FISHERY COUNTRY PROFILE	Food and Agriculture Organization of the United Nations	FID/CP/IDN
PROFIL DE LA PÊCHE PAR PAYS	Organisation des Nations Unies pour l'alimentation et l'agriculture	December 2006
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The republic of indonesia

GENERAL ECONOMIC DATA – December 2006

Land area:	1.9 million km^2
Shelf area (to 200 m):	2 700 000 km^2
EEZ area:	2.7 million km^2
Length of coastline:	81 000 km
Population (2005):	226 600 000
GDP current (2005)	US$ 287. 2 billion
PCE per head (2005):	US$ 1 280
Agricultural GDP (2005):	14% of GDP

FISHERIES DATA

2003	Production	Imports	Exports	Total food supply	***Per caput*** supply
	t live weight				kg/year
Fish for direct human consumption	5,671,759	37,248	935,104	4,673,335	21.3
Non-food uses	100,569	-	-	-	

Estimated Employment (2005)

	Capture fisheries	Inland Fisheries	Aquaculture
Primary Sector	2 734 090	538 190	2 459 355
Secondary Sector	1 164 178	370 361	

Gross value of fisheries output (2004)	
– Capture Fisheries	US$ 3 130 million
– Inland Fisheries	US$ 266 million
– Aquaculture	US$ 2 072 million
Trade (2004)	
– Value of fisheries imports	US$ 139,789,000
– Value of fisheries exports	US$ 1 654 112 000

Fishery sector structure

Marine capture fisheries

Catch profile

Production from marine capture fisheries in 2004 was 4 501 070 t.

In 2004, marine capture fisheries landings were distributed 6.41% in West Sumatra, 2.88% in South Java, 8.73% in Mallacca Strait, 12.15% in East Sumatra, 18.05% in North Java, 5.59% in Bali-Nusatenggara, 5.80% in South-West Kalimantan, 3.44% in East Kalimantan, 11.63% in South Sulawesi, 7.29% in North Sulawesi and 18.04% in Maluku-Papua.

While total production of marine capture fisheries showed steady increase, production of tunas and shrimps have stayed about the same in recent years. Large increase of production was observed in blue swing crab, common squid, cuttlefish and miscellaneous fish species including Sardinella, coraker and groupers. Overall in marine capture fishery in 2004, tunas represented 16.6% of production, shrimp was 5.5%, other fishes was 70.3% and other aquatic organisms was 7.6%.

Landing sites

MAIN LANDING PLACES

Generally, fish landing places in Indonesia are classified into three categories, based on their capacity and facilities available. The first category is the Oceanic Fishing Harbour (Type A fishing harbour), which is able to provide daily shelter for at least 100 fishing vessels of more than 60 GRT each, especially those fishing in the waters of the Indonesian EEZ. Additionally, Type A harbours are able to support annual landings of 18 000 to 120 000 t.

The second category is the Nusantara Fishing Harbour (Type B fishing harbour), that are able to provide daily servicing of 75 fishing vessels of 15–60 GRT each, fishing in Indonesian home waters and the EEZ. The Type B harbours are able to support annual landings of 7 200–18 000 t.

The third category is the Coastal Fishing Harbour (Type C fishing harbour), capable of daily harbouring 50 fishing vessels of 5–15 GRT and supporting annual landings of 3 000–7 200 t.

Harbour types A, B and C are managed by the Ministry of Marine Affairs and Fisheries. In addition, there is a Type D, namely fish landing centres, which are under the management of Provincial governments. Three-quarters of these fisheries harbours are in the western part of Indonesia. Their location and the approximate catch handled annually in Table 1.

Table 1. Fisheries harbour, type, target and actual landings (t) in 2005.

