FISHERY COUNTRY PROFILE	Food and Agriculture Organization of the United Nations	FID/CP/NIR
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THE FEDERAL REPUBLIC OF NIGERIA

1. GENERAL GEOGRAPHICAL AND ECONOMIC DATA

Area:	923 768 km^2
Water area:	140 000 km^2
Shelf area:	42 000 km^2
Length of continental coastline:	853 km
Population (2006):	144.7 million
GDP at current market prices (2006):	US$ 114.7 billion
GNI per head (2006):	US$ 640
Agricultural GDP (2006):	23.1% of GDP

2. FISHERIES DATA

Data for 2003	Production	Imports	Exports	Total supply	Per capita supply
	tonnes live-weight				kg/year
Fish for direct human consumption	505 839	718 621	3 587	1 221 003	9.9
Fish for animal feed and other purposes	N/Av.	N/Av.	N/Av.		

Estimated Employment (2004):	
(i) Primary sector (including aquaculture):	1.25 million
(ii) Secondary sector:	5.10 million
Gross value of fisheries output (2004):	US$ 870 million
Trade (2005):	
Value of fisheries imports:	US$ 432 503 000
Value of fisheries exports:	US$ 568 270 000

3. FISHERY SECTOR STRUCTURE

3.1 Overall fishery sector

The Nigerian Fishery Sector is characterized by a rich resource base, comprising:

- Offshore waters between the 30 mile territorial limit and the 200 mile Exclusive Economic Zone (EEZ).
- 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.
- The huge River Niger delta.
- Inland waters associated with the major rivers, Niger, Benue, etc., their tributaries and flood plains.
- Natural lakes and wetlands.
- Reservoirs, impounded for various purposes including irrigation, water supply and hydro-electricity power generation.
- Purpose-built ponds, mining paddocks and animal watering lots.

These resources together provide a basis for the long-established industrial and artisanal capture fisheries, and the more recent aquaculture industry that is fast growing in content and output. In general, Nigerian fisheries can be divided into:

- marine capture (industrial and artisanal);
- inland capture (mainly artisanal); and
- aquaculture (commercial and subsistence)

The output of Nigeria's fisheries by sector is presented in Table 1, which also includes the landings of Distant-Water Vessels (imports) that constitute the bulk of total supplies.

Table 1. Nigerian fish supply by sector (tonne), 2000–2004

SECTOR	2000	2001	2002	2003	2004
Coastal and brackish waters	236 801	239 311	253 063	241 823	227 523
Inland waterbodies	181 268	194 226	197 902	204 380	207 307
ARTISANAL subtotal	418 069	433 537	450 965	446 203	434 830
AQUACULTURE (Fish farming)	25 720	24 398	30 664	30 677	43 950
Inshore fishing	13 877	15 792	16 064	17 542	16 063
Inshore shrimp	8 056	12 380	12 797	11 416	12 469
Industrial (commercial trawler) subtotal	23 308	28 378	30 091	33 882	30 421
EEZ	1 375	206	1 230	4 924	1 889
Distant water	557 884	648 197	681 152	663 179	648 033
Grand total	1 024 982	1 134 510	1 192 872	1 173 942	1 157 234

3.2 Marine subsector

The marine subsector is the most active in Nigerian fisheries and it poses the greatest challenges to sustaining fish supplies. Both the industrial and artisanal fleets exploiting the marine resources have significant effects on the Nigerian economy, the former in the value of its fishery output and the latter in terms of food security and socio-economic factors. Their activities are intricately linked, as they target a number of common stocks which on occasion results in conflicts of interest.

It is convenient to categorize the marine subsector into the offshore; inshore industrial; and coastal and brackish-water artisanal fisheries.

3.2.1 Offshore fisheries

It is regrettable that, over the years, the biological resources of Nigeria's offshore waters between the continental shelf area and the 200-mile EEZ limit have not been effectively utilized. The potential yield of tuna and mesopelagics in this area has become merely a historical statistic. According to the Nigerian Institute for Oceanography and Marine Research (NIOMR), yield of tuna and tuna-like fishes in Nigerian waters is of the order of 10 000 to 15 000 t/yr. The highly migratory tuna move from one subregion to another in the Eastern Central Atlantic region.

The United Nations Charter on the Law of the Sea (UNCLOS II) gives sovereign states the exclusive right over the resources in their EEZs, thereby conferring on Nigeria the exclusive right to exploit the tuna resources in her EEZ. However, the resources have remained unexploited because local entrepreneurs have shied away from investing in that domain because of the high financial outlay required and local lack of the required technology. Consequently, tuna and tuna-like fishes are ambushed and caught in the waters of neighbouring countries that have the requisite technology and investments. The implication is a colossal loss to Nigeria in view of the fact that the stocks attain prime size within Nigeria's EEZ due to the long coastline and vast area, and hence long residence time within the area. Furthermore, Nigeria cannot attract foreign entrepreneurs to invest in this area as she is not yet a member of the International Commission for the Conservation of Atlantic Tunas (ICCAT).

The situation in the last ten years is that 1 to 3 locally-based vessels have been licensed to fish in the EEZ (Table 2). Their specifications are generally higher than the inshore vessels, i.e. > 25 m LOA and >150 GRT. Their landings indicate that they are not specialized to fish for tuna. They land more of the deep water demersals, the potential of which is estimated at some 6 500 t/yr.

3.2.2 Inshore industrial fisheries

Main resources and catch profile

The industrial trawl fishery targets the resources of the inshore waters between 5 n.mi. off the coast to the edge of the continental shelf. The fish trawlers, using bottom and mid-water trawls, land mainly inshore demersals and certain pelagics. The main species are Croakers (*Pseudotolithus* spp.); Soles (*Cynoglossus* spp.); Groupers (*Epinephelus* spp.); Snappers (*Lutjanus* spp.); Bigeyes (*Brachydeuterus* spp.); Threadfins (*Polydactilus* spp.); Barracudas (*Sphyraena* spp.); Jacks (*Caranx* spp.); Horse mackerels (*Trachurus* spp.); and Cutlass fishes (*Trichiurus* spp.).

Aggregate landings of these major species and the others are presented in Table 1, as under item Industrial Commercial Trawlers, amounting to 16 063 t in 2004. The shrimp trawlers operate bottom trawls in the eastern segment of the inshore waters, in the delta region. They target the Penaeid shrimps around the delta and they catch various demersal finfish as by-catch. Total landings of shrimp was 12 469 t in 2004 (Table 1). The percentage of the target species in their landings is less than 30%.

Landing Sites

Landing and victualing facilities for the industrial fleet are available in the coastal cities of Lagos, Warri, Calabar and Port Harcourt. In order to encourage upgrading of coastal canoe fishing technology, the government in the 1980s provided additional facilities specifically for small trawlers in some estuarine bases, namely Ebughu, Igbokoda and Borokiri, in Akwa-Ibom, Ondo and Rivers states, respectively. In spite of the wide distribution of these facilities, actual landing of the industrial fleet is concentrated in Lagos. Industry estimates that 98 percent of landings are in Lagos, and most of the balance in Port-Harcourt, Rivers state. This matches the location of the operators, who actually land at their private business premises. The proposal by government to have a dedicated fishing terminal in Lagos has been on the drawing board for several years without coming to fruition.

Fishing production means

The industrial fleet consists of medium-sized trawlers between 22 and 25 m LOA and <150 GRT. The number of registered trawlers is high, over 200 annually in the last 5 years (Table 2), although in reality only about two-thirds are active at any time. The others are grounded due to maintenance problems and high cost of operation. Each vessel is licensed to trawl for either fish or shrimp, but not both, because of allowable gear specification.

