


FISHERY AND AQUACULTURE COUNTRY PROFILE	Food and Agriculture Organization of the United Nations	FID/CP/VUT 
PROFIL DE LA PÊCHE ET DE L'AQUACULTURE PAR PAYS	Organisation des Nations Unies pour l'alimentation et l'agriculture	May 2010
RESUMEN INFORMATIVO SOBRE LA PESCA Y LA ACUICULTURA POR PAÍSES	Organización de las Naciones Unidas para la Agricultura y la Alimentación	

NATIONAL FISHERY SECTOR OVERVIEW

VANUATU

1. GENERAL GEOGRAPHIC AND ECONOMIC DATA

Area:	12 190 km ²
Water area:	680 000 km ²
Shelf area:	[no continental shelf]
Length of continental coastline:	1 920 km (length of the coast of islands)
Population (2007):	228 000
GDP at purchaser's value (2007)	512 977 000 USD ¹
GDP per head (2007):	2 242 USD
Agricultural GDP (2007):	73 818 000 USD ²
Fisheries GDP (2007):	3 883 000 USD ³

2. FISHERIES DATA

2007	Production	Imports	Exports	Total Supply	Per Caput Supply
	tonnes liveweight				kg/year
Fish for direct human consumption ⁴	78 187	3 035	73 565	7 657	33.6
Fish for animal	7 200	---	---	---	---

¹ 2007 average exchange rate: US\$1 = Vanuatu vatu 104.0; GDP source: unpublished data kindly provided by the Vanuatu National Statistics Office

² This is the contribution of "total agriculture" in an unpublished document kindly provided by the Vanuatu National Statistics Office. "Total agriculture" includes commercial and subsistence fishing.

³ This is the official fishing contribution to GDP. A recalculation shows the total fishing contribution to be USD\$6.7 million: Gillett (2009). The Contribution of Fisheries to the Economies of Pacific Island Countries and Territories. Pacific Studies Series, Asian Development Bank, Manila

⁴ Data from FAO food balance sheet of fish and fishery products. The production/export amounts apparently include the foreign-owned Vanuatu-flagged vessels.

feed and other purposes					
-------------------------	--	--	--	--	--

Estimated Employment (2007):	
(i) Primary sector (including aquaculture):	15 758 ⁵
(ii) Secondary sector:	Unavailable
Gross value of fisheries output (2007):	34.4 million USD ⁶
Trade (2007):	
Value of fisheries imports:	2.8 million USD
Value of fisheries exports:	62.7 million USD

3. FISHERY SECTOR STRUCTURE

3.1 Overall fishery sector

Vanuatu is a Y-shaped archipelago of about 80 islands, 67 of which are inhabited, and twelve of which are considered major. The islands plus associated reefs lie between latitudes 13-21°S and longitudes 166-172°E in the western Pacific Ocean. The archipelago measures approximately 850 km in length. Compared to other Pacific Island countries, inshore marine areas are not extensive in Vanuatu. Inner reef areas are limited to narrow fringing reefs and the area covered by mangroves is quite small. Nearly 80% of the population reside in rural areas.

With respect to the current situation, fisheries in the waters of Vanuatu can be placed into six categories. These categories and the associated production in 2007 are estimated as:

	Coastal Commercial	Coastal Subsistence	Offshore Locally-Based	Offshore Foreign-Based ⁷	Long-distant fleet (domestic)	Fresh-water	Aquaculture	
							Fishes and crustaceans (Tonnes)	Giant clams and corals (Pieces ⁸)
Volume of Production (metric tonnes or pieces)	538	2 830	81 092	12 858	2 265	80	31	2 500
Value of production (USD)	2 176 923	5 740 385	n.a.	26 003 657	n.a.	173 077	389 000	

Source: FAO - offshore domestic, long-distant fleet, and aquaculture; Gillett (2009)

⁵ This is the number of "fishing households" as determined from the 2007 Agriculture Census. Source: NSO (2008). Preliminary Report Agriculture Census 2007. National Statistics Office, Port Vila.

⁶ From Gillett (2009): includes the six fishery production categories: (1) coastal commercial fishing, (2) coastal subsistence fishing, (3) locally-based offshore fishing, (4) catch by foreign-fleets (5) freshwater fishing, and (6) aquaculture.

⁷ This is the catch taken by the foreign fleet within the Vanuatu EEZ. In FAO statistics of capture fisheries production, this catch is accounted under the catch of the nation(s) under which the vessel(s) is (are) flagged.

⁸ Corals and giant clams are commonly measured in pieces, rather than kg.

The main trends and important issues in the fisheries sector

The main trends in the sector include:

- Increasing exploitation of the coastal resources, especially those close to urban markets.
- Increasing numbers of Asian longliners based in Port Vila in recent years
- Increasing numbers of foreign fishing vessels fishing in Vanuatu waters
- Increasing tuna processing capacity in Port Vila
- Increasing enthusiasm on the part of the government for cooperation in fisheries matters with other Melanesian countries

Some of the major issues in the fisheries sector are:

- Reconciling the benefits of increasing Asian fishing and processing with **impacts on Vanuatu's important tourism industry**. From a larger perspective, better coordination with the growing tourism sector is required to prevent potential areas of conflict from growing.
- With the demise of the government fish market and ice plants in the rural areas, there is a shortage of fish in the Port Vila urban area.
- For the subsistence fisheries, there is a need to support and strengthen traditional management to resist growing commercial pressure.

3.2 Marine sub-sector

The marine fisheries have two very distinct components, offshore and coastal:

- Offshore fisheries are undertaken on an industrial scale by locally based longline and purse vessels as well as by foreign based longline vessels.
- Coastal fishing is primarily carried out for subsistence purposes and for sales for local markets. In addition, there are some coastal fisheries that are export oriented, including trochus, beche de mer, and aquarium fish.

