos. Concrete Nursery Tanks as well as Procurement of twenty (20) nos. circular fiberglass/earthen anks. Each of the tanks will be fitted with all the necessary water control structures (inlets and outlets) for directing water into the tanks and drainage respectively. (See the site sketch map in Annex 1). The water inlets would be provided with showerheads to allow for maximum oxygenation of pond water during impoundment. All the ponds would further be screened with fine netting material to prevent entry of predators into the ponds as well as exit of farmed fish into the wild.

A gentle slope would be maintained in all the ponds bottom to ensure 100% drainage of pond water. A feed mill complex capable of milling 5.0 tons of feed per hour will be procured and installed in the farm to produce the much-needed fish feed for farming operations. A milling house measuring about 6 meters long and 4 meters wide with a store will also be constructed to house the feed mill and store raw materials and processed feed respectively. An indoor hatchery complex comprising two circular concrete tanks of 2.0 meters diameter each, 2 rectangular concrete tanks of 2.0 meters by 2.0 meters each, a laboratory, a store and an office will also be constructed to produce the much-needed fingerlings required in the farm and for sale to other fish farmers within the locality. A farm house comprising an office, security post and living rooms will also be constructed in the farm.



A standard fish processing centre and training hall will also be constructed to allow for value added fish products and training of farmers respectively. Two (2) Industrial Boreholes with overhead tanks will also be constructed to provide the much needed water for the fish farm estate project. A fish marketing center will also be constructed for storage and marketing of fishery products while fish farming equipment, stand by electric generator and farm utility vehicle will be procured for use in the integrated fish farm estate.

### **3.1 Organization and Supervision of the fish farm project.**

The construction works of the project must be completed within the stipulated period and in accordance with the estimated budget. Adequate and continuous supervision of the project is quite imperative and must be provided by the client to ensure that works are carried out to specifications. Application of all relative permits required for the project should be filed. Necessary sub-contracts should also be prepared. In order to ensure smooth execution of the work, targets, resource allocation, duration and support facilities, a separate chart showing estimated cost (bill of quantities) and simple activity schedule are prepared for ease of reference (Tables 2 and 3 respectively). However, various alternatives can always be considered when materials and resources are laid out.

## 4:1 SIMPLE ACTIVITY SCHEDULE FOR THE FISH FARM PROJECT

	ACTIVITY	wk1	wk 2	wk 3	wk4	wk5	wk6	wk7	wk8	wk9	wk10
1	Preparation of Feasibility Report										
2	Supply of materials										
3	Mobilization										
4	Construction and Installation of Boreholes										
5	Construction of concrete Production Tanks										
6	Construction of Indoor Hatchery Complex										
7	Construction Outdoor Nursery Concrete Tanks										
8	Construction of water control structures										
9	Installation of Feed Mill and shed construction										
10	Construction of Farm house and Security post										
11	Construction of Staff Quarters										
12	Construction of Fish Processing Center										
13	Construction of Fish Marketing Center										
14	Construction of Training Hall										
15	Construction of Electric Generating Set Housing										



## **4.2 Management and Administration**

The overall responsibility for the management of the Fish Farming Estate is vested on the Farm Manager. He must be a person of proven integrity with progressive and dynamic qualities. He should be able to exhibit traits of managerial capabilities in handling both administrative and financial activities on the farm. Corps of direct and indirect staff should in turn support him. In addition to technical knowledge and skills, the farm staff must possess drive and determination to get the job well done. The management staff must be prepared to put extra time and efforts, which are considered vital to the smooth operation of the farm. The staff must also ensure that production targets are met within specified period. It has therefore become imperative that merit and rationality be given adequate attention in the selection of the Farm Manager and other supporting staff. However, the view of the consultants is that, Fisheries experts (Aquaculturists) should carry out the recruitment exercise for the company.

## **4.3 Farm Building/Infrastructure**

A detailed building site plan is illustrated in Annexure 1. It is also the view of the consultants that a residential accommodation be constructed at the project site for immediate occupation by the project staff especially the Farm manager. This will ensure availability of the Farm manager at all times.