Table 2. Inshore fishing craft in operation 1993–2002

Year	Inshore trawlers		EEZ deep-water vessels
	Fishing	Shrimp-ing	
1993	83	223	10
1994	74	230	16
1995	72	235	8
1996	57	196	1
1997	49	197	3
1998	36	187	1
1999	23	210	1
2000	34	173	1
2001	33	221	3
2002	30	212	1
2003	48	204	1
2004	37	182	2
2005	35	203	1

Management applied to main fisheries

The natural fisheries resources of Nigeria are threatened in various ways, as discussed below. As total output is less than 50% of food requirements, the ever declining trend, especially in the capture sector, is very disturbing. The Federal government has exclusive responsibility for managing the marine resources, and a shared responsibility with the States for the inland resources. The institutions involved include:

- The Federal Department of Fisheries (FDF), through:
  - Fisheries Resources Monitoring Control and Surveillance (MCS) Unit.
  - Fish Quality Control and Assurance Service.
  - Fish Quarantine Service.
  - Lake and Lagoon Fisheries Management Unit.
- The Nigerian Navy.
- The National Food and Drugs Administration and Control (NAFDAC).
- The Nigerian Ports Authority.
- The Inland Water Ways Department.
- Departments of Fisheries at State level.

The strategies adopted include a combination of management measures, mainly technical and input controls, and, to some extent, output controls and economic incentives. These management measures are backed up by enactment of laws at Federal level and edicts at State level. The subsisting laws are:

- Exclusive Economic Zone Decree No. 28 of 1978.
- Sea Fisheries Decree No. 71 of 1992.
- Sea Fisheries (Licensing) Regulations of 1992.

- Sea Fisheries (Fishing) Regulations of 1992.
- Inland Fisheries Decree No. 108 of 1992.
- Sea Fisheries (Fish Inspection and Quality Assurance) Regulations of 1995.
- Inland Fisheries (Fish Quality Assurance) Regulations of 1995.
- Turtle Excluder Device Regulations of 1996.

These measures are applied as appropriate to the various resources, regarding the state of the particular resource and the objective of management.

Inshore resources

Nigerian inshore fishery resources are clearly overexploited, the single major indicator being the decreasing individual size of fish landed. The objective of management therefore is to promote recovery of major stocks so as to achieve improved quantity, quality and value of landings.

Technical Measures include that the law stipulates that fishing trawl cod-end mesh should not be less than 76 mm and shrimp trawls not less than 44 mm. It is enforced by FDF staff members assigned to observe landings at fishing company premises and to make spot checks. From time to time, trawl nets with undersized cod-end meshes are confiscated. This measure, although appropriate for the target species of the shrimp trawlers, is inappropriate for their by-catch. The unintended results are dumping or illegal transfers between the trawlers and canoe operators at sea. This effect is significant in that up to 80% of the inshore fleet are shrimpers.

The regulations requiring that trawlers are geared with Turtle Excluder Device is very appropriate for conservation of turtles, which are facing extinction worldwide. Compliance level is high in Nigeria as a result of training and awareness campaigns carried out by FDF in the past three years. It was part of the requirements for certification of shrimp exports to the USA.

Input controls address overcapitalization, which is the bane of the industrial fishery sector. There is provision to control the size and number of vessels on the fishery to fishing trawlers at >25 m LOA and >150 GRT, and shrimp trawlers at >23 m LOA and >150 GRT.

Every operating vessel must be licensed either to fish or to shrimp. However, there is no deliberate attempt to limit the total number of vessels by the licensing authority. In fact, a government revenue drive seems to have overtaken the objective of resource management. The situation is worsened by incidences of poaching. Even at the current poor level of surveillance, there are arrests and prosecution of foreign vessels poaching in Nigerian waters, targeting the high-value shrimps of the delta region. Table 3 shows the revenue profile arising from licensing of industrial fishing vessels. FDF is the only one in the Federal Ministry of Agriculture that returns revenue of this magnitude annually, i.e. over Naira 50 million.

Table 3. Revenue profile from fishing vessels licensing (2003–2005)

Vessel Operational Category	2003		2004		2005	
	No of licences	Total revenue (N '000s)	No of licences	Total revenue (N '000s)	No of licences	Total revenue (N '000s)
I. National Waters						
(i) Inshore Shrimping	204	24 480	182	21 840	203	24 360
(ii) Inshore Fishing	48	5 760	37	4 440	35	4 200
(iii) EEZ	8	800	10	650	1	69
II. International Waters						

(i) Category A	15	6 300	43	5 160	48	5 760
(ii) Category B	3	360	—	—	—	—
(iii) Category C	379	15 160	531	21 240	454	22 120
TOTAL	657	52 860	803	53 330	741	56 509
NOTES: Vessel categories are: Category A = Nigerian Flag Registered Vessels (fishing in foreign waters and landing in Nigerian ports); Category B = Foreign Flag Registered Vessels (chartered by Nigerians, fishing in foreign waters and landing in Nigerian ports); and Category C = Direct Importation.						

3.2.3 Coastal artisanal fisheries

Main resources and catch profile

The main resource is the waters within 5 n.mi. of the coastline, which is reserved by law for coastal canoe operators. The multi-species fishery includes:

- Pelagics, largely *Ethmalosa* (bonga) and *Sardinella* species, which are available in the marine environment all the year round, but owing to the limitations of the traditional canoe, fishing is interrupted during the rainy season, June–September, when the weather is stormy and the sea turbulent;
- Demersals, dominated by Croakers, Soles, Threadfins, Catfishes and Sharks; and
- Shellfish, dominated by the Penaeid shrimps, crabs and certain bivalves.

There is a virile brackish-water canoe fishery in the creeks and lagoons. The main species caught are Catfishes (*Arius* and *Chrysicthys* spp.); Tilapia; Mullets; and Shellfish, such as shrimps (*Macrobrachium* spp.), crabs (*Callinectes* spp.), periwinkles, oysters and large quantities of the white shrimps, *Nematopalaemon hastatus,* commonly called "crayfish". Substantial quantities of Penaeid shrimps are also intercepted in the estuaries while maturing. Women fishers are prominent in the brackish-water fishery.

Landing sites

Sites are scattered along the entire coastline. Beach landing is predominant on the water fronts of the communities. Only in few cases of large communities are there piers and jetties for landing. Such sites have adjacent fish markets and distribution points and are usually accessible by road or waterway from inland cities. The coastal states are Lagos, Ogun, Ondo, Delta, Bayelsa, Rivers, Akwa-Ibom and Cross River.

Fishing production means

The craft employed are planked and dugout canoes, 3 to 13 m long, powered by outboard engines ranging from 15 to 25 hp. Some *bonga* outfits could be as big as 25 m in length with 45 hp outboard engines. The gear taken to sea are mainly set gillnets and cast nets, while in the estuaries hooks and traps are also used.

Management applied to main fisheries

In artisanal coastal resources, the most serious challenge is the encroachment of trawlers on the 5-mile limit reserved by law for the artisanal coastal fishery. FDF deals on a regular basis with cases of conflicts, towards resolution and payment of compensation to aggrieved artisanal fishermen, in line with the relevant regulations. In many cases, the fishing licences of trawlers have been withdrawn for irresponsible fishing. The economic crunch inadvertently resulted in reducing the pressure on coastal artisanal resources. Operators can ill-afford the current investment cost of craft and gear. This would have enhanced resources build-up, except for the menace of trawlers.

For brackish-water resources, the state of the resources is deplorable. Fishing pressure is very high, arising from the lack of alternative employment for estuarine communities. Oil pollution further complicates the scenario, with the devastation of aquatic life in the area. Fishery management is incorporated in a broader environmental management plan for the area, and the Petroleum Industry is taking the lead.

3.2.4 Inland fisheries

Main resources and catch profile

The 14 million hectares of inland waters in Nigeria comprises a nation-wide network of rivers, flood plains, lakes, reservoirs and ponds. The Rivers Niger and Benue, including their tributaries, are major sources of fish. During the rains, their banks and those of so many other rivers are flooded. Their total drainage area has been estimated at over 275 000 km^2 (Federal Ministry of Water Resources, 1992). Nutrients are thereby brought into the rivers and these serve to encourage the growth of microscopic aquatic plants, the primary producers. There are also numerous natural and man-made lakes and reservoirs, such as Lakes Chad, Shiroro, Oguta, Goronyo, Bakolori, Tiga, Asejire, etc., that are major sources of fish. Studies carried out on Kainji Lake, IITA reservoir, Asejire and Tiga dams suggest that yields of between 35 and 500 kg/ha/yr are possible, depending on intensity of management and the fertility of the waters. Fishing is intense on these resources, as communities settle at strategic locations along the banks. Inland fisheries contribute substantially to local fish supplies, some 207 307 t in 2004 (Table 1).