Fisheries harbour	Type	Capacity (t)	Actual landings (t)
Jakarta	A	18 000	10 180
Kendari	A	18 000	9 395
Cilacap	A	180 000	20 763
Belawan(Medan)	A	180 000	35 672
Bungus(Padang)	A	18 000	549
Pelabuhanratu	B	7 200	6 235
Kejawanan	B	7 200	2 438
Sibolga	B	7 200	231
Pemangkat	B	7 200	9 279
Brondong	B	7 200	24 736
Ternate	C	3 000	3 969
Tg. Pandan	C	3 000	3 849
Pekalongan	B	7 200	22 766
Ambon	B	7 200	719
Tual	B	7 200	64 980
Prigi	C	3 000	12 948

Sungai Liat	C	3 000	3 681
Karang Antu	C	3 000	1 849
Teluk Batang	C	3 000	304
Bawean	C	3 000	2 049
Karimun Jawa	C	3 000	53
Banjarmasin	C	3 000	6 566
Hantipan	C	3 000	-
Lab. Lombok	C	3 000	2 121
Sorong	C	3 000	1 833
Tarempa	C	3 000	-
Lampulo	C	3 000	-
Dagho	C	3 000	-
Pulau Tello	C	3 000	-
Sikakap	C	3 000	868
Kupang	C	3 000	-
Tarakan	C	3 000	4 309
Total			252 075

Source: Monthly Report of Directorate of Fisheries Infrastructure, 2006.

Fishing Gear and Fishing Vessels

Fishing gear

The number of registered marine fishing gear units was 1 354 516 units in 2004. Marine fishing gear types that increased between years included portable traps, guiding barrier, beach seine, boat liftnet, set gillnet, encircling gillnet, troll lines and skipjack, pole and line.

In 2004, the main gear operated in the West Sumatra area were troll lines, set gillnets and drift gillnets. In the South Java area, most used were drift longline (other than tuna longline), *muroami* and cast net. The main gear in the Mallacca Strait area were cast net, drift longline (other than tuna longline) and trammel nets. The main gear in the East Sumatra area were shell fish gear and hand lines. The main gear in the North Java area were bottom Danish seine and scoop net. The main gear in the Bali-Nusatenggara area were purse seine, other lift nets and guiding barrier. Stationary lift nets, stow nets and encircling gillnets were most operated in South-West Kalimantan. Other traps, guiding barriers and set longlines were most operated in East Kalimantan. Other lines, boat or raft lift nets and cast nets were most operated in South Sulawesi. Hand lines and harpoons were most used in North Sulawesi. Portable traps, beach seines and drift longlines (other than tuna longline) were most used in Maluku-Papua.

Fishing vessels

The number of fishing boats in 2004 was 729 682, showing steady increase since 1998. This increase was largely caused by the increase in the number of outboard motor craft.

In 2004, the number of marine fishing boats was 549 100 units: 15.76% in North Java, 13.76% in Maluku-Papua, 12.49% in South Sulawesi, 11.83% in North Sulawesi, 11.62% in Bali-Nusatenggara, 9.37% in East Sumatra, and 25.17% for all the rest, including West Sumatra, South-West Kalimantan, East Kalimantan and South Java.

Most non-powered boats were found in the Maluku-Papua area (25.46% of all marine unpowered craft), with significant numbers in South Sulawesi, North Sulawesi and Bali-Nusatenggara.

Most outboard motor powered vessels were found in North Java (39.24% of all marine outboard motor powered vessels. The greatest number of inboard motor vessels were in East Sumatra (21.13% of all marine inboard motor vessels). In the East Sumatra area, most (75.32%) inboard motors are in vessels <5 GRT.

Most marine fishing boats in number terms are unpowered, at 256 830 units in 2004. Of those, 52.49% were dugouts, 27.17% small, plank-built boats, 16.74% medium, plank-built boat and 3.60% large, plank-built boats. At the same time, outboard powered and inboard powered vessels 30.11% and 23.12%, respectively, of the fleet.

Main Resources

Marine fisheries resources are classified into (1) large pelagics (skipjack, other tunas, billfish, oceanic sharks and small tuna); (2) small pelagics (scads, mackerels, sardinellas, trevallies, engraulid anchovy); (3) demersal and coral reef fishes (groupers, snappers, rabbitfish, slipmouth, etc.); and (4) prawn, shrimp, other crustaceans, etc. Most of the marine resources in the western part of Indonesian waters have been exploited intensively, while most resources in the eastern part still have room for development.

Management applied to main fisheries

Biologically, management of the fisheries resources is through fish quotas based on the total allowable catch (TAC), determined on the basis of up to 80% of the estimated potential yield, namely 6.4 million t/yr, and operated across nine marine capture fishery areas.

