Aquatic resources in the Philippines and the extent of poverty in the sector

May 2002

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Acknowledgment

This report was produced by Voluntary Service Overseas (Philippines) with financial support from Support to Regional Aquatic Resource Management (STREAM) progrmame.

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Abbreviations

ADB	Asian Development Bank
AFMA	Agriculture and Fisheries Modernization Act
APIS	Annual Poverty Indicators Surveys
BAFPS	Bureau of Agriculture and Fisheries Production Standards
BAS	Bureau of Agricultural Statistics
BFAR	Bureau of Fisheries and Aquatic Resources
CBNRM	Community Based Natural Resources Management
CADCs	Certificate of Ancestral Domain
CENRO	Community Environment and Natural Resources Office
CEP	Coastal Environmental Programme (now CMMO???)
CHED	Commission on Higher Education
CLAS	Central Luzon Agricultural School
CLSU	Central Luzon State University
CRMP	Coastal Resource Management Programme
DA	Department of Agriculture
DAO	Department Administrative Order
DENR	Department of Environment and Natural Resources
DILG	Department of Interior and Local Government
DRDC	Diapitan Resource Development Corporation
DTI	Department of Trade and Industry
DOST	Department of Science and Technology
DOTC	Department of Transportation and Communication
ECC	Environmental Compliance Certificate
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ERDB	Ecosystems Research Development Bureau
FAO	Fisheries Administrative Order
FARMC	Fisheries and Aquatic Resource Council
FIDC	Fishery Industry Development Council
FIES	Family Income and Expenditure Survey
FMB	Forest Management Bureau
FOB	Freight on Board
FLAs	Fisheries Lease Agreements
FSP	Fisheries Sector Program
FSP	Forestry Sector Program
HDI	Human Development Index
ICC	Indigenous Cultural Communities
IPs	Indigenous Peoples
IFMA	Industrial Forest Management Agreement
IFMP	Industrial Forest Management Program
IPRA	Indigenous People's Rights Act
gt	gross tonnes
LLDA	Laguna Lake Development Authority
LMB	Land Management Bureau
LGU	Local Government Unit
MARINA	Maritime Industry Authority
MBN	Minimum Basic Need
mt	metric tonnes
NAMRIA	National Mapping and Resource Information Authority
NAPC	National Anti-Poverty Commission
NEPC	National Environmental Protection Council

NFDO	National Forestation Development Office
NFR	NGOs for Fisheries Reform
NFRDI	National Fisheries Research and Development Institute
NGAs	National Government Agencies
NGOs	Non-Government Organizations
NIPAS	National Integrated Protected Areas System
NPCC	National Pollution Control Commission
NSCB	National Statistical Coordination Board
NRDC	Natural Resources Development Corporation
NSO	National Statistics Office
OECF	Overseas Economic Cooperation Fund
PAKISAMA	Pambansang Kilusan ng mga Mangingisda (National Association of Fishers)
PAMANA KA	Pambansang
PAMB	Protected Area Management Board
PAWB	Protected Area and Wildlife Bureau
PCAMRD	Philippine Council for Aquatic and Marine Research Development
PCG	Philippine Coast Guard
PD	Presidential Decree
PENRO	Provincial Environment and Natural Resource Office
PFC	Philippine Fisheries Commission
PFDA	Philippine Fisheries Development Authority
RA	Republic Act
SAFDZ	Strategic Agriculture and Fisheries Development Zones
SCRA	Supreme Court Ruling Annotated
SEAFDEC	Southeast Asian Fisheries Development Centre
TLA	Timber License Agreement
TVE	Technology Verification and Extension
UP MSI	University of the Philippines Marine Science Institute
UPV	University of the Philippines - Visayas