3.2.1 Marine Catch profile

The WCPFC Yearbook indicated the catch of offshore fishing reported under the Vanuatu based fleet as:

	2005	2006	2007	2008	2009
Volume total catch (tonnes)	87 778	78 363	81 092	47 673	48 011

Estimates of the volumes and values of the offshore catches of the four main commercial species of tuna (Bigeye, yellowfin, skipjack and albacore) taken by foreign based fleet within the Vanuatu EEZ have been made by the Forum Fisheries Agency, using data sourced from the Oceanic Fisheries Program of the Secretariat of the Pacific Community. By adding in volumes and values of catch of non-tuna species, estimates of total catches in the Vanuatu zone can be made:

	2003	2004	2005	2006	2007
Volume total catch (tonnes)	8 351	8 901	11 550	18 292	12 858
Value total catch (US\$) ⁹	18 814 929	18 002 775	25 593 701	43 820 071	26 003 657

⁹ This is the "in-zone" value; the value in destination markets, less the cost of shipment to those markets.

Source: FFA (2008), Gillett (2009)

Estimates of catches from the coastal fisheries vary widely. Studies to estimate production were carried out by external researchers in 1996, 2000, and 2001– but the estimates were very different. Gillett (2009) used those studies plus (a) the results of the 2006 household income and expenditure survey, (b) export data, (c) estimates of production from recent specialized studies, (d) the results of the recent 2006/2007 agriculture census, and (e) opinions of fisheries specialists. The results indicated a coastal commercial production of 538 tonnes (worth USD2.2 million) and a coastal subsistence production of 2 830 tonnes (worth USD5.7 million).

The aquarium fishery has been in existence in Vanuatu for the last 15 years. **Although Vanuatu's reefs are not extensive, they provide sufficient habitat for** ornamental resources that can maintain a small, but sustainable industry. In Vanuatu, about 300 species of non-food reef fish are important ornamental species, including many species of invertebrates, clams, soft corals, and cultured hard corals. In 2007 216 466 pieces of aquarium items worth USD200 403 were exported. (Source: National Marine Aquarium Trade Management Plan, 2008)

3.2.2 Marine landing sites

The foreign vessels that operate in the Vanuatu EEZ land their catches in a variety of locations. The Fiji-based longliners, many of which are flagged under Taiwan Province of China, offload their catches in Suva (fresh fish) or Levuka (frozen fish). Other Asian longliners either transship at ports in Vanuatu or neighboring country, or deliver their catch to Asian ports.

The Asian vessels that are based in Port Vila generally operate under the Vanuatu flag through joint venture arrangement or other arrangement. They usually operate out of the Vanuatu EEZ and offload their catch at Port Vila.

No discussion of fish landing sites in Vanuatu would be complete without some mention of the history of the large facility at Palekula (box).

Vanuatu's involvement in tuna fishing commenced in 1957 with the establishment of the South Pacific Fishing Company Limited (SPFC) base at Palekula, Espiritu Santo island in the north of the group. SPFC was established by the Japanese Mitsui & Company, with the objective of conducting tuna transshipment operations. The facilities established at the Palekula Base were large and occupied some 24 hectares of relatively flat land, which had been initially developed by the US Navy during World War II.

The SPFC complex consisted of a main wharf, slipways (one 500 tonnes and one 50 tonnes), original cold storage, two bait freezers (5,000 cartons of bait in 10 kg boxes/room), two quick-freeze rooms, unloading area, engine room, large brine block ice makers with crusher and loading facility, housing and workshops.

In 1974, much of the plant was upgraded, with a new cold storage facility replacing the old. The new cold storage was in three rooms, each holding from 500 to 600 t of frozen fish. A new engine room was also installed with three large Yanmar diesels with alternators for power, and four large compressors for the ammonia refrigeration system. The bait freezers and quick-freeze rooms were retained. The ice facility was abandoned with ice made by filling plastic bags with water and placing them in the quick-freeze rooms. A new 'T' section was added out from the existing main wharf, so that larger carrier vessels could come alongside to load. In addition, a new fuelling wharf was put in at this time, which was also used for vessels to tie up to, as well as two large fuel storage tanks and a pump house with

pumping equipment.

Over the years, many longliners from different countries worked out of the Palekula Base. At its height of activity between 1971 and 1973, it was estimated that as many as 100 different longliners could visit the base in one year. The average unloading from 1971–1973 was around 14,000 tonnes. In the early 1980s, the number of vessels working to the Palekula Base dropped greatly, with around 4,000 t of fish unloaded in 1981. Unfortunately, the transshipment side of the base’s operation closed in 1986, when the remaining vessels relocated to American Samoa to take advantage of incentives offered by processors there. At this time, the facility was turned over to the Government of the Republic of Vanuatu. The slipways were still operational and the government continued using them until 1998, when a problem with the books of SPFC caused their closure.

Source: Chapman

(2000)¹⁰

Vanuatu operates the Vanuatu International Shipping Registry (VISR) under contract to the Vanuatu Maritime Services with some 500 ships registered under contract through an office in New York, USA. The VISR also allows foreign fishing companies to register as Vanuatu flagged vessels. The number of Vanuatu flagged vessels registered as fishing vessels in 2005 was 86 (up from 33 in 2002) with eleven of these being longliners licensed to operate within Vanuatu waters. In the wider WCPO area, 82 Vanuatu flagged vessels were registered, the fleet included 55 longliners, 24 purse seiners and 3 pole and line vessels. Vanuatu now has the second largest fishing fleet operating in the Eastern Pacific, and has the fastest growing fleet in the Indian Ocean. In the recent past, some of these vessels were implicated in illegal, unregulated and unreported fishing activities and a number of international tuna commissions expressed their concerns to the Department of Fisheries. Consequently, the Department has taken steps to regulate their fishing fleet through implementing a number of administrative and management measures including performing background checks on vessels applying to the registry, ensuring the timely submission of catch data, introducing certificates of origin, and placing a ceiling in fleet size of 116 vessels. (Naviti and Taleo, 2006; Hickey and Jimmy, 2008) In 2009 Vanuatu had a fleet composed of 90 vessels (larger than 18 m LOA) of which 27 were purse seiners, 62 long liners and 1 pole and line.

The commercial food fish catch (i.e. deep-water demersal fish) is mainly offloaded in Port Vila. The non-food catch (i.e. trochus shells) is mostly non-perishable and is often landed close to the fishing areas – which are scattered around the country.

Subsistence fishery landings occur at coastal villages throughout the country, roughly in proportion to the distribution of the population.