Inland Open water Capture Fisheries

Inland open water capture fisheries production reached 310 250 t in 2004. The production of fish accounted for 93.6% of total production with major species of snakehead murrel (tilapia, catfish), kissing gouramis. Production of shrimp was 1.8% of total.

Major inland open water production came from set gillnets 61 568 t, or 18.6% of total inland open water capture production in 2004, followed by hook & lines, 10.8%, and portable traps, 10.7%.

Fishing Units

There were 898 609 fishing units recorded in 2004 in inland open water fisheries. Hook-and-line gear remained the dominant gear in most areas, only displaced by portable traps in Kalimantan and by set gillnets in Sulawesi. Other major gears used included portable traps & set gillnets.

Fishing Boats

There were 180 582 inland open water fishing boats in 2004, mostly (80.59%) unpowered. Outboard motor boats were 18.60% of the inland open water fishing fleet, with only 0.81% having inboard propulsion units. In general the trend is for increasing use of outboard power in the inland fleet, going from 17 677 units in 2003 to 33 599 units in 2004.

Aquaculture

Aquaculture fisheries produced 1 045 051 t in 2004 and 996 659 t in 2003. The number of persons active in aquaculture increased from 2 384 208 in 2003 to 2 459 355 in 2004. Most of them were engaged in freshwater pond aquaculture (46%), paddy field aquaculture and brackish water aquaculture, with a few using cage culture. Most aquaculture activities were located in Java (65.94% of farmers), while the rest were spread out around the country, especially in Sumatra (16.08 5), Sulawesi, Kalimantan and Lesser Sunda Islands.

Culture areas occupied 714 045 ha, comprising brackish-water aquaculture (68.60% of the area), followed by paddy field aquaculture (17.43%) and pond aquaculture (13.97%). The main areas of brackish-water aquaculture were in Java (33.34%), Sumatra (21.49%) and Sulawesi (28.87%). For paddy field aquaculture, Java had an area of 88 335 ha (70.95%) followed by Sumatra (19.72%) and Sulawesi (7.30%).

In terms of production, including aquatic plants, brackish-water aquaculture contributed 38.10% followed by mariculture (28.66%) and pond aquaculture (19.49%). Production of finfish from brackish-water aquaculture consisted of milkfish (43.14%), Mozambique tilapia (4.13%), mullets (2.09%), giant sea perch and others.

Mariculture production consisted of seaweed (94.55%), Colored rosar shell (3.07%), groupers (1.56%) and sea bass (0.41%).

Pond aquaculture produced Common carp (27.92%), catfish (19.25%), Nile tilapia (19.92%), Giant gouramy (7.68%) and Java carp.

Paddy field aquaculture produced common carp (62.54%), Java carp (11.32%), Nile tilapia (11.13%) and Mozambique tilapia (5.32%) and others.

Cage culture produced Common carp (67.95%), Nile tilapia (24.56%), Giant gouramy (2.09%) and others.

Post-harvest use

Utilization of the catch

About 56% of fish production is consumed fresh. There are severe limits to the supply of ice and availability of refrigerated storage and transport facilities, so the balance is processed and consumed as dried and salted (18%), smoked or fermented. There are about 10 000 small fish processing operations, generally using traditional methods.

Less than 2% of the catch is canned. The canneries utilize pelagics, mostly oil sardines and skipjack. Processing of fishmeal has still not yet developed and takes place mostly in conjunction with canning operations. About 16% of total production is frozen for export, mostly shrimp and tuna.

Fish markets

The prospect of domestic marketing of fishery product is very good. Per capita fish consumption was 21.3 kg in 2003 (FAO statistics).

Exports fishery product from Indonesia reached US$ 1 654 112 000 in 2004, with the main destination being

China, Thailand, Japan, United States of America, Singapore and Republic of Korea.

Fishery sector performance

Economic role of fisheries in the national economy

Indonesian fisheries contribution to the GDP in 2004 was 2.4% .

Employment

An important indicator of the value of Indonesian fisheries is employment (Table 2). Fisheries provide over 6 million persons with direct employment, consisting of 3.8 million fishermen and 2.2 million fish farmers.

Table 2. Employment in the Indonesian fisheries sectors, 1999–2003.