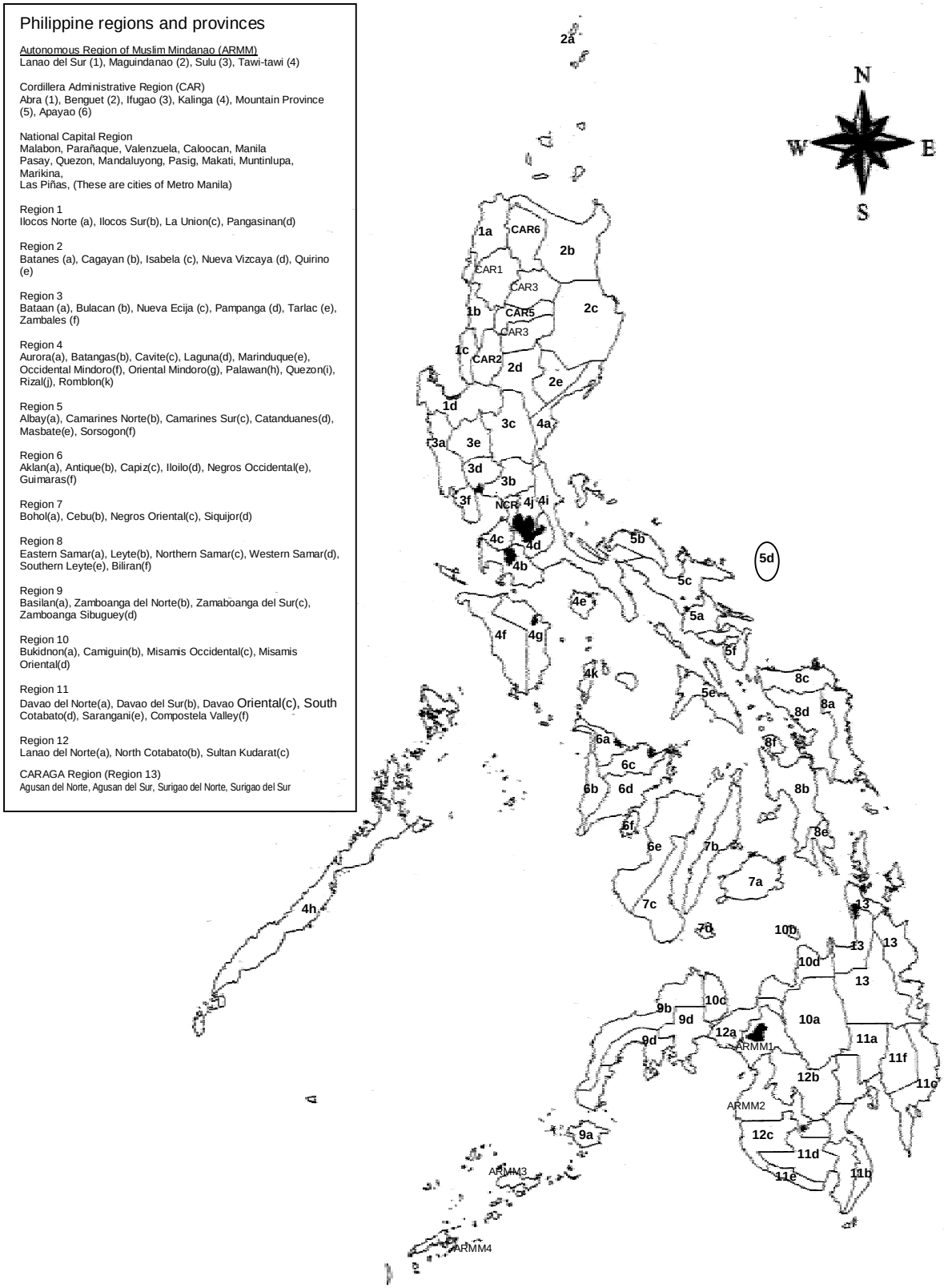


Figure 1: Philippine regions and provinces

1 Introduction

This report presents an overview of the state of aquatic resources in the Philippines, its performance and importance in the Philippine economy, and explores the situation of poverty in the "aquatic resources sector." The report describes the policy environment that guides the action of key actors in the sector.

The report also provides a general analysis of some trends in relation to factors that keep the poor from participating and benefiting from aquatic resource management, based on the perspectives of the authors. The general analysis should be considered "a first go" by the authors at pointing readers to potential entry points for programme intervention on poverty-focused programmes in the aquatic resources sector. The report describes initiatives that have been carried out in the past and gives a general assessment of where poverty focused work may still be needed.

The report is based on a synthesis of publicly available secondary information that we were able to gather within a three-week period, from the first week to the last week of April 2002.

The report was written with two principal users in mind - the STREAM initiative who are interested in regional sharing of learning on poverty-focused programmes in the sector across Southeast Asia and the VSO programme in the Philippines who are reviewing their country strategic plan and is therefore interested to know ***where*** and ***what*** type of poverty-focused intervention in the sector is needed and possible.

The report gives readers general answers to where and what questions above. It does not claim, however, to be comprehensive and much work remains to be done to make the analysis in the report more area and context specific. As much as possible, we have provided "links" to possible sources of more detailed information for readers who are interested to do more research in specific aspects of this report.

The report is divided into seven (7) sections:

- status of aquatic resources in the Philippines,
- fisheries and the Philippine economy,
- fisheries sector production,
- persons involved in the aquatic resource sector,
- description of fishery policies,
- poverty situation in the sector, and
- analysis and recommendations

2 Status of aquatic resources in the Philippines

For the purposes of this report, aquatic resources shall be broadly divided into: (a) marine resources and (b) inland resources.

2.1 Marine resources

Marine resources are those found in the coastal zone. Republic Act 8550 (Fisheries Code) defines the coastal zone as a "*band of dry land and adjacent open space (water submerged land in which terrestrial processes and uses directly affect oceanic processes and uses, and vice versa; its geographic extent may include areas within a landmark limit of 1 km from the shoreline at high tide to include mangroves, swamps, brackish water ponds, nipa swamps, estuarine rivers, sandy beaches, and other areas with a seaward limit of 200 m isobath to include coral reefs, algal flats, seagrass beds, and other soft-bottom areas* (RA 8550).

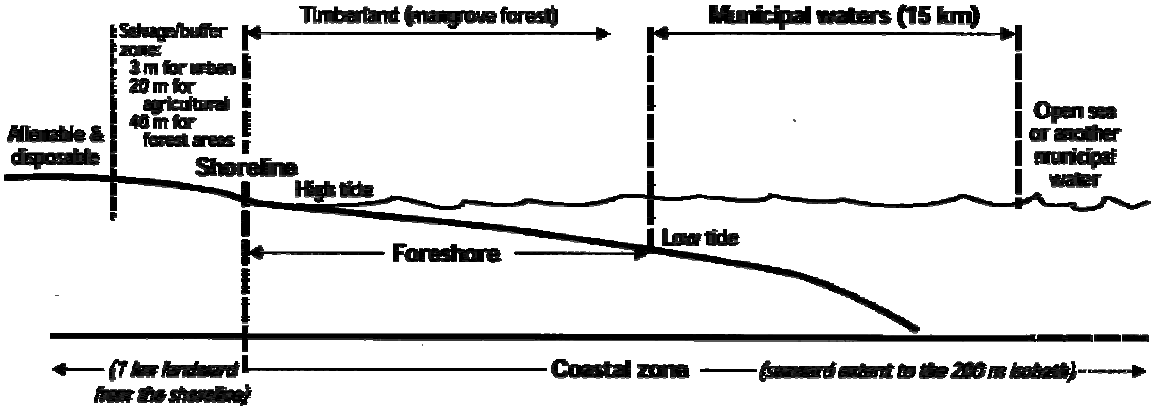


Figure 2: Diagrammatic presentation of key coastal features in the Philippines (Source: DENR, BFAR, DILG 2001)

The Philippines is an archipelago located in the Indo-West Pacific Region, an area recognized for its marine biodiversity. It is composed of 7,100 islands with a discontinuous coastline of approximately 17,460 km (See Table 1). The country's total territorial waters, including the Exclusive Economic Zone cover 2,200,000 sq. km. Coastal and oceanic waters cover 266,000 sq.km. and 1,934,000 sq.km., respectively. The country's shelf area at depth of 200-m totals 184,600 sq. km.

Table 1: General information on aquatic resources in the Philippines

Marine Resources	
Total Territorial Water Area (including the EEZ) Coastal Oceanic	2,200,000 sq.km. 266,000 sq.km. 1,934,000 sq.km
Shelf Area (Depth 200 m)	184,600 sq. km.
Coral Reef Area	27,000 sq. km (within the 10-20 fathoms reef fisheries occur)
Length of Coastline	17,460 km.
Inland Resources	
Swamplands Freshwater Brackishwater	246,063 ha. 106,328 ha. 139,735 ha.
Existing fishpond Freshwater Brackishwater	253,854 ha. 14,531 ha. 239,323 ha.

