

**A FEASIBILITY REPORT / BUSINESS PLAN
FOR THE DEVELOPMENT OF A FISH FARM AT JAJALISCO FOOD FARM,
OPOBO/NKORO LOCAL GOVERNMENT AREA, RIVERS STATE, NIGERIA
BY
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TABLE OF CONTENTS

1.	Introduction/ Executive summary-----	Page 1
	a. Purpose	
	b. Project description	
2.	Project background and concept-----	Page
	a. Fish market	
	b. Project location	

3.	Project technical feasibility-----	Page
	a. Project execution plan	
	b. Risks and challenges	
4.	Economic /Financial plan-----	Page
	a. Operational costs	
	b. Salary/Wages	
	c. Variable costs	
	d. Amortization of costs	
5.	Estimated revenue-----	Page
6.	Conclusion -----	Page
7.	References -----	Page

1. INTRODUCTION / EXECUTIVE SUMMARY

Nigeria is one of Africa’s most populous nations, and with population increase comes the need for food sufficiency. As studies have shown, a tangible number of people in Nigerian like many of the developing countries suffer from protein deficiency in their diet. This problem is intensified by the continual increase in the population of the country. It is therefore necessary to search for means of increasing the availability of the sources of protein that can be accessible to the people. A home-based or private fish farming venture is one source of consideration since an increase in fish production through Aquaculture could be an important source of animal protein. The successful implementation of an aquaculture project depends upon several parameters, such as proper site selection, soil and water quality, project management and other issues. The present report has been prepared with these parameters in consideration.

a. Purpose

The purpose of the study is to assess the viability of the establishment of a fish farm at Opobo/ Nkoro Local Government Area, Rivers State, Nigeria by providing data for the following:

- The entire concept of the project
- The most viable dimension of the project including construction and structures

- The production technology
- The cost and revenue estimates for a year period
- Expansion/development and implication schedule
- Cash flow and financial plan of the project

b. Project description

i. The goal of the fish farm project is to produce fish, specifically catfish for sale. The project would be located at Oko Jaja compound in Opobo town and would produce fish and fingerlings.

ii. The labor required would be mostly unskilled, which are readily available in the project area. Manual construction would be adopted for the construction of the fishponds because of the economic advantages. There is abundant unskilled manpower in the project environment. The market viability in the area and surrounding regions to the project has not been exploited. The project market is therefore unlimited, and all fish produced would have a ready market. This is because the demand for fish almost always exceeds the supply.

iii. A fishpond will require an electric power which would be supplied by a 5 KVA generator. The electricity would be used in pumping water from a drilled borehole to continually service the operations.

iv. The project is deemed financially viable and at the envisaged duration of 4 years in the first phase of operation. A short-term loan of ₦18,500,000 (Eighteen million five hundred thousand Naira), will be sourced from the regional cooperative bank and other private lenders. It is expected that from the second year, the project would generate enough cash to sustain production. The loan would be fully defrayed in the third year of the project, considering that all things will proceed as planned.

v. The project is socio-economically viable. It would create massive employment and has no discernible hazardous impact on the environment.

vi. There would be no difficulty in the introduction of the technology to be adopted for the project. The manager of the project will be adequately trained personnel with skills in fish farming.

vii. It is anticipated that the project will take care of its bills payment from the first year and still be able to cover the cost of yearly production since the profit margin will be reasonable.

2. ENVIRONMENTAL AND INDUSTRY ANALYSIS

Opobo is a town in the Nkoro local government area of Rivers state. It has a population of about 311,500 people. Opobo is a major town in Rivers State and it has a prominent waterfront which attracts travellers from the neighbouring regions. It is bordered by several

towns which include Utaiwa, Kono, Iloma, Minimah, Okukpo, Akwa-ibom. However, due to various activities which are carried out in the river, its quality has declined over the years and this has resulted in a decline in fishing activities. The river is a source of water supply to several car wash services which carry out their business by the river, releasing detergents and other potentially hazardous substances into the river. The physicochemical characteristics of the river are not conducive for breeding of aquatic organisms. As a result, fish production in the river has dropped and fishing in the river has declined as catch per unit effort is reduced. In order to meet up with demand in the community, fish traders purchase fish from other towns and markets as there is no fish farm in the area.

a. Fish market

The fish farm proposed is expected to supply fish to Opobo Town and its neighbouring communities at affordable prices. The town is close to two of the largest cities in Utaiwa and Kono. The demand for fish in both towns is huge and some of the fish from the farms can be transported to these places for sale to increase the market for the product.

b. Project location

Prior to the determination of site suitability, a careful consideration has been given to the easy accessibility of enough water, easy accessibility to the site, proper climatic conditions, easy availability of production inputs, socio-economic aspects, marketing channels etc. The project would be located on a 100 x 300m piece of land at Oko- Jaja compound. The water table at this location would be higher and make it easier to drill a borehole. Presently, there is no fish farm in the area and the main decision to locate the proposed fish farm at Utaiwa was because the market for the product is large and can be profitable. The cost of the land is considerably low because it is presently not used for any major economic venture.