Category	1999	2000	2001	2002	2003
Capture, comprising	2 890 054	3 104 861	3 286 500	3 046 473	3 857 597
- marine	2 409 029	2 486 456	2 562 945	2 572 042	3 311 821
- inland	481 025	618 405	723 555	474 431	545 776
Culture	1 877 814	2 181 650	2 190 920	2 270 164	2 384 238
Total	4 767 868	5 286 511	5 477 420	5 316 673	6 241 835

Source: Fisheries and Aquaculture Statistic of Indonesia, 2005.

Food security

Fisheries play an important role in national food security, since fishery products are generally consumed by poor households and other social communities. It is noteworthy that from 1999 to 2003 annual per capita fish consumption rose from 19.6 kg to 21.3 kg.

Rural development

Fisheries develop by improving business productivity and efficiency, which in turn increases fisheries production, resulting in increases in fish consumption, foreign exchange earnings and supply of raw material for domestic industry. Increases in fish production are also expected to improve incomes of fishermen and fish farmers, enhance job and business opportunities, encourage development of domestic industries and support regional development. Development efforts are implemented with due consideration of the fishery resource and the environment in order to achieve environmentally sound and sustainable fisheries development.

Fishery sector development

Constraints

There are various constraints and problems at all administrative levels – national, provincial, district and local – affecting fisheries management. However, overall, the major current issues and problems associated with development of capture and culture fisheries are:

- overfishing in both marine and inland fisheries waters;
- low income for fishers and fish farmers;
- low standard of living of fishers;
- lack of financial support in terms of credit schemes;
- weak practical fisheries management, particularly concerning monitoring, surveillance and enforcement; and
- degradation of coral reefs and other marine environment affecting fisheries.

Development prospects and strategies

- ***Marine Fishery*** The variety of fish and other marine aquatic organisms provides opportunities for a wide range of fishing activities. It is, however, important to manage those activities so as to avoid conflict among small-, medium- and large-scale fisheries. Moreover, further development in terms of increase in number of fishing vessels to optimize the utilization of marine resources has to be directed to the eastern waters of Indonesia (KTI) and EEZ, where fish resources utilization is relatively less (24% utilized in KTI and 47% in the EEZ in 1998). In this respect, further development is primarily directed to the waters of: (1) western Sumatra and southern Java, Bali and Nusa Tenggara for tuna and skipjack using longlines and gillnets; (2) Makassar Strait and Sulawesi Sea for small pelagics, squid and tuna and skipjack using purse seines, gillnets and longlines; (3) Maluku Sea, Halmahera and Pacific Ocean for tuna, skipjack and demersal species using longlines, pole-and-line and bottom trawls. Also, further development will be encouraged in EEZ waters apart from the Malacca Strait and the Arafura Sea.
- ***Prospects for Mariculture*** The coastline of Indonesia is estimated at around 81 000 km and has great potential for development of mariculture activities. However, in mariculture, each species requires specific environmental conditions. Therefore each region has to develop its mariculture for a particular species or commodity, namely (1) Groupers and Giant perch in North Sumatra, Riau, South Sumatra, Nusa Tenggara and Lampung; (2) Blood cockles in North Sumatra, Riau and Lampung; (3) seaweed in Riau, Lampung, East Kalimantan, Nusa Tenggara and South and South-east Sulawesi; and (4) Sea cucumber in Riau, Lampung, Nusa Tenggara, central and South-east Sulawesi.
- ***Prospect for Brackish-water Culture*** There are various potential species for brackish-water culture, including high-value species such as crustaceans (e.g. *Penaeus monodon*) and some fish (e.g. Milk fish [*Chanos chanos*]). As for mariculati=ure, different regions have differing potentials: (1) shrimp and Milk fish: in all Provinces; (2) Giant perch and groupers in Aceh, North and South Sumatra, Riau, Jambi, West, East and central Java, Lampung, South Sulawesi and Bali; and (3) Streaked Spinefoot in Riau, central and East Java and South Sulawesi.
- ***Prospects for the Processing Industry*** Modern processing units generally process product for export. Commodities include shrimp, tuna and skipjack, fish fillets, tuna loin and tuna steak. There are several processing operations that have good potential, including (1) freezing, cold storage and ice production; (2) product processing with value added, to meet the increasing market demand for fishery products that are ready to cook (convenience products), such as IQF products, shrimps, breaded fish, surimi and fish balls.
- ***Other Fishery Product Processing*** The demands of overseas markets continue to evolve. Indonesia formerly exported in the form of frozen fish, but it is now increasingly providing products such as fresh fish, fillets, smoked fish, shrimp crackers, fish

oil and even live fish.