Source of Data: BFAR, 2000

2.1.1 Coral reefs

The coral reef area in the Philippines is one of the largest in the world, covering 27,000 sq. km. Unfortunately, these areas have been degraded over the past years. In comparing the status of coral reefs in some areas in the country between 1981-1991, Gomez (1991) reports that excellent reef conditions were found in Negros Oriental, Zamboanga del Norte and Aliguay Island in this province.

Good to excellent coral reefs can produce 20 tons or more of fish and other edible products per square kilometer per year. Once destroyed, they produce less than 4 tons per square kilometer per year. The sustainable catch from a good reef over 10 years is about 200 tons of fish while that from a destroyed reef is only 72 tons (www.oneocean.org). A 1996 report by the UP-MSI reports that only 4.3% of our coral reefs are in excellent condition. Most are either in fair (39%) or poor condition (30.5%). An estimated 25% of our reefs are in good condition (See Table 2). See Appendix 1 for status of coral reefs in selected stations in the Philippines and www.reefbase.org for maps.

Table 2: Condition of coral reefs, 1996

	Condition (%)	Coral Reef Area (%)
Excellent	75 – 100.0	4.3
Good	50 – 74.9	25.0
Fair	25 – 49.9	39.0
Poor	0 – 24.9	30.5

Source of Data: UP-MSI, 1996 as cited in Ibon Foundation, 2000

Sedimentation, overfishing, and destructive fishing are the three most common factors significantly affecting coral reefs. The net present value over 25 years (at 10 percent discount rate) of benefits from blast fishing to individuals is only US $14,600. The loss of tourism potential, on the other hand, can amount to more than US$400,000, while that of shoreline protection is about US $190,000. Foregone fishery income can be as much as US $108,000. On the other hand, overfishing of small pelagic and demersal fishes is resulting in loss in catch of more than US$400 million per year, fishing effort 2 to 3 times that required for optimal effort to produce a "sustainable yield" is the primary cause of this loss. These large losses will become more obvious as coral reefs become increasingly degraded and we begin to pay to make the reparations required to recover the health and quality of these precious resources. The unfortunate reality is that reparation and recovery operations are extremely expensive, and they not bring back the original resource lost in its natural and most productive form (www.oneocean.org).

2.1.2 Seagrasses and seaweeds

A total of 1,384 individuals and 55 species from 25 fish families have been identified from five seagrass sites in the Philippines alone (Fortes, 1998). This is considered the highest number in the Indo-Pacific region and the second highest worldwide, second only to Australia. Seagrass beds in the country support at least 172 species of fish, 46 species of invertebrate, 51 species of seaweeds, 45 species of algal epiphytes, 1 sea turtle and 1 species of dugong. They are valued mainly for their role as fish nursery areas and as foraging grounds for fish and others (Fortes, 1998; UNEP, 1997; www.oneocean.org).

An estimated 30 to 50 percent of the seagrass habitat in the Philippines has been lost to heavy siltation and coastal development (Fortes, 1998). The Coastal Resource Management Program (CRMP) reports that although seagrasses are a relatively hardy group of plant species, they are extremely sensitive to excessive siltation, shading, water pollution, and fishing practices that use bottom trawls, which scrape the beds. Their removal from the marine ecosystem results in lower productivity and decreases water quality. Typically, when a seagrass community is eliminated, its marine animal associates also disappear from the area. In most cases, the disappearance of seagrass beds is hardly noticed compared to mangroves or coral reefs. One species that maybe considered endangered, if not completely lost, is *Halophila becarii*. Specimens were last collected

in Manila Bay more than eight decades ago. The species is said to still thrive in the South China Sea and Bay of Bengal.

The country is the third biggest producer of seaweeds in 1997, contributing 0.627 million mt or 9.3% of the world's seaweed production.

2.2 Inland resources

2.2.1 Mangroves and brackish water ponds

A study by Primavera (1997) is instructive on the conditions of mangrove resources in the country (refer to Table 3). According to this study, mangroves have suffered the earliest and greatest degradation in the Philippines because of their relative accessibility and a long history of conversion to aquaculture ponds. Brown and Fischer had the earliest records on mangroves in 1918 with estimates at 450,000 has. This declined to 132,500 has. In 1990 and further declined to 120,000 has. in 1995 (DENR, 1996).

This decline may be traced to overexploitation of coastal dwellers, conversion to agriculture, salt ponds, industry and settlements. Nonetheless, Primavera (1997) suggests that aquaculture remains to be the major cause of this decline in mangrove areas. For example, she cited the "fishpond boom" in the 1950s-1960s where pond construction peaked at 4,000-5,000 ha/yr with government providing support through loans. In the same way, during the so-called "shrimp fever" in the 1980s, pond development accelerated to 4,700 ha/yr. Not surprisingly, the Asian Development bank (ADB) funded a US$21.8 million project on shrimps during this period.

Table 3:Total mangrove and brackishwater culture pond in the Philippines

Year	Mangrove Area	Brackishwater Culture Ponds			
		Total area (ha)	Increase/Year/ Hundred (ha)	Production (mt)	Remarks
1860	n.d.	n.d.	762 (1860-1940)	n.d.	Fishpond recorded in 1863
1920	450,000	n.d.	n.d.	n.d.	
1940	n.d.	60,998	n.d.	15,936 (1938)	
1950	418,382 (1951)	72,753	1,176	25,464	Fishpond boom
1960	365,324 (1965)	123,252	5,050 (1951-1960)	60,120	
1970	288,000	168,118	4,487 (1961-1970)	96,461	Conservation Phase
1980	242,000	176,231	811 (1971-1980)	135,951	Shrimp fever
1990	132,500	222,907	4,668 (1981-1990)	267,814	

n.d. – no data
Source of Data: Primavera, 1997

A 1998 report from the Coastal Environmental Program (DEP) of the Department of Environment and Natural Resources estimates that there are only 142,658.25 mangrove stands in the country planted through loans (See Table 4). Most of these mangroves are found in Region IX (50,515.25). Regions IV and X have 31,514.37 and 20,425.69 mangrove stands, respectively. The National Capital Region has the lowest with an estimate of only 11.0 mangrove stands.

Ramoran (2002) provides the most current estimate on mangrove cover at 117,700 has. Of this, 95% are secondary growth while only 5% are primary growth found in Palawan.