3.2.3. Marine fishing production means

WCPFC Yearbook indicated that the number of vessels operated in the Western and Central Pacific in 2009 was 74, including 6 purse seiners and 68 longliners. Regarding to the foreign flag vessels, the Chinese fleet is currently the dominant fleet operating in the Vanuatu EEZ, both in terms of vessel numbers and capacity, followed by Taiwan Province of China, then Fiji.

¹⁰ Chapman, L. (2002). Development Options and Constraints Including Infrastructure and Training Needs Within the Tuna Fishing Industry and Support Services in Vanuatu. Secretariat of the Pacific Community, Noumea.

The 2007 Agriculture Census does not contain information on fishing production means. Preston (1996)¹¹ uses the 1991 Agriculture Census to conclude that fishing lines were by far the most common coastal fishing gear and were used by 94% of the 14,041 fishing households enumerated at that time. The second most common gear, hand-spears, were used by 46% of households, followed by spearguns (36%), bows and arrows (33%), and gill nets (19%). Most households owned more than one gear type, and had several of each type owned, with fishing lines averaging three per household.

It should be noted that some important fishing activities in Vanuatu (e.g. shell collection, lobster capture) do **not require "fishing gear" (as used in the Agriculture Census)**, but rather just a diving mask or goggles.

3.2.4 Main resources

Vanuatu Fisheries Department (2009)¹² reports that in 2007 the major species in the longline catch was albacore (60% by weight), yellowfin (16%) and bigeye (10%). On the other hand, WCPFC Yearbook indicated that the majority (around 80 % with some fluctuation) of catch taken by purse seine was skipjack.

With respect to inshore fishing, Bell and Amos (1993)¹³ list the twenty-two species that are believed to be the most important finfish in Vanuatu: *Naso lituratus* (orangespine unicornfish), *Kyphosus cinerascens* (highfin rudderfish-topsail drummer), *Epinephelus merra* (honeycomb grouper), *Variola louti* (lunartail grouper), *Scarus blochi* (quoy's parrotfish), *Cheilinus undulatus* (napoleonfish-maori wrasse), *Hemigymnus melaptarus* (blackedge thicklip wrasse), *Plectorhynchus gibbosus* (black sweetlips), *P. orientalis* (oriental sweetlips), *Chaetodon lineatus* (lined butterflyfish), *Lethrinus harak* (blackspot emperor), *L. miniatus* (longnose emperor), *Sargocentron tieroides* (pink squirrelfish), *Lutjanus fulvus* (flametail snapper), *L. gibbus* (humpback snapper), *Mulloidichthys flavolineatus* (yellowstripe goatfish), *Siganus canaliculatus* (seagrass rabbitfish), *S. doliatus* (pencil-streaked rabbitfish), *Acanthurus lineatus* (bluebanded surgeonfish - convict tang), *Shyraena genie* (blackfin barracuda), *Valamugil seheli* (bluespot mullet), *Caranx melampygus* (bluefin trevally) and *Geres oyena* (oyena mojarra).

Invertebrate species are also very important in the inshore commercial and subsistence fisheries. These include rock lobsters, slipper lobster, coconut crab, green snail, trochus, aquarium fish, various crustaceans, and beche-de-mer.

Trochus is especially important in Vanuatu. It is a source of cash for remote communities, it forms the basis of a small manufacturing industry in Port Vila, has been cultured by the Fisheries Department, and is the object of much management effort. The box gives some information on this shell.¹⁴

¹¹ Preston, G. (1996). *Masterplan for the Sustainable Management of Development of Vanuatu's Inshore Fisheries Resources*. Technical Report 2. TCP/VAN/4552. Food and Agriculture Organization of the United Nations, Bangkok.

¹² Vanuatu Fisheries Dept (2009). *National Tuna Fishery Report*. Report WCPFC-SC5-AR/CCM-27, Western and Central Pacific Fisheries Commission, Pohnpei.

¹³ Bell, L. and M. Amos (1993). *Republic of Vanuatu Fisheries Resources Profiles*. Report 93/49, Forum Fisheries Agency, Honiara.

¹⁴ Sources: (1) Gillett, R. (1995). *Aspects of Trochus Industries, Trade and Marketing Relevant to the Pacific Islands - a report prepared for the World Bank*, 75 pages. (2) Bell, L. and M. Amos (1993). *Republic of Vanuatu Fisheries Resources Profiles*. Report 93/49, Forum Fisheries Agency, Honiara.

Trochus

Trochus (*Trochus niloticus*) is commercially one of the most important shellfish in the Pacific Islands. It is valued for the inner nacreous layer of the shell, which, along with that of the pearl oysters, is used for the manufacture of "mother-of-pearl" buttons.

Trochus live on coral reefs from the inter-tidal zone down to a usual maximum of about 15 metres. The natural distribution of trochus is from Wallis Island in the central Pacific westward to Sri Lanka and from southern Japan southward to New Caledonia and northern Australia. The species has also been transplanted to many new areas of the Pacific Islands where in some cases it now supports substantial fisheries.

The annual harvest of trochus in the Pacific Islands in recent years was about 2 300 tonnes with an export value of about US\$25 million. Although this is not great in purely financial terms, the impact is substantial. Because little or no equipment is used in the collecting of trochus and because the shells may be stored for long periods prior to shipment to market, trochus is one of the few commercial fisheries feasible for remote communities. In several Pacific Island countries trochus provides an important source of cash income at the village level, especially since the demise of the copra industry.

The collection of trochus for its protein-rich flesh has been a traditional activity in the Vanuatu for a long time. However, since the end of the 19th century, the sale of trochus shells for its shell has become apparent in Vanuatu. French settlers were reported to have harvested trochus shells in Vanuatu at the beginning of the 20th century. At present, trochus is one of the major inshore resources in Vanuatu that generates income for the rural communities.



For the aquarium ornamentals, the National Marine Aquarium Trade Management Plan gives the six fish groups most commonly targeted: the angelfish (Pomacanthidae), gobies (Gobiidae), tangs (Acanthuridae), damsels (Pomacentridae), groupers (Serranidae) and wrasses (Labridae). Of the Pomacanthidae, the flame angel (*Centropyge loriculus*) has been the most exported fish species, representing 12.5% of Vanuatu's average total annual fish exports. Fish represent the bulk of Vanuatu's marine aquarium exports, contributing about 66% of the total annual average export volume, followed by invertebrates (18%) and live rock (10%). (Source: National Marine Aquarium Trade Management Plan)

3.2.5 Management applied to main marine fisheries

Tuna Fishery Management

The Vanuatu is a member of the Western and Central Pacific Fisheries Commission that was established by the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. The Convention entered into force in June 2004.