The species commonly caught are Nile perch (*Lates* spp.); tilapias (*Oreochromis* and *Hemichromis* spp.); Catfishes (*Clarias, Heterobranchus* and *Synodontis* spp.): Silver catfishes (*Chrysichthys* and *Bagrus* spp.); elephant snouts (*Gnathonemus* and *Momyrus* spp.); trunk fish (*Gymanarchus* spp.); tongue fish (*Heterotis* spp.); and moon fish (*Citharinus*) spp.

A first attempt at a comprehensive, nationwide inventory of inland water resources has been made by the Aquaculture and Inland Fisheries Project (AIFP) of the National Special Programme for Food Security (NSPFS). Results revealed 2 658 fish farms, 937 lakes and dams, and 215 feed mills (Table 4.). Fish farms are concentrated in the southern states, as are feed mills, while lake sites are much more in the north, as depicted in Figure 1.

Table 4. Summary of Inventories on Aquatic Resources, Fish Farms and Feed Producers in Nigeria

(AIFP Project) July 2004

No.	Geo Political Zones (States)	No. of Dams and Reservoirs	No. of Fish Farms	No. of Feed Producers
	South East Zone			
1.	**Abia**	4	40	2
2.	**Anambra**	5	18	3
3.	**Ebony**	17	12	7
4.	**Enugu**	22	4	4
5.	**Imo**	9	40	16
	Sub Total	***57***	***114***	***32***
	South South Zone			
1.	**Akwa Ibom**	16	98	4
2.	**Bayelsa**	52	86	-
3.	**Cross River**	17	199	-
4.	**Delta**	30	420	6
5.	**Edo**	6	136	-
	Rivers			

6.		22	89	8
	Sub Total	***143***	***1,028***	***18***
	South West Zone			
1.	**Ogun**	24	173	35
2.	**Ekiti**	6	31	2
3.	**Lagos**	-	153	16
4.	**Ondo**	8	15	3
5.	**Osun**	7	300	26
6.	**Oyo**	29	234	9
	Sub Total	***74***	***906***	***91***
	North Central Zone			
1.	**Abuja**	15	29	1
2.	**Benue**	45	198	5
3.	**Kogi**	35	32	-
4.	**Kwara**	21	121	18
5.	**Plateau**	85	18	9
6.	**Nassarawa**	16	16	2
7.	**Niger**	***35***	***29***	***1***
	Sub Total	***252***	***443***	***36***
	North East Zone			
1.	**Adamawa**	16	4	-
2.	**Bauchi**	33	16	-
3.	**Borno**	18	12	-
4.	**Gombe**	44	9	1
5.	**Taraba**	83	8	1
6.	**Yobe**	20	13	1
	Sub Total	***214***	***62***	***3***
	North West Zone			
1.	**Jigawa**	15	4	1
2.	**Kaduna**	20	10	9
3.	**Kano**	17	10	1
4.	**Katsina**	40	7	16
5.	**Kebbi**	30	56	-
6.	**Sokoto**	15	9	1
7.	**Zamfara**	40	9	7
	Sub Total	***177***	***105***	***35***
	GRAND TOTAL	**912**	**2,658**	**215**

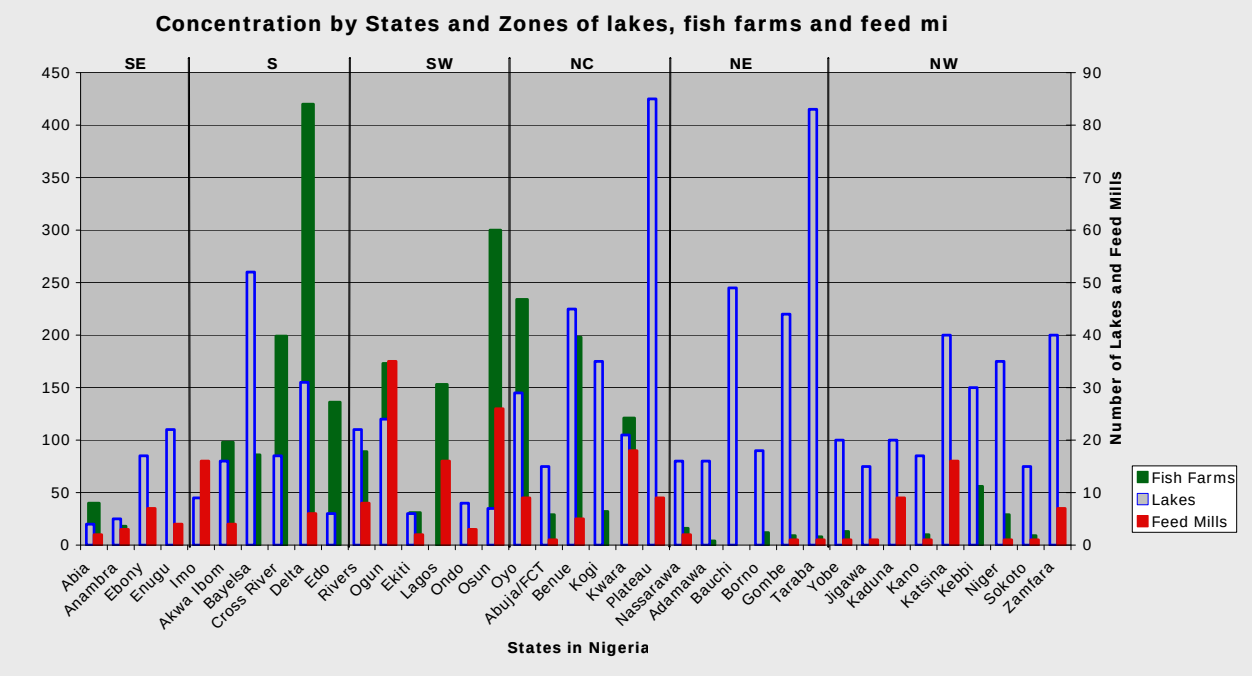

Figure 1. Distribution of fish farms, lakes and feed mills in Nigeria.

Ornamental fish fishery

There is an emerging fishery in ornamentals. The Nigerian Institute for Freshwater Fisheries Research (NIFFR) carried out a nationwide survey on the fishery in 2001. The survey was structured on the major river basins, and between 10 and 20 species were identified for each basin. The survey results contain an inventory of the species, level of production, areas of collection, marketing and potentials for the fishery. The inventoried fish include exotic and indigenous (fresh and brackish-water) species.

The indigenous species are sourced from the wild, through artisanal fishermen. They are in high demand in international markets, the major ones being Germany, Japan, Singapore and USA. Collection is throughout the year, but it peaks in the dry season, December to January.

Another study by the Nigerian Institute for Oceanography and Marine Research (NIOMR) confirms the export of about 40 species to foreign markets. The major indigenous species are: *Gnathonemus petersii; Heterotis niloticus; Calamoichthys calabaricus; Chana obscura; Polypterus* spp.*; Protopterus annectens; Schilbe mystus; Gobiocichia wonderi; Barbus occidentalis; Hemichromis bimaculatus;* and *Pantodon bucholzi.*

Exotic species are imported, bred locally and marketed widely within the country. The major exotic species are: Goldfish (*Carassius auratus*); Angel fish (*Pterophylum* spp.); Guppies (*Poecilia* spp.); Gourami (*Trichogaster* and *Bellontiid* spp.); Koi carp (*Cyprinus* spp.); and Red tilapia (*Gitong biyayo*).

Landing sites

Inland waters landing sites are as widely dispersed as there are communities along river banks and lake shores. These sites are naturally more accessible than the coastal landing sites, but the respective fisheries administrations do not have the resources to monitor their landings on a sustained basis. In a few cases, where special projects have outposts at the sites, it is possible to obtain more realistic figures, both on the very low and very high ends of the production scale. Examples are given below.

- Doro Baga (Lake Chad Shore) in Kukawa LGA of Borno State. The AIFP, from its studies on processed fish emanating from the site, derives a total of 95 520 t of fresh fish (73 920 t in the peak season of July–November and 21 600 t in the lean season). FDF

data have a total of 57 000 t for Borno State.