3. PROJECT TECHNICAL FEASIBILITY

The project would be in two separate compartments: Fish production unit and a hatching unit. The fish production section would be concerned with the production of table size fish for consumption. The layout of production would start with 2 production ponds measuring 25m² each. In the 1st year of operation, the ponds would be constructed and stocked. The two ponds would have a stocking density of 8,000 catfish fingerlings each, per culture period. The 2 initial production ponds would therefore have a total fish density of 6,000 catfish fingerlings when fully stocked. It is expected that total yield would be increased per unit of production. In the second year, 2 additional production ponds measuring 25m² each would be constructed.

The bio-technical feasibility of the selected species is given as follows:

The catfish belongs to the family Clariidae. This family is divided into two genera: Clarias and Heterobranchus. Clarias have 8 major species while the latter has 3 species in the southern zone of Nigeria. The former has a single rayed dorsal fin extending almost to the tail; the latter has a rayed dorsal and adipose fin. The Clarias family would be used for the project because they feed on a wide variety of food ranging from weeds and planktons to

insect larvae, snails, crustaceans, worms. The hatchery section starts in the second year of production. At this time, all the fingerlings required for the production ponds would be supplied from the hatchery. In the hatchery, catfish would be artificially induced to spawn by hormonal treatment using pituitary hormone within the hatching units. Catfish matures after 7-10 months at a weight of 200- 500 g. However, spawning would not take place since the final stimulation associated with the rise in water levels and the inundation of marginal areas would not occur. In the hatchery, four female brood fish each weighing 500g can produce 10% body weight of eggs. The rate of hatchability is estimated at 50% and the survival rate of fry to fingerling at 30%. This means that the hatchery can produce 20,000 fingerlings from the 4 brood fishes, enough to meet the fingerling requirements of the production ponds after the initial cropping.

a. Project execution plan

When the project is fully implemented, a total of 1 brooder pond and 2 nursery transition ponds would be constructed. The brooder ponds measure 4×4 m (16 m²) and the nursery/transition ponds measure 3×4 m (12m²). 4 production ponds would also be constructed and stocked for the production ponds, measuring 5×5 m (25 m²).

b. Risks /Challenges and Solutions

- Power -Opobo Town is in a rural area and the supply of power to the area is not too great. For the project to be successful, it would rely largely on power supply from the generator which could increase the operational cost. We intend to purchase a second generating system of the same capacity in order to use them interchangeably and prolong its life.
- Water - During the dry season, the water table in the area reduces greatly. This would put a lot of stress on the pumping machine and could result in frequent breakdowns which would increase the operational cost of the project. Within the first year, in anticipation of the dry season, arrangements will be made to have a budget for a new pump as well as source for a technician who will be readily available on call.
- Security -There are security challenges in the area which may result in great loss if not properly managed. However, this can be managed by using locals who are conversant with the environment as security personnel. Arrangements will also be made to install security devices around the plant or a gated enclosure.

4. ECONOMIC /FINANCIAL PLAN

Table 1: Cost of land and fish farm infrastructure development

Activity	Amount (₦)
A. Cost of land and land development	

Land acquisition	2,750,000
Survey of land	50,000
Pond construction	1,250,000
Total	4,050,000
<u>B. Fish farm infrastructure development</u>	
Cost of farmhouse / office	2,800,000
Fencing of the farm	1,800,000
Fish shade building	600,000
Generation of power (5 KVA)	300,000
Water pump	80,000
Bore hole	900,000
2 800Litre tanks	500,000
Total	6,980,000
<u>C. Fish production and hatchery materials</u>	
Equipment (Nets, water analysis kit etc)	1,000,750
Total	1,000,750
<u>D. Salaries and wages of staff</u>	
Project supervisor	400,000
2 Farm assistants	480,000

Security	240,000
Total	1,120,000
<u>E. Variable inputs</u>	
12,000 Fingerlings	430,000
Feed	550,000
Organic fertilizer	30,000
Other chemicals	30,000
Transportation	650,000
Total	1,690,000
<u>F. Other operational costs</u>	
Fuel	700,000
Maintenance on pond	100,000
Maintenance on equipment	200,000
Stationery	50,000
Total	1,050,000
Grand total	15,890,750