The "Revised Tuna Management Plan - A National Policy for the Management of Vanuatu Tuna Fisheries" is a 62-page document which (1) Identifies the fishery and assesses the present state of its exploitation, (2) Specifies the objectives to be achieved; and (3) Specifies the management and development measures to be

taken. The revised plan was endorsed by the Government and launched by the Minister responsible for fisheries in December 2008.

The main objectives of the management of tuna fisheries in the Plan are:

- To ensure that the exploitation of the tuna resources that are found in and pass through Vanuatu waters is compatible with the sustainability of the stocks throughout their range.
- To ensure the harvest is taken in a way that maximizes the long term economic and social benefits received by the peoples of Vanuatu.
- To contribute to the food security of Ni Vanuatu¹⁵.
- To meet regional and international responsibilities for tuna management.

The main measures given in the Plan to achieve the objectives are:

- A licensing programme for all commercial fishing vessels
- Limitations to be applied to fishing operations
- A total allowable catch for foreign fishing, locally base foreign, local and sport fishing vessels.

Coastal Commercial Fisheries Management

Management plans for the coastal commercial fisheries have been prepared for aquarium ornamentals, trochus, and beche-de-mer. These plans have been made in accordance with Part 2 Section 3 of the Fisheries Act. As an example of the content of a management plan, the National Marine Aquarium Trade Management Plan contains sections on:

- Description of the Marine Aquarium Trade Fishery
- Precautionary approach
- Management measures
- Monitoring
- Training
- Amendments
- Research
- Various forms/applications

No management objectives/goals are given in the aquarium plan. With respect to actual management measures, the following general measures are specified:

- Limitations
- Quota allocation
- Licensing
- Fishing methods and collection practices
- Prohibitions
- Facilities and husbandry
- Employment of foreign workers
- Use of underwater breathing apparatus
- Areas of operation (Access agreements)
- Conservation
- Reporting
- Observers

¹⁵ "Ni-Vanuatu" is a term that means the indigenous inhabitants of Vanuatu.

Subsistence Fisheries Management

The management authority for subsistence fisheries is primarily vested with the traditional reef custodians through customary marine tenure (CMT). CMT is legally recognized in Vanuatu in Chapter 12 of the Constitution that states:

- All land in the Republic of Vanuatu belongs to the indigenous custom owners and their descendants.
- “Land” is further defined in the Land Reform Act to include “... land under water including land extending to the sea side of any offshore reef but no further”.
- The rules of custom shall form the basis of ownership and use of land in the Republic of Vanuatu.

These articles provide the customary owners rights to manage their land and reefs as they have traditionally done for centuries through the use of taboos and other fisher behaviour restrictions. Research into traditional resource management in Vanuatu reveals a strong heritage of managing resources through CMT and a combination of **traditional beliefs and practices that included privileged user’s rights, species specific prohibitions, seasonal closures, food avoidance and closed areas**. Examples of these practices includes the placement of marine closures or taboos for up to seven years or more upon the death of a chief, or any clan member, the ordination or grade taking of a traditional leader and seasonal prohibitions on consuming certain fisheries resources following agricultural cycles, respect and avoidance of areas of symbolic significance and behavioural restrictions for fishers that limited fishing effort including those associated with totemic restrictions. The Vanuatu Department of Fisheries actively supports these customary practices and recognizes CMT as a viable, decentralized system of resource management that fosters a sense of responsibility amongst communities to manage their own resources well. (Hickey and Jimmy, 2008)¹⁶.

Institutional Arrangements for Fishery Management

In Vanuatu the main institution involved with fishery management is the Department of Fisheries. The role of this agency is covered in more detail in a section below.

3.2.6 Fishermen Communities

The concept of “fishermen communities” has limited applicability to Vanuatu. Nearly all households in coastal villages are involved in coastal fishing activities. It could therefore be stated that all coastal villages in Vanuatu **are “fishing communities”**.

3.3 Inland sub-sector

The Vanuatu Fishery Resource Profiles¹⁷ contain extensive information on the **country’s freshwater fish and invertebrate resources**. It is reported that the distribution of the various freshwater ecosystems is patchy throughout the Vanuatu archipelago, covering only 1.0% of the total land area. The profiles cover 18 families of local freshwater fish, 3 families of introduced fish, and several species of shrimps and crab. The most important taxa for fishery purposes are:

- Local species of fish: Five genera of fish (*Khulia*, *Lutjanus*, *Gerres*, *Monodactylus*, *Scatophagus*), four species of mullets, and several species of freshwater eels.

¹⁶ Hickey, F. and R. Jimmy (2008). Fisheries. In: Gay, D. Vanuatu Diagnostic Trade Integration Study 2008 Report. Blue Planet Media + Communications, Port Vila, Vanuatu.

¹⁷ Amos, M. (2007). Vanuatu Fishery Resource Profiles. Pacific Regional Environment Programme, Apia, Samoa.

- Introduced species of fish: *Cyprinus* and two species of tilapia
- Invertebrates: Several species of *Macrobrachium*

Recent annual production from freshwater fisheries in the country is about 80 tonnes per year, worth about USD 173 100. This is almost entirely for subsistence use, except for the *Macrobrachium* shrimp which is sold in urban areas.

Any management of the freshwater fisheries is carried out through customary marine tenure (see section above).

3.4 Recreational sub-sector

Hickey and Jimmy (2008) indicate that the sport fishing industry has steadily grown from two to three charter boats a decade ago to a current level of eight. Vanuatu currently holds blue marlin world records and is increasingly being recognized as an international game-fishing destination. Each boat lands approximately six to eight tonnes of pelagic fish annually. Fish landed by game boats remain the property of the boat, not the game fisher and the sale of these fish are used to offset fuel and operation costs. This equates to some 48 to 64 tonnes of fresh pelagic fish supplying the hotel, resort and restaurant trade.