Table 4: Mangrove stands and plantations (as at 21 January 2002)

Region	Natural Stand (1998)	FSP Loan I	ESP OECF (2001)	CEP Cumulative	Total
I	100	868.39	0.00	309.00	1,277.39
II	3,700	127.00	0.00	170.00	3,997.00
III	100	1,157.80	0.00	261.60	1,519.40
NCR	0	0.00	0.00	11.00	11.00
IV	27,600	885.25	934.86	2,094.16	31,514.37
V	500	323.76	954.00	960.00	2,737.76
VI	2,500	312.81	445.37	54.00	3,312.18
VII	2,100	1,612.88	550.00	2,6846.50	7,109.38
VIII	500	251.03	2,060.00	4,030.00	6,841.03
IX	49,500	0.00	0.00	1,015.25	50,515.25
X	19,900	207.69	0.00	318.00	20,425.69
XI	5,700	49.20	0.00	571.00	6,320.20
XII	200	179.00	426.06	1,800.00	2,605.06
XIII		298.20	1,702.00	215.12	2,215.32
ARMM		1,449.82	807.50	0.00	2,257.32
TOTAL	112,400	7,722.83	7,8979.79	14,655.63	142,658.25

Sources of Data: Forestry Statistics 1998, Information from NFDO (Loan 1 & OECF 2000)
CEP Reports

2.2.2 Swamplands

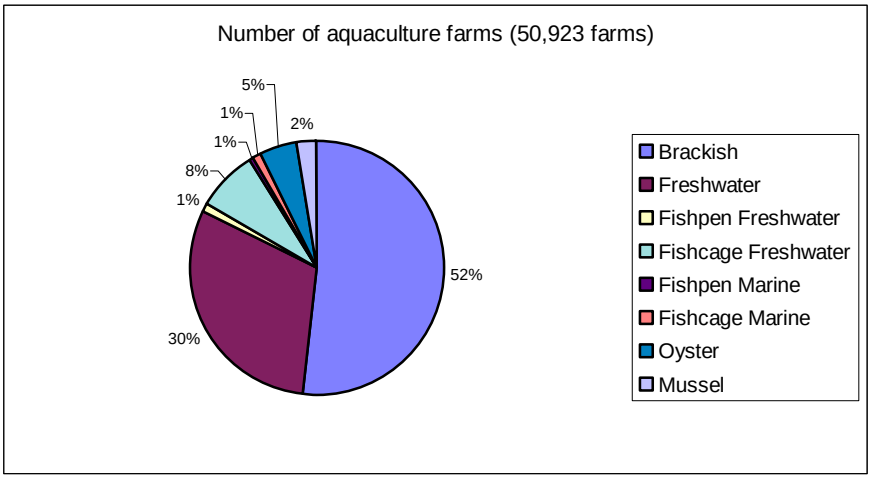
The Philippines has a total of 246,063 ha of swamplands: 106,328 ha of which are freshwater and 139,735 ha are brackishwater (BFAR, 2000).

2.2.3 Fishponds

There are 253,854 ha of fishponds: 14,531 ha of which are freshwater and 239,323 ha are brackish water fishponds.

In 1997, there were 50,923 farms recorded. 52% of these farms are brackish water farms, and 30 percent are freshwater farms (see Figure 3). The rest are fishpens, fish cages, etc. The average size of a brackish water farm therefore is 10 ha; while the average size of a freshwater farm is just under 1 ha. There are brackish water farms, however, which are more than 500 ha, especially those devoted to milkfish culture.

Figure 3: Distribution of aquaculture farms, 1997



Source: Bureau of Agricultural Statistics, 1997

2.2.4 Lakes and rivers

The ten major lakes in the Philippines are shown below. Fish pens and fish cages stocked with tilapia can be found in all of these lakes.

Table 5: Ten major lakes in the Philippines

Name of Lake	Location	Area (ha.)
1. Laguna de Bay	Laguna and Rizal	89,076
2. Lake Lanao	Lanao del Sur	34,000
3. Taal Lake	Batangas	24,356
4. Lake Mainit	Surigao del Norte-Agusan	17,430
5. Naujan Lake	Oriental Mindoro	7,899
6. Lake Buluan	Maguindanao	6,134
7. Lake Bato	Camarines Sur	3,792
8. Lake Pagusi	Agusan	2,532
9. Lake Labas	South Cotabato	2,141
10. Lake Lumao	Agusan	1,686
TOTAL		189,046

Source : Philippine Fisheries Profile, 2000, BFAR.