- Argungu is a flood plain fisheries site in Kebbi State, and it accounts for up to one-tenth of the 37 000 t total annual production of the state.
- The major landing sites in Kogi State are riverine, and are also major fish markets. Lokoja alone could account for up to 1 000 t/yr.
- Lakeshore landing sites such as Asejire in Oyo State and Ohana in Cross River State have as low as 100 t/yr and 30 t/yr, respectively.

Fishing production means

Fishing in the inland waters of Nigeria is basically artisanal. It is dominated by shore-based communities, but some professionals among them migrate extensively to exploit resources in other areas, where they can exert their superiority. The resources are fished all the year round. Gear employed includes gillnets, cast nets, longlines, lift nets, beach seines, drift nets and assorted traps. The craft used include dugout canoes, planked canoes and, on the reservoirs, gourds (as a floating device) are common. Outboard engines are rarely used for fishing. Engines ranging from 5 to 25 hp could be found on planked boats for transportation of humans, goods and for marketing of fish products.

In April 2004, a survey of the fishery of one of the reservoirs in Kebbi state was carried out. The 17.5-ha Yamama lake had a total of 107 fishermen, employing various craft and gear: canoes (34), gourds (46), gillnets (432), cast nets (102), longlines (266) and traps (4072). This is a typical configuration of craft and gear used in the inland waters. A typical fisherman's investment in craft and gear, in this fishery, would be N 7 000 to 15 000 for a 10 to 15 m boat, and another N 5 000 in nets.

Management applied to main fisheries

The main issues for management of inland water resources in Nigeria are excessive fishing pressure; pollution, siltation and weed infestation; irresponsible fishing; and loss of biodiversity.

As mentioned earlier, there are laws and regulations governing the practices of fishing in the rivers, covering mesh size regulation, prohibition of poisoning, and, in deference to the Inland Waterways Authority, control over erection of barriers and diversions. The laws are ineffective due to lack of resources to administer control measures. Some improvements are however coming by way of interventions at fishing community level. The DFID/FAO Project on Sustainable Fishery Livelihoods (SFLP) has done a lot in recent years in the area of adoption and application of the Code of Conduct for Responsible Fishing in its four project sites.

In the area of Reservoirs and Lake Fisheries Management, the AIFP of the NSPFS has a specific mandate, which it has pursued vigorously with striking results. The Project's approach is to select a sample of 6 waterbodies from its inventoried list, well distributed geographically. Each provides unique characteristics that could form a basis for grouping of a larger number within the country. Studies have been carried out on the selected lakes and their respective communities covering geophysical, biological and socio-economic parameters. These studies have established the state of the resources and the level of effort applied; the subsisting practices and prevailing constraints; extent of livelihood dependencies; and the potential yield of the resources if the parameters were changed. In all cases, the most crucial element of change required is better management. The project intervened in each case with appropriately designed management training and institution building. Community-based lake fisheries management techniques have been established in each case to be applied in future to other waterbodies having similar characteristics in their respective groups.

In these cases, as in many others, fishermen were knowledgeable about their resources and the fishes. The open-access nature and lack of ownership had resulted in excessive pressure. The project worked through the strong social structure of the communities to achieve community ownership and control. The implications of open-access fishery, especially as it relates to migrant fishermen, have been recognized. The major outputs of the training include:

- self-evaluation as to prevailing “bad” methods of fishing;
- input control, as the communities drew up their own regulations in line with existing laws, and assigned penalties to breaches;
- communal responsibilities for dealing with physical constraints such as weed infestation, dumping of pollutants and unhygienic use of water; and
- appointment of Fisheries Management Units (FMUs) and assignment of specific responsibilities.

Another major achievement of the intervention is in the area of enhancements, which in the last two years had resulted in rising catch per unit effort (CPUE). The Project took advantage of hatchery facilities of its aquaculture components to address the problem of biodiversity losses. The limnological studies, species composition, catch data and fishermen’s experiences were combined to determine stocking requirements in terms of species and vacant niches.

For ages, the practices of closed seasons and closed areas have been in use in many parts of the country, albeit to serve various ends, which include:

- reducing fishing pressure to allow stocks build up for eventual harvests;
- saving stocks for periodic fishing festivals;
- protection of breeding grounds;
- provision of sanctuaries for biodiversity conservation; and
- socio-cultural and religious purposes, which completely deny availability of stocks for use.

Current training interventions have led some communities to arrive at such technical management measures out of their understanding of the issues. The AIFP activities have substantially built on the achievements of the previous GTZ-assisted project on the management of the resources of Kainji Lake. The continuous replication of these methodologies in many more waterbodies within the country will improve yields and have a positive impact on livelihoods.

4. RECREATIONAL SUBSECTOR

Annual fishing festivals in large bodies of water are the usual recreational fishing activities. These are traditional and cultural events, which have been improved upon over the years. The Argungu Fishing Festival in Kebbi state has become a tourist attraction of international dimension. There is the Aketa festival in Katsina-ala, Benue state, and a similar event is being revived in Taraba state. Suitable resources of this nature abound in the northern part of the country. They can support annual festivals, since fishing is prohibited in the intervals. However their regularity depends on the priorities of the local authorities.

There is potential to develop recreational fishing and nature tourism in smaller lakes in other parts of the country. AIFP studies have opened up such potentials, for example on Ohana and NIPSS lakes in Cross River and Plateau states, respectively. Such bodies of water are small (<5 ha), located close to major cities, have very little occurrence of aquatic weeds, very low turbidity, regular shape and well-developed shoreline.

5. AQUACULTURE SUBSECTOR

Development in this sector got off to a promising start in the 1950s, when government carried out research at designated centres and attempted to extend aquaculture technology through demonstration fish farms. Such government-led strategies dominated the scene for up to 40 years, with a number of achievements.

- Increase in the number of fish farms built by both Federal and State Government Agencies and private entrepreneurs.
- Establishment of four Fish Seed Production Centres by the Federal Department of Fisheries at Oyo, Panyam, Umuna Okigwe and Kaduna, in collaboration with FAO.
- Establishment of more Fish Seed Centres by the Federal and State governments, in other parts of the country.

- Establishment of the African Regional Aquaculture Centre (ARAC) at Aluu, Port Harcourt, by the Federal Government with the assistance of FAO. The centre provided research support and training for aquaculture development in Africa south of the Sahara.
- Establishment of commercial fish farms by the nation's River Basin Development Authorities, which catalysed increased participation of the private sector in viable and functional commercial fish farms.
- Upgrading of a government fish farm facility in Oluponna, Oyo State, with a grant from the Government of Italy, to specifically demonstrate integrated poultry-fish farming techniques.

These attempts, although opening up awareness of the potentials for aquaculture development, did not translate too much output. Federal, state and local government investments in over 50 fish farm facilities, together with the private farms that came along, were responsible for only about 20 000 to 25 000 t/yr of fish supplies in the 1990s, i.e. 5–6% of domestic production.

The constraints included inadequate and poor quality seed and feed, and poor management, and they persisted over the years. As the supply vs. demand gap continues to widen and the output of the capture sector approaches its limits, aquaculture is beginning to gain prominence. A different strategy is being adopted, which is changing the profile to a focus on the private sector. Government at all levels is divesting its traditional holdings. A good example is in Lagos State, where an erstwhile abandoned facility has been transformed into a highly productive food fish and feed production centre and a training centre. Government is also setting up structures to encourage and support private sector producers. Through the AIFP, technical assistance in all aspects of hatchery and grow-out technology is rendered on a sustained basis to private fish farmers. The current state of the industry is healthy, with output almost doubling since 2000, even by official data, which is usually an underestimate (Table 1).

From the AIFP inventory, a total of 2 642 fish farms and 215 feed producers were identified. Less than 100 of the fish farms are state-owned. The private sector is clearly driving the industry, with investments in fish production, hatchery and feed production facilities. Current production systems include:

- subsistence and homestead ponds with outputs of 0.2–1.5 t/ha/yr.
- integrated farms with rice, poultry and pigs, with enhanced yields, depending on the extent of integration.
- commercial farms with outputs of 1.5–3.5 t/ha/yr; and
- intensive re-circulation systems with outputs of 0.2–1.0 t/m^2/yr.