The Vanuatu Game Boat Operators Association (VGBOA), established in 2004, indicates that 1 120 people came to Vanuatu in 2005 on pre-booked fishing charters and spent over USD 2.6 million in-country. Three quarters of this was spent on airfares, accommodation, food and drinks, entertainment, transport, sightseeing and outer island travel. The VGBOA funds, deploys and maintains three fish aggregating devices off Efate, although all fishers have access to them.

Currently, the Tourism Office grants a tourism licence for sport fishing boats while the Department of Fisheries grants a fishing licence. That licence comes within the scope of the Vanuatu Tuna Management Plan, which states that "charter sportfishing vessels that sell their catch are considered to be commercial fishing vessels and are required to obtain a commercial fishing licence and will follow the same rules for determining fees and license conditions as any other commercial vessel".

3.5 Aquaculture sub-sector

Recent aquaculture production in Vanuatu			
	2005	2006	2007
Cultured giant clams (pieces)	0	1 310	2 186
Cultured coral (pieces)	815	1 205	403
Red tilapias (tonnes)	0	90	13
Nile tilapia (tonnes)	1	2	n/a
Monkey river prawn (tonnes)	0	0	n/a
Blue shrimp (tonnes)	0	22	18

Vanuatu's 2007 aquaculture production is estimated to be 31 tonnes of fishes and crustaceans and 2 500 pieces of giant clams and corals, with the estimated total value of about USD 389 000.

4. POST-HARVEST USE

4.1 Fish utilization

In general offshore fishing is export oriented. The high quality fresh bigeye and yellowfin is typically exported to Japan and the USA. Much of the albacore is sent to canneries in American Samoa, with some going to canneries in Southeast Asia. The non-tuna catch and rejected tunas landed by the offshore fishing vessels that are based in Port Vila are consumed locally.

In the coastal fisheries:

- Inshore finfish and invertebrates are largely consumed by the harvesting household, but a significant amount is sold to urban residents and resorts/restaurants. Those commercial establishments pay especially high prices for deepwater demersal fish, lobsters and coconut crab.
- The beche de mer is shipped to China.
- The aquarium fish and associated coral products are shipped to the USA.
- The trochus is either processed locally (to form button blanks) or for export to Asia and Europe (to form high quality mother-of-pearl buttons).

4.2 Fish Markets

Two government-owned urban fish markets with substantial refrigerated fish-storage were established in 1983: the Port Vila market, called Port Vila Fisheries Limited (PVFL), but commonly known as Natai, located on the waterfront, and the Luganville Santo Fish Market located adjacent to the Public Market on the Sarakata River. The role of the fish markets was to market the high value deepwater fish that was caught from the rural fisheries centres in the two urban centres where there was a growing demand from the tourism and urban markets. Airfreight was relied upon for shipment to these urban centres. In the mid-1990s both markets closed. The reasons for the closures are related to government involvement in commercial activities and subsequent divestment. (Hickey and Jimmy, 2008)

Currently, there are a few commercial fish markets in the main urban areas of Port Vila and Luganville, plus several locations where fish are informally marketed.

5. FISHERY SECTOR PERFORMANCE

5.1 Economic role of fisheries in the national economy

A recent study by the Asian Development Bank attempted to quantify the fishery-related benefits received by Vanuatu. The study gave the available information on the contribution of fishing/fisheries to GDP, exports, government revenue, and employment. The results can be summarized as:

- Official estimates show that fishing in 2007 was responsible for 0.8 % of the GDP of Vanuatu. A recalculation using a different methodology shows it was 1.3% in 2007.
- Exports of fishery products were about 3.4 % of all export in FY 2006/07.
- Access fees paid by foreign fishing vessels represent 1.2 % of all government revenue.
- 72% of the rural households in Vanuatu are engaged in fishing activities

From the above it can be seen that fisheries make a relatively important contribution to rural employment.

5.2 Demand

The per capita consumption of fish in Vanuatu, based on the 2007 FAO Food Balance Sheet, is 33.6 kg. Various other studies have made estimates ranging between 15.9 and 25.7 kg. Considering Vanuatu's population, 25 kg of fish consumption per capita translates into a 2010 demand for 6 131 tonnes of fish.

Factors influencing the future demand for fish are increase in price of fish (over-exploitation of inshore areas, gradual devaluation of the local currency, fuel cost increases), increase in the tourism industry, relative cost of fish substitutes, and changes in dietary preferences.

5.3 Supply

The government has several strategies to increase the national fish supply. These involve supporting the marketing of fishery products in Port Vila from other parts of the country, deploying offshore fish aggregation devices, installation of ice machines in all six provinces, promoting aquaculture, and supporting village-level fisheries management.

Major factors affecting the local supply of fish are the cost of fuel, employment alternatives, transport links to the outer islands, and the offloading of fish by the locally-based longliners.

5.4 Trade

Over the 2004-2007 period the FOB value of annual fisheries exports from Vanuatu fisheries averaged USD 1.2 million, which does not include tunas taken by Vanuatu flag vessels and exported. The major exports are trochus, beche de mer, and aquarium products. FAO estimates of the average export of tunas over 2004-2007 period were around USD 72 millions.

Fishery exports, excluding tunas, are responsible for about 3.4% of all exports of the country.

5.5 Food security

Fish is an important element of food security in Vanuatu. However, relative to other Pacific Island countries, fish is not as significant in Vanuatu. Many fish consumption studies show that Vanuatu and Papua New Guinea have the lowest per capita fish consumption in the region.

The FAO Food Balance Sheets show that in 2007 fish contributed an average of 15.8% of all protein to the diet and 39.2% of animal protein.

Animal protein substitutes for fish consist mainly of various types of imported and domestic meat.

5.6 Employment

The most recent information on the degree of participation in fishing activities comes from the 2007 Agriculture Census. The report of the census states:

- 72% of the rural households in Vanuatu possess fishing gear and are engaged in fishing activities during the last 12 months.
- These fishing households number 15,758. Of those 11 577 (73%) fish mainly for home consumption, 4 127 (26%) for home consumption with occasional selling, and 74 (less than 1%) mainly for sale.

The earlier 2006 Agriculture Census had slightly different findings. 78% of all Vanuatu households (urban and rural) engage in fishing, with 48% in urban areas and 86% in rural areas.