## 4.4 Fish Pond Management


### a. Selection of Fish Species

Although a large number of fish species grow successfully in fishponds only a restricted number are usually recommended for culture in ponds. Therefore, fish species exhibiting some of the following characteristics are usually selected for stocking in ponds:

- Adaptability to the environment
- Faster growth rate
- Efficient converter and utilization of both natural and artificial fish feed.
- Hardy and can tolerate adverse environmental fluctuations
- Resistance to diseases
- Palatable with high nutritive value
- Acceptability to the local community
- Is of high demand in the market and
- Has high market price

In order to find all these qualities in one fish is very difficult, hence fish species having the maximum required qualities are usually selected for pond culture. The following fish species are highly recommended for fishpond culture in the fish farm estate:

- |   |                               |
|---|-------------------------------|
| • <u>Clarias gariepinus</u>                   | Mud catfish (African catfish) |
| • <u>Heterobranchus bidorsalis/longifilis</u> | African bony tongue           |
| • <u>Heterotis niloticus</u>                  | African bony tongue           |
| • <u>Cyprinus carpio</u>                      | Common carp                   |
| • <u>Oreochromis niloticus</u>                | Nile tilapia                  |
| • <u>Heteroclarias</u>                        | Hybrid catfish                |

- 
- Two fish species namely; *Clarias gariepinus* and *Oreochromis niloticus* are recommended for culture in the Commercial Fish Farming Estate. This is because of their unique growth performance within a short period of time. These fingerlings are readily available in various parts of the country viz;
  - National Institute for Freshwater Fisheries Research (NIFFR), New Bussa, Niger State.
  - Durante Fish Farm Limited, Ibadan, oyo state.
  - Fagam Fish Farm, Mariri, Kano State
  - Panyam Fish Farm, Mangu LGA, Plateau State

## **b. Pond Preparation and management**

### **Liming**

- As soon as the pond construction is completed and water control structures put in place, the ponds will then be limed using Agricultural Lime or Quicklime. Lime is usually broadcasted at the pond bottom at the rate of 450 kg. Per hectare and will be allowed to stay for about two weeks. Lime application in ponds is needed to neutralize the acid nature of the soil, promotes the growth of phytoplankton, destroys harmful bacteria, settles suspended soil particles in the water and promotes the formation of mineral elements needed for optimum growth and development of the farmed fish. About 1000 kg of lime will be procured for use in the Integrated Fish Farm Estate, Balare.



## **Fertilization**

- Fertilizer application in ponds accelerates the growth of phytoplankton and zooplankton which are known to be the natural food for farmed fish. Either Organic fertilizer (Cow dung, Poultry waste, Pig waste etc) or Inorganic fertilizer (NPK, Urea, Super phosphate etc) could be used to fertilize ponds. It is usually broadcasted or dissolved in water or tied in jute bags and suspend in water. The rate of application of fertilizer depends on the type of fertilizer. About 1000 kg of Inorganic fertilizer is required in the proposed Fish Farm. Fertilization may not be necessary because concrete and fiberglass tanks will be used for fish production in the farm.


## **Stocking of fish**

- It is best to introduce fish into ponds very early in the morning or late evening especially when the sunshine intensity is very low. This is to avoid unnecessary stress which might cause high mortality of fish few days after stocking. The fish will be stocked at the rate 10-35 fingerlings per square meter for catfish depending on the production system and 10-50 fingerlings per square meter for Tilapia. It is better to lower the fingerlings container gently into the pond water so that the fish swim out by themselves.

## **Feeding**

- As earlier mentioned, fertilizer application in ponds promotes the growth of phytoplankton which constitute a primary source of natural fish food. This has to be supplemented with specially formulated and compounded fish feed to accelerate the growth of fish at their maximum





potentials. To this end therefore, fish will be fed twice daily with artificial feed at the rate of 5% body weight. A feed mill unit comprising a hammer mill, mixer, dryer and pelletizer capable of producing 5 tons of feed per hour will be installed to produce the much needed fish feed required in the farm. The feed mill will also be used to produce extra fish feed for sale to other fish farmers within the locality.