The species commonly grown are: Catfish (*Clarias* and *Heterobranchus* spp.); Tilapia (*Oreochromis* spp.); Carp (*Cyprinus* spp.); and Mullets (*Mugil* spp.). Potential species for culture include: Trunkfish (*Gymnarchus* spp.); Catfish (*Chrysichthys* spp.); Nile perch (*Lates* spp.): Tonguefish (*Heterotis* spp.): and Tarpon (*Megalops* spp.)

Many of the larger-scale fish farms are vertically integrating, to the advantage of the entire industry. Some are working on higher-grade species in response to the demands of more sophisticated markets, e.g. All-male (tagged 'Super') tilapia, freshwater shrimps and *Gymnarchus* spp. As for *Clarias* spp. (catfish) which is "the farmed fish" in Nigeria, many fish farms are producing fingerlings much in excess of their needs and selling to other farmers. Many of such hatcheries produce 60 000 to 200 000 fingerlings per year. The high-tech farms, 4 or 5 in number, turn out of their hatcheries some 3 to 4 million fingerlings per year. Annual fingerling production has therefore increased from about 3 million in 2001 to about 30 million in 2004. Quality fish fingerlings are now more widely available, to meet the fish farmer demand.

Fish feed supply remains problematic. Although over 200 feed millers were identified, most produced animal feed mainly for the poultry industry (3.5 million t/yr). Some produce fish meal as a sideline, but it is largely unsatisfactory in quality and texture for fish farming. Commercial fish farmers have therefore taken fish feed formulation and production on-farm. Total output is only about 25 000 to 30 000 t/yr, going into medium-

to small-scale farms. Another 6 000 t of high quality fish feed is imported by the high-tech producers to achieve as high as a 1:1 conversion ratio in their intensive culture systems.

The growth trend in Nigerian aquaculture is very apparent. The blue-print for Fisheries Development in Nigeria, produced in 2005 by the Presidential Committee on Fisheries and Aquaculture, set some production targets for following five years:

- Fish fingerlings – 2 billion;
- Fish feed – 1.5 million tonne; and
- Table fish – 1.0 million tonne.

6. POST-HARVEST USE

6.1 Fish utilization

Fish in its different forms contributes substantially to the diet of Nigerians. It is more acceptable than other forms of animal protein as there are no social, cultural or religious taboos associated with its consumption. It represented 28 percent of the animal protein content of the average Nigerian diet in 2004.

The pattern of fish utilization in the country has not changed in many years. Conditioned by the huge supply-demand gap, most of the 1 200 000 t annual supply is destined for human consumption locally. The exceptions are export products, such as 95–98 percent of the shrimp landed by industrial shrimp trawlers; less than 1 000 t of other shellfish caught in industrial trawls (cuttlefish, marine crabs, lobsters, etc.); less than 100 t/ of ornamental fish; small quantities of farmed catfish (fresh) and smoked catfish; and leakages through trans-border trade in smoked fish (could be substantial but is unreported).

The fish for local consumption is available in different forms. The freshly frozen landings of inshore trawlers find a ready market in the Lagos metropolis and neighbouring states. The same applies to the landings of the coastal artisanal fishery (demersals), which fishmongers take over and refrigerate for eventual distribution. In effect, freshly frozen fish is available in major cities of the coastal states all the year round. In addition, the inventory study reveals a concentration of fish farms (77%) in the southern part of the country and of reservoirs and impoundments in the north (Figure 1). Therefore, freshwater fish is available in major cities all over the country, only at a higher price, N 350–400/kg compared with N 200–250/kg for marine species. Farmed catfish is available at N 400–500/kg at the farm gate, and it can reach N 700/kg in major northern cities.

The cheapest and most-widely distributed species for local consumption are the deep-frozen landings of distant water vessels (imports), which consist of lower-grade mackerel, sardinella and herring, at N 150–200/kg. Higher grade frozen fish (croakers, breams, etc.) sell for N 250–300/kg. The large quantity of these imports, 650 000 to 700 000 t/yr, provides the much-needed bridge towards satisfying local demand.

In Nigeria, there is a notable consumer preference for the smoked product of specific species; clupeids (marine and freshwater); farmed species, especially *Clarias*, *Heterobranchus* and Carp; and riverine species, such as *Heterotis, Chrisychthys* and *Gymanarchus*. In fact, in the southern part of the country, smoked *Gymanarchus* and *Chrisychthys* are listed in the components of bride-price.

The landings at Lake Chad are in a special category. The handling of over 50 000 t/yr (conservative estimate) of fish, mainly *Clarias* has continued to pose great challenges. The traditional facilities in use are brick ovens providing hot and fast smoking. The product (*banda*) is very dry, charred and brittle. It is of low quality, but of appreciably long shelflife. It is just suitable for extensive distribution all over the country, to meet the demand of the low-income strata.

There is no confirmed data of the quantity of fish going into other uses such as animal feed. The animal feed industry in Nigeria is well established and it supports the local

production of poultry, pigs, rabbits and fish. According to a study on Animal and Aquafeed Industry in sub-Saharan Africa in 2000, less than 40 000 t of the 3.8 million tonne produced in Nigeria is fish feed. The study also revealed that the fishmeal component of the rations is sourced mainly from Denmark, Norway and Iceland (85%) and from local sources (15%).

Attention has been shifting towards fish feed production, in response to the growing local aquaculture industry, which in 2005 was importing up to 6 000 t/yr of feed. There are local resources to support fish meal production. In the coastal states, heaps of miscellaneous fish and discards of the crayfish processing industry are taken up by feed millers for the protein content of their rations. Clupeids out of Kainji lake are sun-dried, pulverised and packaged as fish meal for distribution nationwide. In the Lake Chad fisheries, stunted Tilapia, broken dried Clarias and insect-infested fish are pulverised together and bagged as fish meal. All these are not quantified and are unreported.

Output of the fish feed industry today is estimated at 45 000 t/yr, worth about N 5.4 billion.

6.2 Fish markets

Fresh and processed fish is widely marketed within the country, and the markets follow the distribution lines described above. It is usual to find fish markets for smoked products, much less for fresh, along inter-city highways, Onitsha, Lokoja, Jebba, Makurdi, Aba for stockfish, etc. In such locations, there are back-up facilities to maintain the quality of unsold product day in, day out. In the cities, municipal authorities endeavour to designate specific markets for fish so as to have sufficient room for its special requirements in terms of handling and processing. In Abuja, for instance, it has greatly improved product quality and resulted in enhanced earnings for the marketers. Products are sold direct to consumers through a bargaining and haggling process.

Elite consumers are provided for in the chain stores and supermarkets. The choice species, Croakers, Shinenose, Baraccuda, Shrimps and Lobsters, are presented on ice in refrigerated display cabinets, with enhanced aesthetic value. Products are offered at fixed prices per kilogramme to direct consumers.

Canned fish (Tuna and Sardines) are widely available in local markets and shops. They are mainly imports, not captured in the landings of distant water vessels, as they are classified with other general goods by the Customs Service.

Quite a bit of the fresh products are supplied directly to hotels and restaurants. Vendors contracted for the business usually patronise fish farmers and reservoir fishermen. In many cases, such vendors are financiers of artisanal fishermen who are under obligation to deliver an agreed proportion of their catch in fulfilment of repayment terms. The arrangement keeps the fishermen in business, as otherwise they are not credit worthy. In addition, fish farmers are facing an emerging demand from the fast food industry. This special segment of the market may force fish farmers to diversify their range of species, individual portion size of product, and value addition.

Fish product exports are marketed mainly in Europe and the USA. The Nigerian fisheries administration has had to set up institutions to ensure that exporters meet the international market standards with regards to product quality and best practices in harvesting and processing.

7. FISHERY SECTOR PERFORMANCE

7.1 Economic role of fisheries in the national economy

Fisheries are an important subsector in the Nigerian economy. According to Central Bank of Nigeria's published figures, it has maintained a steady contribution to total GDP in the last 5 years, at 1.2%, 1.6%, 1.7% 1.5% and 1.55% (2000–2004). This translates to about 5% of agricultural GDP, which itself contributed between 30 and 35 percent in the same period.

The contribution of fisheries is significant, in the context of other social, economic and cultural effects, as discussed elsewhere.

Official figures put fisheries GDP (current basic prices) at N 106.47 billion in 2003 and N 128.29 billion in 2004. Component estimates from industry watchers are shown in Table 5.