A study by the Forum Fisheries Agency¹⁸ tracked the number of people in Vanuatu employed in tuna fishing and processing in Vanuatu over a seven-year period:

	2002	2006	2008
Local Jobs on Vessels	54	20	30
Local Jobs in Shore Facilities	30	30	30
Total	84	50	60

5.7 Rural development

The Fisheries Department's Capture and Development Section promotes artisanal, commercial and subsistence fishing enterprises to improve the livelihood of rural areas. The Department maintains extension centers in all six provinces. One of the major objectives of these outposts is to promote fisheries development. This is carried out through a variety of ways, including market facilitation, advice on fisheries management, deployment of offshore fish aggregation devices, and provision of ice-making equipment.

6. FISHERY SECTOR DEVELOPMENT

6.1 Constraints and opportunities

Some of the major constraints in fisheries development are:

- Many of the inshore fishery resources, especially those close to the urban markets, are fully or over-exploited.
- Small-scale fishers have difficulty in economically accessing the relatively abundant offshore fishery resources.
- There are considerable difficulties associated with marketing fishery products from the remote areas where abundance is greatest to the urban areas where the marketing opportunities are greatest.
- Port Vila is a relatively high-cost location to base an industrial fishing fleet.

The opportunities in the fisheries sector include:

- Taking advantage of the proximity of Port Vila to good longline fishing grounds.
- Having **smaller longline operations "piggyback" on to the new fishing/processing infrastructure.**
- Establishing closer linkages between the fishing and tourism sectors.
- Encouraging more on-shore processing of fish caught by vessels fishing in Vanuatu waters

A report by the Forum Fisheries Agency¹⁹ summarized the opinions on opportunities in Vanuatu domestic tuna industry development of (1) senior Fisheries Department officials and (2) the operator of an Asian longline fleet based in the country:

¹⁸ Gillett, R. (2008). A Study of Tuna Industry Development Aspirations of FFA Member Countries. Forum Fisheries Agency, Honiara, 70 pages.

¹⁹ Gillett, R. (2008). A Study of Tuna Industry Development Aspirations of FFA Member Countries. Forum Fisheries Agency, Honiara, 70 pages.

Present and former fisheries officials indicate that the two longline processing facilities under construction will result in a large increase in interest in longlining. In addition, all vessels licensed to fish in Vanuatu that do not offload in Vanuatu will pay significantly higher fees. These two factors will contribute to making the aspiration of having a substantial longline fleet based in the country a reality. A major operator of longline vessels (who is building the tuna processing facility in Vanuatu) aspires to have a fleet of 25 to 45 longline vessels based in Port Vila within a few years – but he stresses that fleet survival will be the main aspiration for the next decade. The desire to increase the fleet based in Port Vila is because the port is closer than in Suva (where much of his fleet is based) to the longline fishing ground that he targets.

6.2 Government and private sector policies and development strategies

The Fisheries Department annual reports contain information on the government's policies and development strategies. Recent reports indicate that the Department is concentrating its development efforts on five main activities:

- Ice machines and fish aggregation devices
- Improvement in the coordination and monitoring of fisheries development/management
- Provision of technical advice, information and training
- Improving the marketing from rural areas
- Development of alternative fisheries

Many of the government's policies and development strategies in fisheries are found in the document "Revised Tuna Management Plan - A National Policy for the Management of Vanuatu Tuna Fisheries". The plan gives information on both small-scale and tuna industry development policies and strategies:

Small-scale fisheries development:

- Local Development Fund - A component of licence revenues will be set aside in the Fisheries Development and Management Fund specifically for the purposes of funding rural fishery and aquaculture development activities.
- A FAD development programme will be developed under the supervision of the Director of Fisheries. The Local Development sub account in the Fisheries Development and Management Fund will be utilized for the construction and maintenance of FADs within the six provincial government regions of Vanuatu. This sub account will in part be funded by the users themselves through a portion of their licence fees.
- The Fisheries Development and Capture Division Officers will: (1) in collaboration with respective provincial enforcement officers carry out the duties of the Authorized Officers within their area of jurisdiction pursuant to the Fisheries Act No. 55 of 2005; (2) act as a liaison between the Vanuatu Maritime College (VMC), the Provincial Governments and fishermen to promote standard courses developed by the VMC; (3) provide specific rural training on tuna fishing and handling techniques where this is not available from the VMC; (4) develop and assist in the implementation of the provincial FAD programme activities in rural areas; (5) be an information resource on fisheries laws, regulations, and management plans; and (6) provide fisheries related technical support in rural areas when traveling for other purposes.

Support for Tuna Fishery Development

- **Duty free concessions:** To encourage participation in the development of the domestic tuna industry, all locally based vessels with a valid Commercial Fishing Licence will be eligible for duty exemptions on fuel and fishing gear including bait, fishing equipment and spare parts for their fishing operation
- **Infrastructure Development:** The current lack of basic infrastructure impedes the development of a larger scale tuna fishing industry in Vanuatu. Development plans that include the construction (or reconstruction) of infrastructure and resources with long-term benefits to the domestic fishing industry such as wharves, processing facilities and slipways will be given preference by the Fisheries Department.
- **Information Resources:** The Fisheries Department will provide appropriate technical assistance to facilitate development of domestic tuna business in Vanuatu.
- **Foreign Investment:** In order to assist in attracting foreign investors the Fisheries Department will provide information and support to the Vanuatu Foreign Investment Board and other agencies to actively promote and attract genuine foreign investment in the Vanuatu tuna industry. Joint ventures with significant involvement of Vanuatu companies and individuals will be given preference.
- **Legislation to Facilitate Fish Exports:** To facilitate the export of tuna and tuna products to foreign markets as the US and European Union, the Tuna Management Advisory Committee (TMAC) will actively support the development and implementation of appropriate health and other legislation required to ensure that the food safety requirements of importing countries can be met.
- **Ni Vanuatu Crewing Requirements:** All Vanuatu flagged fishing vessels and all locally based foreign fishing vessels will be obligated to employ Ni Vanuatu as officers and fishing crew, while placement of Ni Vanuatu on foreign fishing vessels operating in Vanuatu EEZ will be strongly encouraged. Local vessels must be crewed by Ni Vanuatu and wherever possible this will include the master and engineer.