Figure 4: Location of ten major lakes in the Philippines

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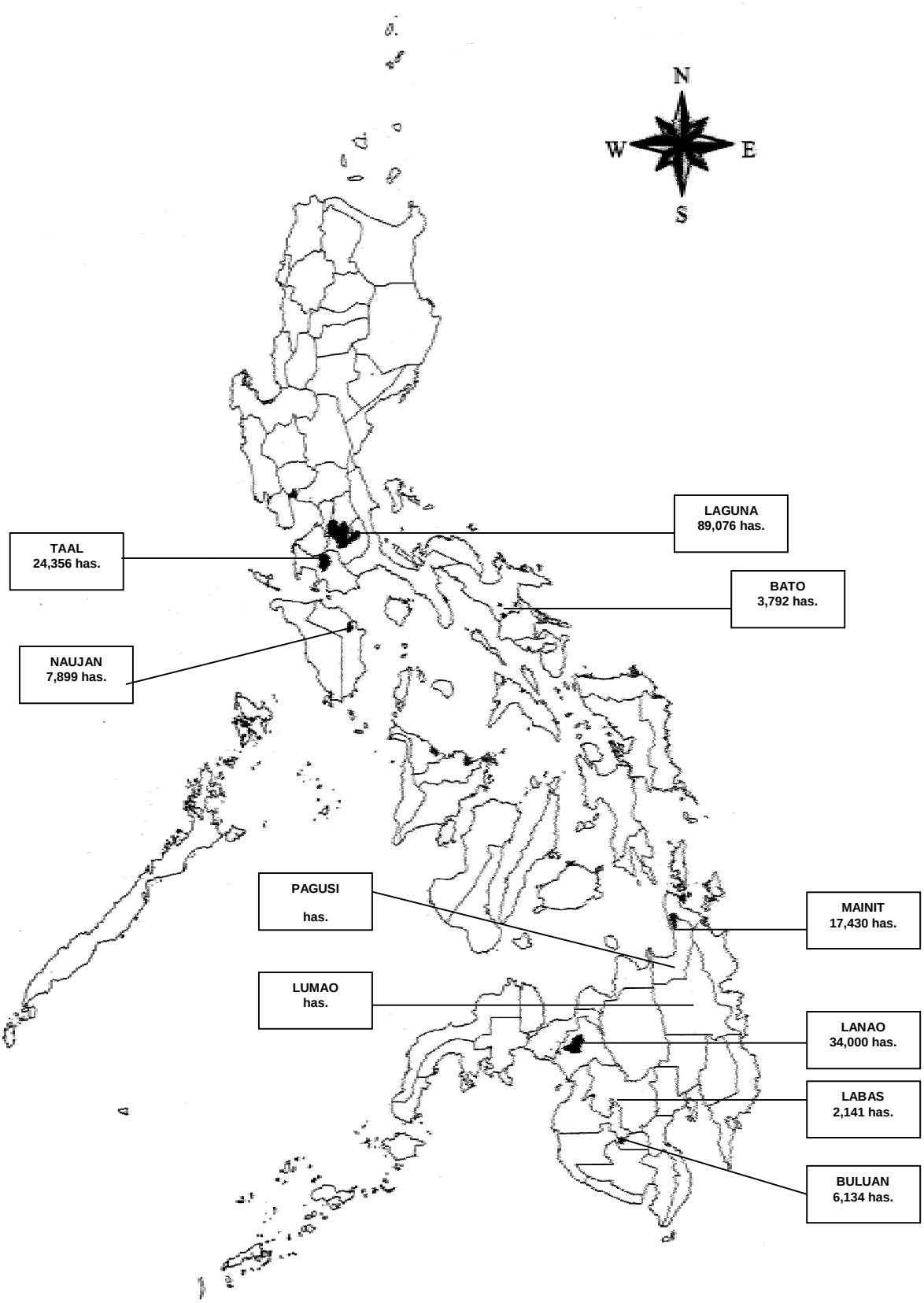
N
W
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LAGUNA
89,076 has.
TAAL
24,356 has.
BATO
3,792 has.
NAUJAN
7,899 has.
PAGUSI
has.
MAINIT
17,430 has.
LUMAO
has.
LANAO
34,000 has.
LABAS
2,141 has.
BULUAN
6,134 has.

The major river systems in the Philippines are enumerated below. Fish cages (for *lapu-lapu, Ephinephelus*) can be found in the mouths of some of these rivers. People also depend on these rivers for fish usually for home consumption.

Table 6: Major river basins in the Philippines

Rank	River Basins	Region	Drainage Area (sq. km)	Level Area (sq. km.)
1	Cagayan	II	25,649	3,546
2	Mindanao	XII	23,169	5,132
3	Agusan	X	10,921	2,494
4	Pampanga	III	9,759	6,660
5	Agno	III	5,952	1,883
6	Abra	CAR	5,152	299
7	Pasig-Laguna Bay	IV	4,678	1,065
8	Bicol	V	3,771	549
9	Abulug	II	3,372	178
10	Tagum-Libuganon	XI	3,064	504
11	Ilog-Hilabangan	VI	1,945	31
12	Panay	VI	1,843	430
13	Tagoloan	X	1,704	173
14	Agus	XII	1,645	166
15	Davao	XI	1,623	164
16	Cagayan	X	1,521	86
17	Jalaud	VI	1,503	301
18	Buayan-Malungun	XI	1,434	150

Source : National Water Resources Center as cited in The State of the Philippine Environment, IBON Foundation ,Inc., Databank and Research Center, 2000.

3 Fisheries and the Philippine economy

The country's population is 69 million (76 million in 2001) with an annual growth rate of 2.3% (Instituto del Tercer Mundo, 1999). About 80% of the country's provinces, two-thirds of its municipalities and 17 of its 25 largest cities are located in the coastal areas. An estimated 55% of the entire population resides in these areas. There are 806,929 people involved in the fishing industry, which is approximately 5% of the country's labour force. A majority of these people (68%) are involved in municipal fisheries. The aquaculture sector employs 26% of this number while commercial fishery employs the remaining 6% (ibid).

Some studies show that there may be an even higher number of people dependent on municipal fisheries. The National Statistics Office, for example, report that there are 500,000 families whose main source of income is fishing (cited in Quicho, Mislang & Batay-an, 1999). Multiplying this with 5, which is the average number of persons/family, it may be deduced that there are at least 3 million people dependent on fishing.

Unfortunately, a more precise and deliberate accounting of the number of people involved in the fishing industry and the number of people dependent on municipal fishing does not exist. This

may be due to the fact that such task is difficult considering the multiplicity of livelihood sources in communities. Fishers after all are also usually farmers or at times, labourers too.

According to BFAR, the Philippines ranks 14th among the 52 top-producing countries in 1997 and 11th in the world aquaculture production of fish and shellfish. The country is also the 3rd biggest producer of seaweeds in 1997, contributing 0.627 million mt or 9.3% of the world's seaweed production.

3.1 Contribution to GDP (Gross Domestic Product)

Fisheries contributed 3.7% to the total gross domestic product (at constant 1985 prices) in 2000. The total GDP of the Philippines in 2000 at constant 1985 prices is 953,582 million pesos (£ 13.4 billion).