### **Water quality management**

- Regular and frequent analysis of the pond water has to be carried out. Water quality parameters such as dissolved oxygen (DO), acidity (PH), carbon dioxide (CO<sub>2</sub>), iron (Fe), carbonates (Co<sub>3</sub>), nitrates (No<sub>3</sub>), nitrite (No<sub>2</sub>), ammonia (NH<sub>3</sub>), sulphide (So<sub>2</sub>), Chloride (Cl<sub>2</sub>), temperature, alkalinity, total hardness, turbidity and conductivity have to be monitored properly to ensure that they are kept at optimum levels. To this end, a water test kit will be procured for measuring these water quality parameters regularly to ensure the growth and survival of farmed fish. Excessive feeding and fertilization must be avoided as they may pollute the water, which might kill the fish.

### **Sampling**

- For effective management, sampling of farmed fish to determine their growth performance in response to their feeding has to be carried out on regular basis e.g. monthly. When fish is sampled, the quantity of feed required by the fish will change and will correspond to the increase in weight gained for a period of sampling. Regular sampling ensures an up-to-date knowledge of the growth rate of farmed fish. Scoop net, clap net, cast net or drag net could be used to sample fish in ponds.

## Harvesting

- Harvesting is carried out when the farmed fish have grown to the desired size (table size). To harvest the fish, the pond water is reduced to a very low level so that fishermen/farm attendants could move through with a drag net to collect all the fish. Alternatively, the pond water should be removed/drained completely so that all the fish could be collected.



## Annex 1 List of Fish Farming Equipment

Item	Number	Item	Number
Plastic Bowls (30 litres)	10 pcs	Water testing Kit	1 no
Plastic Buckets (50 litres.)	10 pcs	Secchi Disc	1 no
Weighing Balance (100kg)	1 no	Oxygen meter	1 no
Wheel Barrows (Standard)	3 no	pH meter	1 no
Scoop net	1 no	Thermometer (100 0C)	1 no
Cast net/clap net	1 no	Dissecting Kit	2 pcs
Drag Net and accessories	2 pcs	Mortar and pestle (ceramic)	10 pcs
Mosquito netting material	15 bundles	Hypodermic Syringes	2 pkts
Hand towel	20 pcs	Microscope (Binocular)	1 no
Hand glove	10 pcs	Microscope Slides	100 pcs
Air Pump / Air Blow	10	Feed Mill Unit (Hammer mill, Mixer, Dryer and Pelletizer)	1 pcs

## Annex 2. Estimated total Project Cost

SN	ITEM	UNIT COST	QUANTITY	AMOUNT (NGN)*
A	Land Acquisition	Lump	(5.0 Ha)	10.0m
	<b>Sub-Total</b>			<b>NGN 10.0m</b>
B	<b>CONSTRUCTION WORKS</b>			
	Construction of Earthen/Fibre glass production ponds	Lump	20 nos.	6.0m
	Construction of Concrete production tanks	Lump	20 nos.	8.0m
	Construction of Cottage Indoor Hatchery Complex	Lump	1 unit	4.0m
	Construction of Boreholes	Lump	2 units	4.0m
	Construction of Concrete rearing tanks	Lump	10 nos.	2.8m
	Construction of water control structures	Lump	Assorted	0.4m
	Construction of Farm House (office, store and net loft)	Lump	1 unit	4.0m
	Construction of Staff Quarters	Lump	2 units	6.0m
	Construction of Training Hall	Lump	1 unit	4.0m
	Construction of Fish Marketing Center	Lump	1 unit	2.8m
	Construction of Feed Mill Complex with feed store	Lump	1 unit	4.0m
	Construction of Fish Processing Center	Lump	1 unit	2.5m
	<b>Sub Total</b>			<b>NGN 48.5m</b>