The Government's aquaculture development strategy is given in the **Aquaculture Development Plan 2008–2013**. The plan identifies seven critical areas that need to be addressed in order for aquaculture to develop:

- putting in place appropriate aquaculture policy and legislation;
- establishing credit and finance schemes for the public and private sector;
- ensuring that adequate infrastructure is in place, including basic utilities and transportation;
- instigating research and development that will address bottlenecks in farming, marketing, etc.;
- ensuring that environmental management and biosecurity programmes maintain development within limits and at an acceptable level of risk;
- providing adequate extension support to farmers and communities; and
- undertaking human resource development to ensure that the public and private sector have the necessary skills and training for aquaculture.

The private sector's policies are not formalized. Judging from the attitudes and recent action of the companies engaged in offshore longline fishing, the main policy is not one of expanding but rather surviving during a period of poor profitability – as has been the case for the last few years.

6.3 Research

A very large number of fisheries research projects have been carried out in Vanuatu. Most areas of Vanuatu and most types of resources have been covered by various research endeavors. The older research is listed in the Vanuatu Fisheries Bibliography²⁰. The results of many of the research projects are summarised by resource in the Vanuatu Fisheries Profiles²¹.

Many of the research activities have been carried out or supported by regional or international agencies, in particular the French research organization ORSTOM²² which until 1997 maintained a field centre in Vanuatu.

Historically, the main areas of research projects have been:

- biological studies on deep-bottom fish
- studies on the distribution and yield potential of tuna baitfish species
- resource assessments of trochus, green snail and beche-de-mer
- biological and population dynamics studies on coconut crab
- experimental hatchery rearing of trochus and green snail
- juvenile release experiments with trochus, and subsequent population monitoring

Presently, a research priority of the Fisheries Department is to carry out stock assessment of important inshore resources such as trochus, green snail, sea cucumber and giant clams.

6.4 Education

As part of earlier EU funded fisheries development efforts a Fisheries Training Centre (FTC) was established in Luganville on Espiritu Santo in 1991. This centre provided training to island fisherman who resided at the centre for a month while they received training in deepwater and pelagic fishing gear and methods, fish handling, outboard engine and boat maintenance as well as basic financial management. Hundreds of fishers from throughout the group received training through the centre through the 1990s. However, with the cessation of EU funding in 1996, the government had difficulty in funding the centre and it was decided to eventually allocate the centre to the newly formed Vanuatu Maritime College (VMC) in 2001. The College trains seafarers for employment on merchant and fishing vessels as well as for cruise ships. The VMC includes in its mandate to provide practical fisheries training to rural communities in addition to its primary function of providing training to seafarers. Fisheries training courses are run in rural areas following requests from **Provincial Governments, fisherman's associations** and/or from the Department of Fisheries (Hickey and Jimmy 2007)

Higher-level or academic training in fishery-related subjects is generally sought overseas. Overseas education is undertaken in a variety of institutions:

- Academic training in biological, economic and other aspects of fisheries is given at the University of the South Pacific in Suva, and to a lesser extent at universities in New Zealand, Australia, Japan, and the United Kingdom.

²⁰ Gillett, R. D. and D. Kenneth (1987). Vanuatu Fisheries Bibliography. Document 87/7, FAO/UNDP Regional Fishery Support Programme, Suva, 67 pages.

²¹ Amos, M. (2007). Vanuatu Fishery Resource Profiles. Pacific Regional Environment Programme, Apia, Samoa.

²² Now known as IRD – Institute de recherché pour le development.

- Training courses, workshops and attachments are frequently organized by the regional organizations: the Secretariat of the Pacific Community in New Caledonia and the Forum Fisheries Agency in the Solomon Islands. The subject matter has included such diverse topics as fish quality grading, stock assessment, seaweed culture, fisheries surveillance, and on-vessel observing.
- Courses and workshops are also given by NGOs and by bilateral donors.

6.5 Foreign aid

Vanuatu has enjoyed fisheries sector assistance from a range of multi-lateral and bi-lateral donors. Support has historically included the funding of expatriate staff positions within the Department of Fisheries, establishment and operation of rural fishing centres, provision of vessels, FAD materials and equipment, construction of aquaculture facilities, collaborative research costs, and travel costs for training and attendance at meetings.

Important donors have included the Governments of Britain, Australia, New Zealand and Japan as well as the European Union. Other donors have included ACIAR, ICOD and CIDA. Assistance is also obtained from the international organisations of which Vanuatu is a member, including FAO, UNDP, ESCAP, and other United Nation agencies. The regional organisations serving Pacific Island countries, including the Forum Fisheries Agency, the Secretariat of the Pacific Community, the South Pacific Regional Environment Programme, the Forum Secretariat, and the South Pacific **Applied Geoscience Commission have been active in supporting Vanuatu's fisheries sector.**

7. FISHERY SECTOR INSTITUTIONS

Administration, development and management of the fisheries sector is the responsibility of the Fisheries Department within the Ministry of Agriculture, Quarantine, Forestry and Fisheries. The Fisheries Department headquarters are in Port Vila with a regional office in Luganville, and smaller provincial centers in each of **Vanuatu's six provinces. The Fisheries Department is headed by a Director, and has five functional divisions (Amos 2007).**

According to the most recent annual report of the Fisheries Department (Raubani 2008), the functions of the five divisions are:

- The Management and Policy Division is the Fisheries Department's **arm responsible for coordinating all the Department's activities relating to management and policy matters.** The core activities of the Division are to: (1) Appraise investment proposals, (2) Provide investment advice on potential areas, (3) Develop and manage Departmental database, (4) Review and development of new management policies, regulations and fishery plans, (5) **Manage the Department's Information Technology section, and (6) Maintain close collaboration with line government agencies.**
- The Compliance, Licensing and Enforcement Division ensures that fishing activities within **Vanuatu's 200 miles EEZ comply with Fisheries laws and regulations:** in particular, the Fisheries Act No. 55 of 2005. This governs the harvest of resources, access to resources and penalties.
- The Research and Aquaculture Division deals mainly with research work, which includes stock assessment of resources, aquaculture and development **of awareness materials. The Division's objectives include: (1) Exploring potential marine resources and new initiatives for rural people. (2) Carrying**

- out stock assessment and analysis on all edible and commercial marine resources, and (3) Developing effective materials and information for fishers.
- The Development and Capture Division deals directly with domestic fisheries development activities within the six-mile provincial zones. Its objectives are to encourage private, commercial and subsistence fishing enterprises to improve livelihood in the rural areas. This division plays a vital role in ensuring that essential services provided by the Department are delivered to the rural areas. However, due to budget constraints, only five out of six centers operated in 2007.
 - **The Finance and Administration Division is the Department's gateway to other government departments and ministries.** It provides the financial and administration backup that allows smooth delivery of fisheries programs to the people of Vanuatu.