Table 5. Impact of fisheries on Nigeria's economy in 2005 (N billions)

Component	Capital Investment	Output
Industrial Fishing	55.00	12.30
Artisanal Fishing	16.50	86.90
Ornamental Fish	0.03	0.03
Aquaculture	7.00	16.50
Total	78.53	115.73

7.2 Fish demand and supply.

Nigeria's fish supply situation has been described earlier (Table 1), totalling 1 160 000 t in 2004. The major sources are imports (56%); coastal, brackish-water and inland fishery (37.6%); industrial trawl fishery (2.6%); and aquaculture (3.8%). Nigeria's demand for food fish in 2005 was projected at 1 million tonne. However, effective demand in 2005 was 1.2 million t. Factors that would affect further demand projections include: current per capita consumption of 8.9 kg; population of 130 million with a growth rate of 2.8%; fish prices ranging widely from N 100 to 500 for the various products; prices of alternative protein foods—beef and chicken—with similar acceptance level; and population distribution *vis-à-vis* major fishery resources. One other option is to apply average world per capita consumption of 13 kg/yr to population and its growth rate.

7.3 Trade

According to the World Fish Centre, traded fish and fishery products, valued at US$ 58 billion, account for a modest 2 percent of international trade, but is expected to increase markedly in the next 5 to 10 years. Tables 6 and 7 present the situation of Nigeria's contribution to international trade in fish and fishery products, and confirm the expected increasing trend.

Nigeria exports shrimps; crabs; oysters; periwinkles; shark fins and oils; and live ornamental fish of indigenous species. The shrimps that form the bulk of the exports are graded, packaged and certified in Nigeria, in conformity with EU guidelines. The destinations are Europe and the USA. About 7 000 t, valued at about US$ 53 million, were exported in 2004. Nigerian shrimps are of high value as the consumer price of the higher grades is in the order of US$ 15–18/kg.

The emerging live-fish export trade should also be noted. The value of their export is put at about US$ 300 000. Currently they source the products from the wild through local artisanal fishermen. The industry is, however, looking forward to expansion in the area of culturing the indigenous species.

Nigerians are high fish consumers with a total current consumption of about 1.2 million t/yr, out of which about 650 000 t is imported. This makes Nigeria the highest importer of fish and fishery products in Africa. The composition of the imports is largely mackerels, sardinella, hakes, herrings and croakers caught off the coasts of the Eastern Central Atlantic countries of Senegal and Mauritania and from the North Sea. The exporting countries are Spain, the Netherlands, Russia, Denmark, the Irish Republic and, to some extent, USA. Value of imports is over US$ 400 million. Frozen fish is characterized by the best distribution network within the country. The marketers have access to a chain of strategically located cold stores, whence retailers collect in cartons

for supply to consumers at daily markets. To further extend the distribution, some of it is smoked or fried at retail outlets.

Table 6. Shrimp and prawn exports from Nigeria and value, 1995–2004

Year	Quantity (tonne)	Value (US$)
1995	4 265 276	13 393 769
1996	3 845 500	14 345 623
1997	2 946 146	8 386 458
1998	8 028 157	31 163 784
1999	7 418 739	46 485 491
2000	6 303 250	39 495 886
2001	6 694 207	48 820 467
2002	7 372 540	54 053 123
2003	6 900 000	48 215 029
2004	7 316 160	52 706 373

Table 7. Fish imports to Nigeria and value, 1995–2004

Year	Quantity (tonne)	Value (US$)
1995	266 448	140 308 752
1996	403 273	290 351 310
1997	382 442	158 632 744
1998	373 043	190 098 052
1999	466 840	209 958 638
2000	557 884	241 006 537
2001	648 196	368 188 841
2002	681 151	375 027 917
2003	663 179	403 485 885
2004	648 033	425 080 231

7.4 Food security

Fish is an important component of the Nigerian diet. It meets the elements of food security as regards timely availability, adequate quality, possibly insufficient quantity but most certainly healthy living. A number of factors are responsible for this level of importance. They include:

- its relatively low price compared to other animal proteins, except pork;
- its nutritional superiority over other meats;
- its relative storability when processed into dry and smoked products;
- its ability to enhance mental health (IQ) in developing children; and
- its ability to mitigate various arteriosclerosis conditions in adult populations.

Fish and fishery products traditionally fit into culturally diverse culinary preparations ranging from pepper soups, vegetable dishes, cereal to root-crop-based preparations. In several of the diverse cultures of Nigeria, a meal is hardly complete without some form of fish or fish product as the main animal protein component or as a condiment. Its contribution to animal protein in the average Nigerian diet has been rising steadily and is

currently at 28 percent.

7.5 Employment

Fishing is a natural and inherited vocation of coastal and riverine communities, and they largely depend on it for their livelihoods. Fishing could be lucrative for the coastal fishermen, because the resources are abundant in season (e.g. bonga); huge landings per trip generate employment in handling and processing; their gear is reasonably selective, thus engendering sustainable exploitation; and though the resources are on open access, high investment profile and low level expertise naturally curtail entry. However, the intrusion of trawlers, environmental degradation and pollution adversely affect their earnings, but they seem to remain in the fishery because there are very few alternative livelihoods available.

The riverine communities benefit from species diversity and high value of their landings. The highly professional ones are migratory and they employ their expertise and supervisor gear to take advantage of those who only harvest marginally from their abundant resources base. FDF data (Table 8) indicate a total artisanal fishermen population of 1.2 million in 2004, of which 705 000 were fulltime. It could be expected that in total, about 5.0 million are engaged directly and indirectly in the artisanal fishery, considering fish processors, marketers, net fabricators and menders, canoe builders and engine fitters.

Table 8. Number of artisanal fishers in Nigeria, by category (1995–2004)

Year	Category			Total
	Full-time	Part-time	Occasional	
1995	285 000	115 000	8 500	408 500
1996	301 177	126 832	9 693	437 702
1997	272 380	198 900	9 984	481 264
1998	650 864	475 280	23 857	1 150 001
1999	647 478	472 807	23 732	1 144 017
2000	666 320	486 566	24 422	1 177 308
2001	654 887	478 217	24 003	1 157 107
2002	656 228	479 196	24 052	1 159 476
2003	655 155	478 413	24 013	1 157 581
2004	705 168	502 426	21 003	1 228 597

Employment in the aquaculture sector can be estimated on the basis of the 2004 Inventory of fish farms and feed millers. In view of the fact that the aquaculture production systems described earlier are labour intensive, except the WRS, which are only a handful, a figure of 30 000 is likely for the primary sector, with another 60 000 in the secondary sector.

The 30 companies operating in the industrial sector employ about 1 500 shore-based and 4 000 sea-going staff. An estimated 50 000 could be involved in the secondary sector.

8. RURAL DEVELOPMENT

Agriculture accounts for up to 35 percent of GDP and is the single largest contributor to the well-being of the rural poor, sustaining 90 and 70 percent of the rural and total labour forces, respectively, with 90 percent of the output coming from smallholders. Fishing is very much an integral part of this scenario. Over the years, output of small-scale producers has been consistently high, accounting for 94 percent of domestic fish

production in 2004 (Figure 2).

Artisanal fishermen are among the most socially disadvantaged groups in the country, as a result of the remoteness of their habitations, which is conditioned by the location of the resources. However, there is a high demand for their product and this translates to potentials for sustaining their livelihoods. In coastal and riverine communities, fishing is an inherited (natural) vocation. Recent socio-economic studies by the AIFP on some inland fishing communities revealed that between 50 and 70 percent of respondents had a positive attitude to fishing, as a profession. Those who did not, gave only poor economic returns as the deciding factor. It is to be noted that inland fishing communities have more options for alternative vocations (farming, livestock rearing, trading) and yet were so highly disposed to fishing. Coastal communities are almost wholly dependent on fishing and the able-bodied are actually proud to be fishermen. To the extent that appropriate strategies could be formulated to raise their level of income, they would remain in fisheries.