Table 7: The contribution of fisheries to the Philippine economy

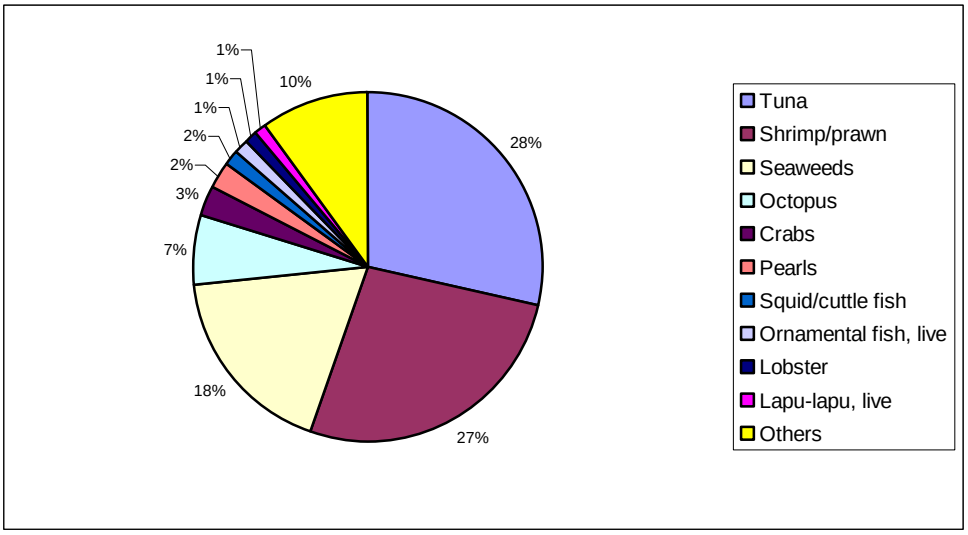
Contribution to the Total GDP	
At current Prices At Constant Prices	2.3% 3.7%

Source: BFAR, 2000

3.2 Fisheries exports

Fishery exports amounted to USD 137,382,000 in 1999. The top three fishery exports in terms of value in 1999 are: tuna (28% of total fishery exports), shrimp/prawns (27%), and seaweeds (18%) (see Figure 5.). For a breakdown of fishery exports in 1999, please see Appendix 2.

Figure 5: Major fishery exports, 1999



3.3 Employment in fisheries

In 2000, the fisheries sector was recorded to employ a total of 806,929 persons (see Table 8).

Table 8: Employment in the fisheries sector

Employment	
Aquaculture Municipal Commercial Total	74,537 persons 374,408 persons 357,984 persons 806, 929 persons

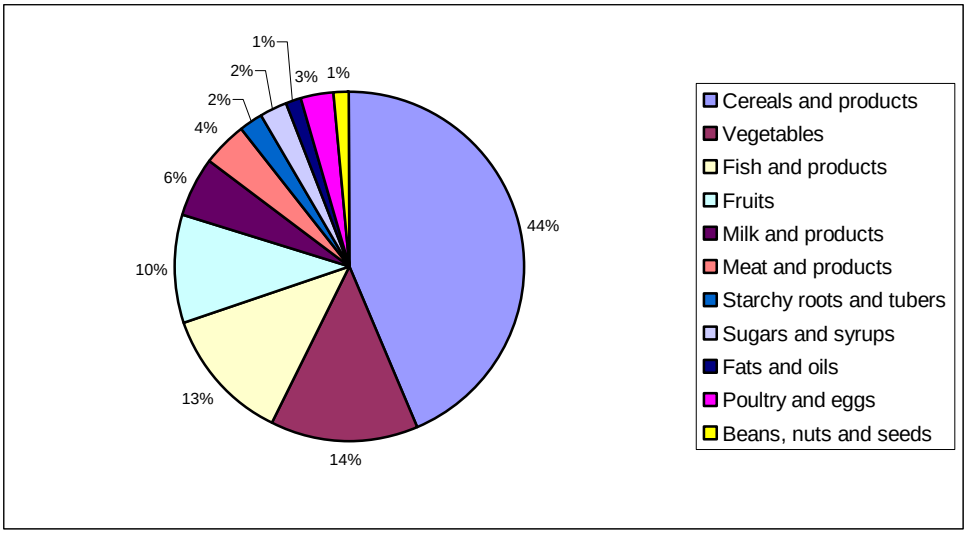
Source: BFAR, 2000

3.4 Per capita food consumption of fish and fishery products

Per capita fish consumption in 1993 is estimated to be 36 kg/year with fresh fish accounting to 24 kg/year. The consumption of dried fish, processed fish and crustaceans and mollusks were estimated to be 4 kg/year.

Fish and fish products account for 13% of the Filipinos per capita annual food consumption. The Filipino diet usually consists of cereals (mostly rice and a bit of corn), 44%; vegetables, 14%; and fish and fish products, 13% (see Figure 6). See Appendix 3 for a breakdown of per capita consumption of fish and fishery products.

Figure 6: Per capita food consumption, 1993



3.5 Performance of the Industry (National Production and Value)

Fishery production in 1999 is estimated to be 2.868 million mt with a total value of PhP95.5 billion. In terms of quantity, aquaculture put in slightly higher at 34% while municipal fisheries and

commercial fisheries contributed 33% each to total national production. The value of fishery produce for commercial and municipal fisheries is almost the same (35% each) while aquaculture provided 31% of the total value of fishery production in the country (Table 9).

Table 9: National production and value, 2000

Sector	Quantity (000 MT)	%	Value (PB)	%
1. Aquaculture	978	34.1	29.1	30.5
2. Municipal Fisheries	944	32.9	32.5	34.0
3.Commercial Fisheries	946	33	33.9	35.5
TOTAL	2,868	100.0	95.5	100.0

Source of Data: BFAR, 2000

3.6 Export and import performance

There was an increase in overall foreign trade figure from $372.7 million in 1999 to a surplus of $413 million in 2000. For the same period, there was an increase in fishery exports from $480 million to $506.8 million. Fishery imports, on the other hand, decreased from $107.3 million to $93.8 million

Table 10: Export and import performance of Philippine fisheries

	2000			1999		
	Quantity (MT)	FOB Value (P M)	($ M)	Quantity (MT)	FOB Value (P M)	($M)
Fishery Exports	199,719	20,422.8	506.8	173,051	19,345	480.00
Fishery Imports	242,464	3,847.5	93.8	255,066	4,399	107.3
Trade Balance	(42,745)	16,575.3	413.0	(82,015)	14,946	372.7

Source: BFAR, 2000

Box 1: Subsistence fishers and trade liberalisation

Aklan's (a province in Region 6, the Visayas) resources are severely degraded. There was an excessive cutting of mangroves, sedimentation has increased the bottom of local rivers and bays and an increase in fishing structures within the bays and rivers often obstruct the flow and flushing of sediments to the sea. For example, Batan Bay and the open sea fisheries off the coastal towns west of Kalibo have degraded resources because of siltation, pollution from untreated solid wastes and overfishing. Siltation in Batan Bay has resulted in part from soild erosion in upland farms and from mangrove deforestation associated with fishpond development. Overfishing has accelerated with the introduction of fine mesh nets and installation of an overabundance of stationary fish gear called taba. Fortunately, there are yet no reports of red tide incidents perhaps because of the natural cleaning effect of prevailing currents in the Sibuyan Sea.