Other institutions in the country that are relevant to fisheries are the Vanuatu Maritime College, the Sports/Charter Boat Association, the Vanuatu Fishermen Association, and the Vanuatu Chamber of Commerce and Industry.

Some of the important internet links related to fisheries in Vanuatu are:

- www.spc.org.nc/coastfish/Countries/Vanuatu/vanuatu.htm - Information on Vanuatu fisheries, links to other sites concerning Vanuatu, and some SPC reports on fisheries in Vanuatu
- www.adb.org/Documents/Reports/Vanuatu - Contains the Asian Development Bank review of Vanuatu agriculture and fisheries.
- www.sprep.org/att/publication/000557_IWP_PTR49.pdf-Contains the Vanuatu fishery resource profiles

8. GENERAL LEGAL FRAMEWORK

The Fisheries Act No. 55 of 2005 is the main fisheries law of Vanuatu. The main provisions of the Act deal with:

- Fisheries management, development and conservation
 - Designated fisheries
 - Fisheries management plans
- Local fishing vessels
 - Obligation of local fishing vessels
 - Local fishing licences
- Foreign fishing vessels
 - Obligations of foreign fishing vessels
 - Access agreements
 - Related agreements
 - Foreign fishing licences
 - Locally based foreign fishing vessels
- Compliance with international obligations
- General licensing provisions

The Act's sections on management/development are especially important and deserve additional mention. The framework for management is based on designated fisheries and management plans. With respect to these two features, important provisions of the Act are:

Designated fisheries:

- The Minister may, on the recommendation of the Director, by notice published in the Gazette, determine that a fishery is a designated fishery if, having

regard to scientific, economic, environmental and other relevant considerations, the Minister considers that the fishery is important to the national interest; and requires management and development measures for its effective conservation and optimum utilisation.

- The Director must prepare, and review as necessary, a plan for the management and development of each designated fishery.
- The Minister may make regulations, not inconsistent with this Act, relating to the determination of designated fisheries and the management, development and conservation of those fisheries, and the enforcement of any matter identified in a plan relating to a designated fishery.

Fisheries management plans

- Each fishery management plan must: identify each fishery and its characteristics, including the present state of its exploitation; And (b) specify the objectives to be achieved in the management of the fishery to which it relates; and (c) specify the management and development strategies to be adopted for the fishery to which it relates; and (d) provide for a scheme of licensing, if necessary, or other appropriate management measure; and (e) specify, if applicable, the licensing regime to be applied, including the limitations, if any, to be applied to local fishing operations and the amount of fishing, if any, to be allocated to foreign fishing vessels; and (f) specify the information and other data required to be provided by persons licensed to fish for that fishery; and (g) take into account any relevant traditional fishing methods and practices.
- During the preparation of each fishery management plan the Director must consult with appropriate government ministries and departments; and fishermen, local authorities and other persons likely to be affected by the plan.
- Every fishery management plan is to be submitted to the Minister and comes into operation on approval by the Minister in writing.
- The Minister may make regulations, not inconsistent with this Act, for the purpose of enforcing fisheries management plans.

The most recent regulations under the act were made by the Minister in 2009. The Fisheries Regulations Order No. 28 of 2009 are 105 pages in length and provide for the implantation of most aspects of the Act.

REFERENCES

- Amos, M. 2007.** Vanuatu Fishery Resource Profiles. Pacific Regional Environment Programme, Apia, Samoa.
- Bell, L. and M. Amos. 1993.** Republic of Vanuatu Fisheries Resources Profiles. Report 93/49, Forum Fisheries Agency, Honiara.
- Chapman, L. 2002.** Development Options and Constraints Including Infrastructure and Training Needs Within the Tuna Fishing Industry and Support Services in Vanuatu. Secretariat of the Pacific Community, Noumea
- FAO. 2009.** Fishery and Aquaculture Statistics: Food balance sheets. In: FAO Yearbook of Fishery and Aquaculture Statistics 2007. Rome, FAO. pp 55-68
- Gillett. 2009.** The Contribution of Fisheries to the Economies of Pacific Island Countries and Territories. Pacific Studies Series, Asian Development Bank, Manila
- Gillett, R. 2008.** A Study of Tuna Industry Development Aspirations of FFA Member Countries. Forum Fisheries Agency, Honiara, 70 pages.
- Gillett, R. 1995.** Aspects of Trochus Industries, Trade and Marketing Relevant to the Pacific Islands - a report prepared for the World Bank, 75 pages
- Gillett, R. D. and D. Kenneth. 1987.** Vanuatu Fisheries Bibliography. Document 87/7, FAO/UNDP Regional Fishery Support Programme, Suva, 67 pages.
- Hickey, F. and R. Jimmy. 2008.** Fisheries. In: Gay, D. Vanuatu Diagnostic Trade Integration Study 2008 Report. Blue Planet Media + Communications, Port Vila, Vanuatu.
- NSO. 2008.** Preliminary Report Agriculture Census 2007. National Statistics Office, Port Vila.
- Preston, G. 1996.** Masterplan for the Sustainable Management of Development of Vanuatu's Inshore Fisheries Resources. Technical Report 2. TCP/VAN/4552. Food and Agriculture Organization of the United Nations, Bangkok.
- Raubani, J. 2008.** Fisheries Department 2007 Annual Report. Management & Policy Division, Fisheries Department, Port Vila.
- Vanuatu Fisheries Dept. 2009.** National Tuna Fishery Report. Report WCPFC-SC5-AR/CCM-27, Western and Central Pacific Fisheries Commission, Pohnpei.