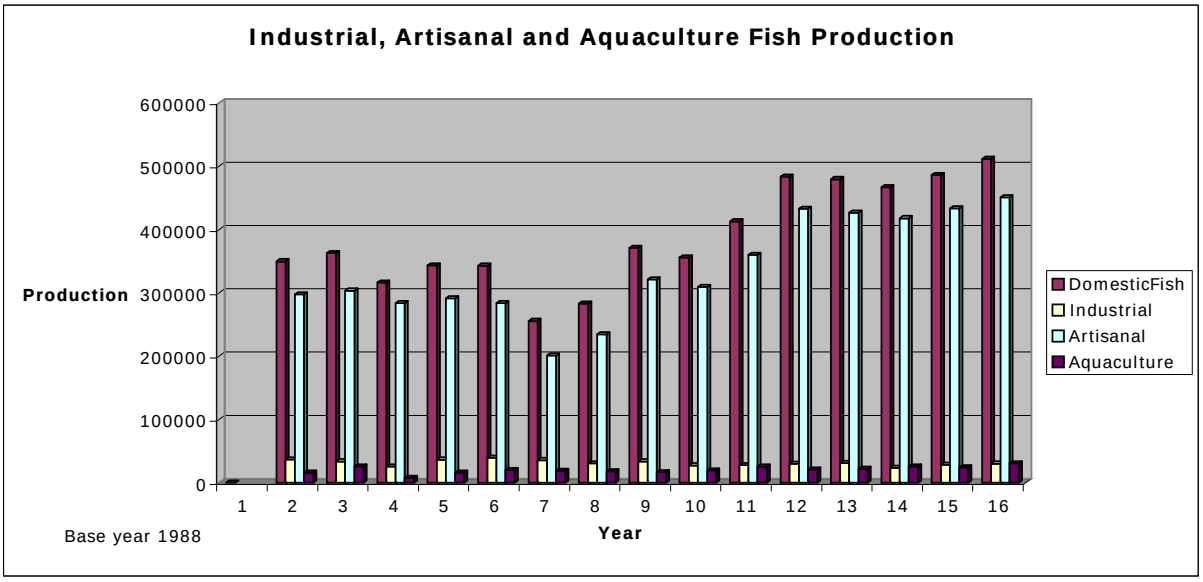

Figure 2. Comparative output of rural artisanal fishermen in Nigeria (1990–2004). Artisanal fishers supply on average more than 90 percent of annual domestic fish production. The high-cost industrial fishing subsector creates only hundreds of jobs, whereas there are more than one million artisanal fishers.

9. FISHERY SECTOR DEVELOPMENT

9.1 Constraints

Resources

Although the Niger Delta is the second largest and one of the most productive of shrimps in the World, the waters of the Nigerian continental shelf are not so productive of other fish stocks. There is limited upwelling, compared with other areas of the Eastern Central Atlantic, resulting in low primary productivity. The extensive brackish waters have been depleted of their stocks due to pollution from the petroleum industry. Mangroves are fast disappearing and with them the important shellfish fishery, with which women had been occupied for ages. The inland waters, although replenished by annual flooding, are beset with significant siltation and weed infestation.

Technology

Technological constraints have held back aquaculture development for decades, but the situation is now changing. It is still a major issue in industrial fishery, as untapped potential of the offshore resources have been put at 10 000 t of pelagic and 6 500 t of demersal stocks.

Processing technology in the artisanal fishery is still poor, as post-harvest losses remain as high as 40 percent. The two areas of very high output are the remote north-east and south-west parts of the country. Smoked products are accepted by consumers all over the country, but the technology has not advanced to such a level that would accommodate the capacity and quality that would withstand extensive distribution.

Inputs

Even now that aquaculture is picking up, the major inputs—seed and feed—present serious constraints. Current supplies, especially of feed, are expensive. The medium-scale farms that for the majority can hardly cope with fingerlings (5–7.5 cm) at N 8–15 each and juveniles (10–15 cm) at N 25 each. Locally produced fish feeds are hard to come by, while the alternative, high quality imported feeds are available only exorbitant rates of N 200–250/kg.

For a long time, fishing nets and accessories have been imported, as local manufacturers complain of an unfavourable fiscal environment. Coupled with the same situation as out-board engines, the main inputs of the artisanal fishery are becoming beyond the reach of the operators.

The industrial sector is at present seriously constrained by inadequate supply and high cost of automotive gas oil. The government deregulation policy for the downstream sector of the petroleum industry is taking a toll on industrial fishing. The industry can only pursue concessionary terms if they can muster sufficient justification.

Infrastructure

Undoubtedly, the practice of capturing, landing, handling, processing and marketing of fish in Nigeria could be greatly improved if terminal facilities were provided for the industry. A dedicated fishery harbour had been proposed for Lagos, but has never materialized. The smaller coastal terminals in the other ports that had provision for artisanal coastal fishery are dysfunctional.

Management

The need to sustainably manage available resources cannot be overemphasized. Whereas the legal and administrative frameworks are in place, investment in equipment is lacking. Government has not sustained the gains of the World Bank-assisted Fisheries Monitoring Control and Surveillance Project. The results are incessant poaching on the valuable resources of the Niger Delta and, of late, a high-level of dangerous piracy at sea, leading to maiming of crew and even loss of life.

9.2 Development prospects and strategies

Strategies for development are formulated in order to (i) address the major constraints in the subsector and (ii) take advantage of available potentials.

The Federal Government in 2005 constituted a Presidential Committee on Fisheries and Aquaculture Development in Nigeria. The committee has produced a blue-print for accelerated development of the subsector for the next five years. One principle underlying the proposed development is Public Private-sector Partnership (PPP), which the Government of Nigeria is vigorously promoting in all economic sectors. The blue-print therefore emphasized partnership in the delivery of the various proposed programmes. In August 2005, Nigeria successfully hosted an Africa Regional Summit on *Fish For All*, under the auspices of NEPAD. The summit produced a “NEPAD Fisheries Action Plan” and an “Abuja Declaration on Fisheries and Aquaculture”. The proposed programmes in the Nigerian blue-print have since been aligned with the provisions of the NEPAD Fisheries Action Plan.

Major programmes include:

- upgrading artisanal fishery technology (catching and processing);
- resource enhancements in lakes and reservoirs, with associated management training;
- divestment of government-owned aquaculture production facilities and their release to private sector operators;

- aquaculture skill development and training with technical assistance;
- development of Lagos fishery harbour and rehabilitation of coastal fishery terminals;
- investment in offshore fishery;
- strengthening of institutions and mechanisms for protection, management and conservation of fisheries resources;
- investing in staff development to build capacity and improve Nigerian content in the industry; and
- establishing an effective fisheries information network system.;

The strategy for programme delivery is to have a Presidential Implementation Committee, constituted by the private sector and serviced by the public sector. Such Committees earlier constituted by the current administration on Cocoa, Rice and Vegetable Oils have had a substantial impact on the output of the respective commodities over the last 2 to 3 years. The latest is a Presidential Committee on Financing Agriculture, which is administering a N 50 billion, low-interest (8%) credit to large- and small-scale farmers. The first set of beneficiaries under the scheme included a female fish farmer who was able to obtain a N 10 million loan. The Nigerian fisheries industry is geared to pursuing the implementation of this medium-term plan on fisheries and aquaculture to its ultimate benefit.

9.3 Research and training

Research and manpower development for Nigerian fisheries are being implemented through the activities of several institutions:

1. The two Federal Fisheries Research Institutes: Nigerian Institute for Oceanography and Marine Research (NIOMR), Lagos; and National Freshwater Fisheries Research Institute (NIFFR), New Bussa.

2. Federal Universities with full-fledged Departments of Fisheries and Aquaculture: Marine Fisheries at the Universities of Lagos and of Calabar; and Freshwater Fisheries at the Universities of Ibadan, Abeokuta, Makurdi, Umudike, Akure, Minna and Yola.

3. The three Federal Colleges of Fisheries at Lagos, New Bussa and Baga-Maiduguri.

The main research projects are:-

- Marine Geology and Geophysics, Physical and Chemical Oceanography.
- Abundance, distribution and other biological characteristics of fisheries and other aquatic resources in Nigerian marine and brackish waters.
- Socio-economic problems of rational exploitation and utilization of the marine and brackish-water aquatic resources.
- Improvement of brackish and marine aquaculture (shrimp culture).
- Studies on physical and biological characteristics of inland waterbodies of economic significance.
- Socio-economics of riverine and lacustrine communities.
- Resource enhancements in reservoirs and other aquatic enclosures.
- Freshwater aquaculture technology.
- Biotechnology research.
- Development of simple, efficient prototypes of fishing gear and smoking kilns to reduce post-harvest losses.
- Control and utilization of aquatic weeds.