The degradation of resources affects the people of Aklan. In 1994, over 70% of the province's labor force was employed in the agri-fishery sector. At present, 129,000 people are estimated to be part of the sector. In the entire province, about 30% of its population is above the poverty level with a reported income of PhP20,000-PhP29,000 per month. In fisheries, catch declined from 10 kgs/trip in the 1950s to only a kilo at present. Translated into income, this amounts to about PhP1,800-PhP3,000 a month for households who are solely dependent on fisheries. Those with other sources of income have a reported income of PhP3,000-PhP4,000.

In addition, there is weak delivery of services in the coastal communities. In a survey done in one of the coastal villages in 1999, 133 out of 297 households do not have toilet facilities, there are 44 cases of malnutrition among 5-year old children and below, and 70 of the 158 cases of child deliver were made without any assistance from a trained health personnel or midwife.

At present, Developers Foundation reports that fish producers in Aklan are increasingly shifting production from the local market to external trade and to urban growth markets in the Philippines, especially Manila.
There is heavy extraction of local shellfish from the wild and overfishing in commercial grounds while employment alternatives for small-scale fishers whose catch comes from overcrowded local fishing grounds remain weak. At the same time, occurrences of seasonal dumping of surplus inventories of prawns in the local market are recorded and there is an increase in prices for local fish staples due to rising demand in Manila, which translates into an erosion of food security for low-income fish producers.

The study suggests that while the Philippine government is committed to the Asia Pacific Economic Cooperation (APEC) and has set a target of lowering import tariffs on most goods, including fish, to 5% in 2004, further studies on the actual social and ecological effects of this commitment needs to be undertaken. In Aklan, the liberalization regime has focused public and private investments on expanding commercial and aquaculture production for export. Small-scale fishers are basically being pushed to leave fishing as a way of life and become pond workers or farmers. The government's "safety net" programs may be able to address livelihood problems at a local level, but they sidestep the question of whether trade itself is contributing to the crisis of the fishers. On closer inspection in Aklan, this study of Developers Foundation provides evidence that this is in fact the case.

Source: *Signals of Distress: A Report on the Impact of Liberalization on the Subsistence Fishers and Coastal Environment of Aklan Province, 2001*

4 Fishery sector production

In the Philippines, Republic Act (RA) 8550 or the Philippine Fisheries Code is used as the basis for categorizing fisheries in the country. RA 8550 is presently the governing law in fisheries. This law defines municipal fishing as "fishing within municipal waters using fishing vessels of three (3) gross tons or less, or fishing not requiring the use of fishing vessels (Chapter 1, Sec 4). Sometimes, municipal fishers are also referred to as small-scale or artisanal fishers. On the other hand, commercial fishing is defined as "the taking of fishery species by passive or active gear for trade, business or profit beyond subsistence or sports fishing" (Chapter 1, Section 4). It is further classified as:

- Small-scale commercial fishing – fishing with passive or active gear utilizing vessels of 3.1 gt up to 20 gt.

- Medium-scale commercial fishing – fishing utilizing gears and vessels of 20.1 gt up to 150 gt; and,
- Large-scale commercial fishing – fishing utilizing active gears and vessels of more than 150 gt

Aquaculture is defined as "fishery operations involving all forms of raising and culturing fish and other fishery species in fresh, brackish and marine water areas" (Chapter 1, Section 4).

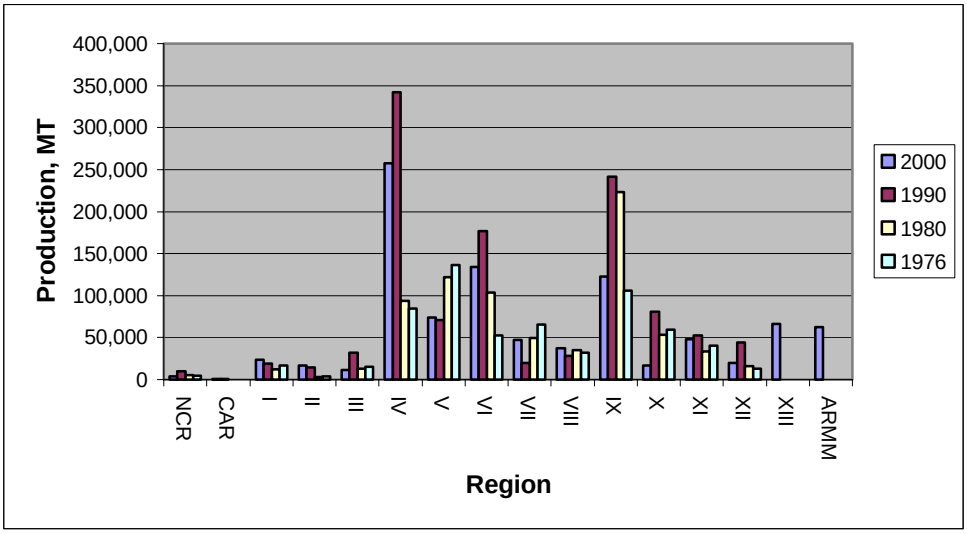
This section describes the production levels of municipal fisheries, commercial fisheries and aquaculture. Case studies are presented to further illustrate the local-level conditions of fisheries.

4.1 Municipal fisheries

4.1.1 Municipal fisheries production

Municipal fisheries production in 2000 was 943,951 metric tonnes. Regions 4, 6 and 9[1] recorded the highest municipal fishery production in 2000. Figure 7 shows a chart of municipal production for 1976, 1980, 1990 and 2000; while Appendix 4 show the actual production figures.