**NGN=Nigerian Naira - 1 USD = 158.4 NGN**

## Annex 2. Estimated total Project Cost (Cont.)

SN	ITEM	UNIT COST (NGN)	QUANTITY	AMOUNT (NGN)
C	<b>PROCUREMENT</b>			
	50KVA Generator	0.5m	1	1.0m
	Feed Mill Unit (Hammer mill, Mixer, Pelletizer and Dryer)	Lump	1 (5 tons/Hr)	5.0m
	Utility vehicle	4.0m	1 no.	7.0m
	Overhead tanks	0.1m	10	1.0m
	Fish farming equipment	2.0m	Misc	2.0m
	<b>Sub total</b>			<b>NGN 16.0m</b>
D	<b>INPUT SUPPLY</b>			
	Fish brood stock (200)			0.4m
	Fingerlings (200,000)			4.0m
	Fish Feed (assorted)			14.0m
	Fish Feed Ingredients			2.5m
	Fertilizer and lime			0.2m
	Fry feed, hormones,			0.2m
	Drugs and Medication			0.2m
	<b>Sub total</b>			<b>NGN 21.5m</b>

## Annex 2. Estimated total Project Cost (Cont.)

SN	ITEM	Amount (NGN)
E	<b>STAFF SALARIES AND ALLOWANCES</b>	
	Farm Manager (1 no.) @N50,000/Months X 6 Months	0.3m
	Marketing Manager (1 no.) @N30,000/Months X 6 Months	0.18m
	Farm Accountant (1 no.) @N30,000/Months X 6 Months	0.18m
	Fishery Overseer (2 nos.) @N10,000/Months X 6 Months	0.12m
	Farm watchman (4 no.) @N10,000/Months X 6 Months	0.24m
	Farm Driver/Mechanics (1 no.) @N10,000/Months X 6 Months	0.06m
	Farm Attendants (10 no.) @ N10,000 / Month X 6 Months	0.60m
	<b>Sub-Total</b>	<b>NGN 1.68m</b>
F	<b>MISCELLANEOUS EXPENCES</b>	
	Oil, Fuel and Lubricants	0.12m
	Advertisements	0.2m
	Sundry expenses	0.5m
	Insurance	1.0m
	Legal fees	0.5m
	<b>Sub-Total</b>	<b>NGN 2.32m</b>

## Annex 2. Estimated total Project Cost (Cont.)

<b>SN</b>	<b>ITEM</b>	<b>UNIT COST NGN</b>
A	Land Acquisition and	10.0m
B	Construction works	48.5m
C	Procurement	16.0m
D	Input Supply	21.5m
E	Staff Salary and Allowances	1.68m
F	Miscellaneous expenses	2.32m
	<b>GRAND TOTAL</b>	<b>NGN 100.0m</b>

### Annex 3. Economic Viability of The Fish Farm Project

SN	ITEM	Amount (NGN)
	<b>Total costs</b>	
A	Land Acquisition and	10.0m
B	Construction works	48.5m
C	Procurement	16.0m
D	Input Supply	21.5m
E	Staff Salary and Allowances	1.68m
F	Miscellaneous expenses	2.32m
	<b>Grand Total</b>	<b>N100.0m</b>

SN	ITEM		Quantity	Amount (NGN)
	<b>Total outcome</b>			
i	Sale of Table Fish (assuming 10% mortality)	N500/kg	180,000kg	90.0m
ii	Sale of fingerlings and juveniles	N20/pc	1.0 million	20.0m
	<b>Grand Total</b>			<b>N 110.0m</b>

**Profit = 110 – 100 = NGN 10.0m**

Note: total fixed cost has been taken out of first year revenue – If only depreciation is considered, the profit will be much higher





# Conclusion

## **Assumptions in estimating the project outcome:**

- Each fish weighs 1.0kg averagely
- Production cycle of six months
- 10 percent fish mortality
- Price of One kg of Fish is NGN 500/kg
- Price of Fingerling/Juvenile is NGN 20/piece

## **Profitability Analysis**

The cost benefit analysis above has shown that 90 tons of table fish and 0.5 million fingerlings are realizable in six months of production with a net profit of about N10.0m bearing in mind that total fixed and operation costs have been deducted from the revenue of first production cycle. More profit will be realizable in subsequent production cycles especially two production cycles could be achieved in Nigeria. The very high return on investment (ROI) of this project signifies that the project is very much Feasible, Viable and Profitable.