10. FOREIGN AID

Nigeria continues to work with international development agencies to advance the fisheries subsector. This is usually achieved through projects co-financed by the parties. In addition to existing partnerships, new vistas continue to open.

- The IFAD-assisted Artisanal Fisheries Development Project (AFDP) in the four coastal

states of Akwa-Ibom, Cross River, Rivers and Bayelsa had been succeeded by a new project, The Community-based Natural Resources Management Project (CBNRMP). It is planned for the nine Niger Delta Development Commission (NDDC) States of Edo, Delta, Ondo, Bayelsa, Rivers, Cross-River, Imo, Abia and Akwa-Ibom. The programme goal is to improve the quality of life of at least 400 000 poor rural people of the Niger Delta, with emphasis on women and youths. Its major components are "Institutional Strengthening" and "Community Development". It is valued at US$ 82.2 million over 20 years, out of which IFAD will extend a loan of US$ 15 million and a grant of technical assistance of US$ 3.8 million over 8 years. Other contributors will be NDDC (US$ 15 million), various levels of government (US$ 44 million) and participating communities (US$ 4.4 million, in kind as labour and materials for village infrastructure). Project implementation commenced in 2005.

- The ECOWAS Fund loan for the provision of inputs to artisanal fishermen has extended its portfolio from 5 to 11 states (2 coastal and 9 inland).
- The GEF/UNEP/FAO project on the effect of tropical shrimp trawling on living marine resources has been initiated. The implementing agencies are FDF, NIOMR, NITOA and some Nigerian NGOs. The project covers the 8 coastal states of Nigeria and is implemented in collaboration with the Republic of Cameroon due to the sharing of the same shrimp resources and other commercial inshore stock. Project outputs include selection of appropriate by-catch reduction devices (BRDs), promotion of their use among industrial operators, training in the application of TEDs and harmonization and improvement of monitoring, control and surveillance (MCS) activities in the Gulf of Guinea area.
- There is a possibility of accessing funds from the Islamic Development Bank, and a project proposal for reduction of Post-Harvest Loss of Fish has been submitted.
- The National Special Programme for Food Security is unilaterally funded by Nigeria but is under FAO Technical Management. The fishery industry has benefited from the South-South component of it through assignment of Chinese technicians to fish farms and integrated rice-fish culture projects.
- The Aquaculture and Inland Fisheries Project, Annex II of the NSPFS, has been very successful in Nigeria. Under an FAO Technical Adviser, the AIFP is designed to address the complete value chain in aquaculture, including inputs, support for farmer-driven professional groups, financing and marketing, targeting 50 private fish farmers. In the inland sectors, it is to target inland fishing communities, to empower them in co-management of 43 small water bodies. The first 6 (pilot) waterbodies have been covered, each in a category in which similar management principles would apply. The project is also to compile and update inventories of fish farms, lakes and reservoirs and feed producers during its 4-year term. The first edition of the inventories have been published and widely circulated.
- The Nigerian Micro, Small and Medium Enterprise (MSME) Project is an FGN/IDA initiative to be executed by the Nigerian Investment Promotion Council. It aims to increase the performance levels of MSMEs in selected non-oil sectors. It has an aquaculture component, which will mobilize increases in private sector investments in catfish farming. It is a timely intervention in view of the growing knowledge of catfish farming technology and the potential for widespread adoption in the country, leading to substantial output. Government is already exploring possibilities of foreign markets for farmed catfish.

11. FISHERIES SECTOR INSTITUTIONS

The executive arm of the Nigerian government is constituted by line ministries, each under the authority of a cabinet minister. Agriculture and a few other large ministries are administered by a Minister and a Minister of State, both of cabinet rank. For the fist time, the President recently appointed a Special Adviser on Fisheries, to further establish a renewed focus on fisheries development. The executive structure is similar at the state level, except that the head of the ministries are designated Commissioners.

Fisheries is one of the eight professional Departments in the Federal Ministry of

Agriculture and Rural Development, and is headed by a Director of Fisheries. State Directors of Fisheries also head similar Departments in their respective Ministries of Agriculture. The Federal Department of Fisheries (FDF) is responsible for policy formulation, programme development, regulations and quality control. Internally, FDF is structured into divisions, branches and sections. Also at the Federal level are the Research Institutes and Colleges of Fisheries, with their specific mandates on research and training.

As government strengthens its focus on the private sector, professional fisheries organizations are assuming increased roles in the development of fisheries. The major ones are:

- Fisheries Society of Nigeria (FISON)
- Nigerian Trawler owners Association (NITOA)
- Catfish Farmers Association of Nigeria (CAFAN)
- Nigerian Union of Fishermen and Seafood Dealers (NUFAS)
- Association of Fish Importers of Nigeria (AFIN)
- Association of Ornamental Fish Exporters of Nigeria (AOFEN)

These associations are vibrant and at the forefront of assessing their members' needs and responding to them. However, they need to be more effective in engaging government on fiscal issues that have direct bearing on their operations, in order to bring about the desired industry-driven development.

There is a National Fisheries Development Committee (NFDC) which is a forum of all stakeholders mentioned above. It meets twice a year to deliberate on issues of policy, management, development, research, training, sector constraints, perspectives, etc. This body assists FDF to articulate policies and programmes for presentation to the National Council on Agriculture (NCA), at which level, policies and programmes are finalized for Government approval.

12. GENERAL LEGAL FRAMEWORK

The management of Nigeria's inland and marine fish resources are guided by the following Decrees (Acts) and Regulations.

Exclusive Economic Zone Decree (Act) no. 28 of 1978

It delimits the EEZ of Nigeria as an area extending from the external limits of the territorial waters (TW) of Nigeria up to 200 n.mi. seawards from the baseline, from which the breadth of the TW is measured. Within this zone, Nigeria exercises certain sovereign rights, especially in relation to the exploration, conservation and exploitation of the natural resources (minerals and living species, including fish and shell fish) of the sea bed, its sub-soil and superadjacent waters.

Sea Fisheries Decree (Act) no. 71 of 1992

It provides that no person shall operate or navigate any unregistered and unlicensed Motor Fishing Boat (MFB) for the purpose of fishing or a Reefer Vessel for the purpose of discharging frozen fish within the TW of Nigeria or its EEZ. It recognizes the Honourable Minister responsible for fisheries as the Licensing Officer, who shall cause a licence to be issued in respect of any MFB if they are satisfied that all due process has been undertaken, and that the operation of the MFB in the TW of Nigeria or its EEZ will not be prejudicial to the interest of the sea fishing industry in Nigeria.

Sea Fisheries (Licensing) Regulations, 1992

Provide conditions for licensing of a MFB; types of MFB approved for use in Nigeria's TW; and validity of a licence.

Sea Fisheries (Fishing) Regulations

Provide guidelines on where not to trawl or navigate; specification of trawl nets and fishing vessels; landing of catch and size that can be displayed for sale; and powers of adjudication.

Inland Fisheries Decree (Act) no. 108 of 1992

It makes provision for licensing and identification of fishing craft; restriction on the use of certain fishing gear; prohibition of obnoxious fishing methods; prohibition of unauthorized export or import of live fish; and protection of fish products from contamination and infection.

Inland fisheries matters are on the concurrent legislative list. Therefore, Commissioners of Agriculture in the States have concurrent powers under this Act. States that hitherto did not have fisheries legislation are encouraged to use the Act as a guide in drawing up theirs.

Sea Fisheries (Fish Inspection and Quality Assurance Regulations), 1995

It is principally to institutionalize fish inspection and quality assurance in Nigeria, with emphasis on the mode of transportation, handling, storage and sale of fish imported into or exported from Nigeria.

Inland Fisheries (Fish Quality Assurance) Regulations, 1995

Provide for the manner of transportation, handling, preservation and marketing of fish caught from the inland waters of Nigeria.

Turtle Excluder Device Regulations, 1996

Provide conditions for the enforcement of application of By-catch Reduction Devices to industrial fisheries (not yet gazetted at the time of writing).

CONTACTS

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