Research

The main research institutions are:

- National Coordinating Agency for Survey and Mapping (BAKOSURTANAL).
- Meteorological and Geophysics Institute of Indonesia (BMG).
- Agency for the Assessment and Application of Technology (BPPT).
- Indonesian Navy Hydrographic and Oceanographic Service (DISHIDROS TNIAL).
- Agency for Marine and Fisheries Research, Ministry of Marine Affairs and Fisheries (BRKP-DKP).
- Research Centre for Oceanography, Indonesian Institute of Sciences (P2O -LIPI).

Education institutions equivalent to university with an interest in fisheries include:

- Faculty of Fishery and Marine, Bogor Agriculture Institute, Bogor.
- Faculty of Marine and Fishery, Diponegoro University, Semarang.
- Faculty of Marine and Fishery, Hasanuddin University, Ujung Pandang.
- Faculty of Marine and Fishery, Samratulangi University, Manado.
- Faculty of Fishery and Marine, Pattimura University, Ambon.
- Faculty of Fisheries and Marine, Riau University.
- Faculty of Fisheries, Brawijaya University, Malang.
- Gajahmada University, Jogyakarta.
- Andalas University, Padang
- Fishery University, Jakarta.
- Pajaran University, Bandung.
- There are other (private) universities.

Education institutions equivalent to High School include:

- Fishery High School in Tegal, Central Java Province.
- Fishery High School in Pariman, West Sumatra Province.
- Fishery High School in Banda Aceh, Aceh Province.
- Fishery High School in Belawan, North Sumatra Province.
- Fishery High School in Pontianak, West Kalimantan Province.
- Fishery High Scool in Aertembaga, North Sulawesi Province.
- Fishery High School in Ujung Pandang, South Sulawesi Province.
- Fishery High School in Ambon, Maluku Province.

- Fishery High School in Sorong, West Papua Province.
- Fishery High School in Singaraja, Bali Province.
- There are other (private) high schools.

Fishery sector institutions

Previously, fisheries administration came under the Agriculture Department, but since 1998 has been under the Ministry of Marine Affairs and Fisheries. The administrative structure for the sector is illustrated in the organigram at the end of this Profile.

The vision for marine affairs and fisheries development is:

"Marine and Freshwater Ecosystem with all Natural Resources in it are the God Almighty's gift, that should be Considered, Sustained and Managed in an Optimum and Sustainable Manner for National Unity, National Development, and Indonesian Community Welfare."

The Mission

- To improve the role of marine and fisheries sector as a source of economic growth;
- to improve prosperity for coastal fisheries and marine communities, especially fishermen and small-scale fish farmers; and
- to improve fish consumption of the population; to maintain and improve the environmental quality of freshwater, coastal, small-island and marine ecosystems; and to improve the role of the sea as a unifying instrument for the nation and the creation of a Indonesia maritime work ethic to improve role of marine and inland fisheries as a source of economic growth.

In order to support the vision and mission, the necessary strategies include:

- utilization of optimal, efficient and sustainable. marine resources and services;
- improvement of surveillance and control of marine and fisheries resources;
- rehabilitation of coastal and marine habitats and ecosystems;
- application of science, technology and professional management in marine affairs and fisheries businesses;
- establishment of a conducive fiscal and monetary policy;
- empowerment in social and economic terms in marine and fisheries communities;
- expansion and strengthening of the economic network;
- expansion and strengthening of the information system for marine and inland fisheries;
- expansion of the system and mechanism of relevant law, and cooperation with international and national organizations; and
- establishment of a marine concept in society.

Internet links to the Ministry of Marine Affairs and Fisheries

- http://www.dkp.go.id
- http://infohukum.dkp.go.id
- http://infohukum.dkp.dkp.go.id

STRUCTURal ORGANIZATION OF the MARINE AFFAIRS and FISHERIES DEPARTMENT