The land required for the project was acquired from the community for a cost of ₦2,750,000 and the perimeter and topographic survey have been carried out. The design of the farm has also been completed. The constructions of the ponds were estimated at ₦1,250,000. The construction would be undertaken manually, because it would be more expensive to transport earth moving equipment from the state capital to site. The method of construction would also provide opportunity for greater participation by the unskilled unemployed labour force in the project area. With close supervision of the construction work, it is expected that the time schedule for the implementation of the project would be easily met. A farmhouse would be required in the site to secure the project. It would provide areas where farm equipment would be assembled and maintained. A small office and a store would be constructed as part of the building to enable adequate control of the staff activities on the project site. In view of the

high cost of building materials and transportation of such materials to site, it is estimated that it would cost ₦1,690,000. All other equipment such as generators, tanks and other equipment would be procured from established companies. The total cost of all infrastructure for the fish farm would cost ₦5,690,000.

a. Operational costs

The operational costs for the fish farm include the cost of the day-to-day management of the hatching, the wages and salaries of staff and procurement of other operational inputs. The purchases for all the materials making up the hatchery equipment will be made from Utaiwa and transported to the project site.

b. Salaries and wages

The estimated total annual expenditure on wages and salaries is estimated at ₦1,120,000.

c. Variable costs

The total variable costs of the project amount to ₦1,690,000 for procurement of fish fingerlings, feed ingredients, inorganic fertilizer, inorganic fertilizer and other chemicals.

d. Payback of cost

All the capital expenditure would be made in the 1st year of implementation of the project. Already, land acquisition, land surveying and fish designing have been completed. It shows that in the 1st year of the project, a total expenditure of (₦18,730,000) would be made to take care of the operating costs of the project. A total of ₦970,000 would be needed for the operational expenditure of the project. After that, the project would be capable of generating enough funds to take care of all the operational expenditures.

5. ESTIMATED REVENUE

For the purpose of this feasibility report, the revenue expected is restricted to the operation of the production ponds. It is however necessary to mention that the hatchery ponds would produce the fingerlings required for the production ponds after the 1st year of operation. The production ponds when fully stocked would have a total fish density of 12,000 fingerlings, making provision for mortality at 50% mature fishes. The fish harvested would be 6,000 kg. It is expected that catfish would sell for ₦900 per kg. Sales and total estimated revenue for the 1st year of production would therefore, be ₦400,000. With a modest estimated annual increase in the prices of fish of 10%, the estimated revenue accruing from the project for the first 4 years would be as shown in Table 1

Table 1: Estimated revenue accruing for the first 5 years.

Year	Income (₦)
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1	5,400,000
2	5,940,000
3	6,534,000
4	7,187,400

The Farm /project supervisor would be trained in fisheries and have acquired skills to provide technical and specialized leadership needed for the management of the fishponds. He would be personally responsible for the day to day running of the fish farm. The positions of the farm assistants would be occupied by men/women who have acquired some form of formal or informal experience in fish farm management. It is also expected that they would be trained practically on the job.

Table 2: Condensed income/expenditure of fish farm project (Principal: ₦13,000,000 + interest 30 % = ₦3,900,000).

Activity	Year 1	Year 2	Year 3	Year 4
Sales (₦)	5,400,000	5,940,000	6,534,000	7,187,400
Costs of sales (₦)	9,760,000	*	*	*
Gross profit (₦)	(4,360,000)	5,940,000	6,534,000	7,187,400
Operating cost (₦)	2,970,000	2,780,000	2,400,000	2,560,000
N.P.B.T. (₦)	2,403,000	3,160,000	4,134,000	4,627,400
Tax 45% (₦)	*	1,422,000	1,860,300	2,082,330
Proposed loan repayment (₦)	780,000	880,000	1,000,000	1,150,000

CONCLUSION

The fish farm, when in full operation would have tremendous economic and socio-economic well-being for the people in Opobo Town and the entire Opobo/Nkoro local government area.

Fish has become a very scarce commodity because of the ecological factors due to changes in climate. The scarcity has also made fish very expensive and unaffordable to much of the population in the area. This has resulted in serious deficiency in the intake of protein by the people in the area. The prices of fish produced in the farm would be less expensive relative to the present supply. This can aid the increased intake of protein by majority of the people as it would be affordable and accessible. The project would provide direct employment for people in this operation. This is a significant contribution to the economic well-being of the people and social improvement of the project environment. The fish farm would be a highly profitable project which would generate enough cash to sustain production from the second year. With the proper anticipated management, the profits from the project would be able to repay the loan and interest within the first 4 years.

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