Figure 7: Municipal fisheries production, by region (1976, 1980, 1990, and 2000)



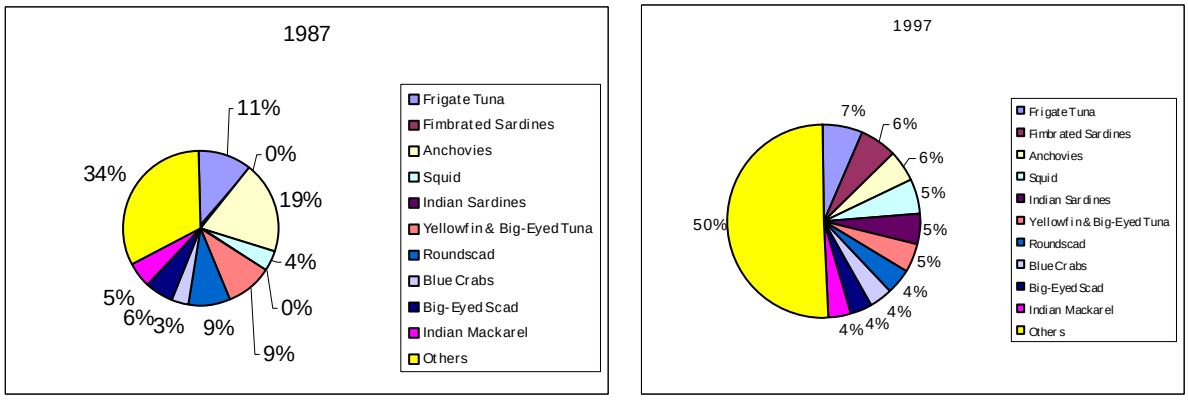
Source: Fishery statistics of the Philippines, BFAR, 1976 and 1980; Fisheries profile of the Philippines, BFAR 1990 and 2000

[1] Region 4 is composed of 11 provinces (Batangas, Laguna, Quezon, Cavite, Rizal, Marinduque, Romblon, Aurora, Palawan, Occidental Mindoro and Oriental Mindoro; Region 6 of 6 provinces (Iloilo, Aklan, Antique, Capiz, Guimaras, and Negros Occidental); Region 9 of 3 provinces (Basilan, Zamboanga del Sur, and Zamboanga del Norte).

4.1.2 What do municipal fishers catch?

A big chunk of recorded catch of municipal fishers are fish species that are "unclassified" and usually sold in Philippine wet[2] markets, as shown in Figure 8 that compares fish catches by municipal fishers for 1987 and 1997.

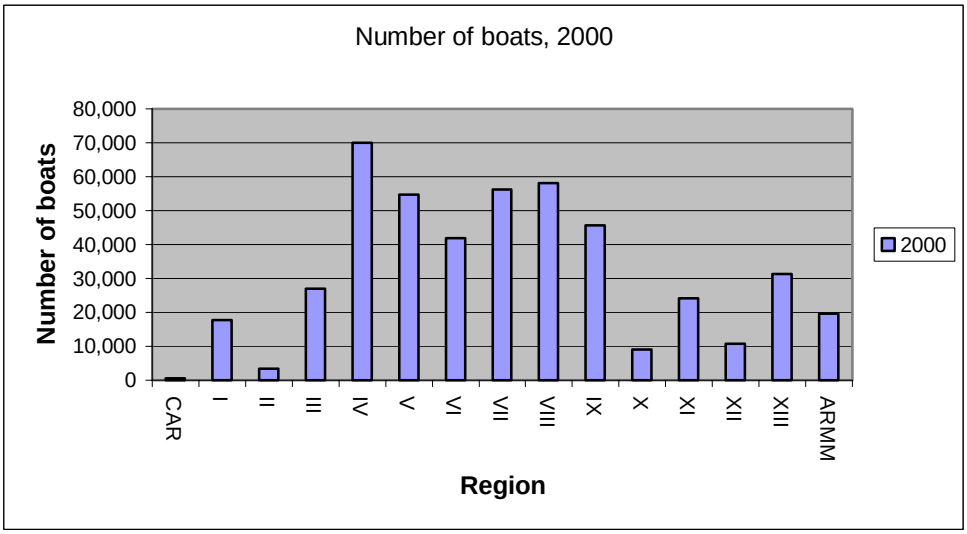
Figure 8: Type of fish species caught my municipal fishers, 1987 and 1997



4.1.3 How many municipal fishing boats are there?

There were 469,807 municipal fishing boats recorded in 2000. The number is not disaggregated into motorized and non-motorized. Region 4 posted the highest number of boats at 69,927 (see Figure 9). Since only 374,408 persons were recorded to be employed in municipal fisheries in 2000, it appears that there are more boats than municipal fishers. This could be true, as some boats are not used for fishing but undergo the same registration system.

Figure 9: Number of municipal boats by region, 2000



Source: Fisheries Profile, BFAR, 2000

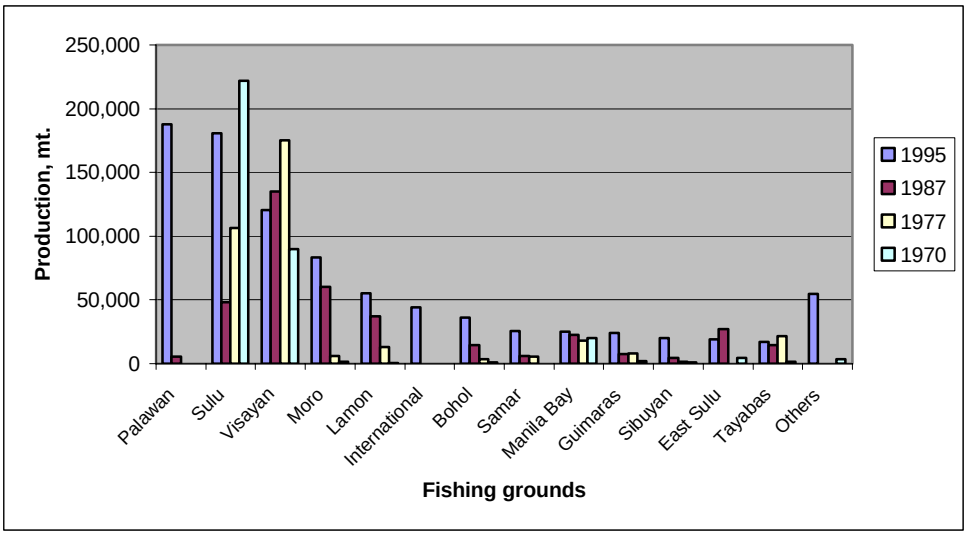
[2] A wet market is the fish and meat section of markets found in town and cities. A market in the Philippines usually is divided into two sections: the wet and the dry section. The dry section sells clothing, kitchen wares and other "dry goods."

4.2 Commercial fisheries

4.2.1 Commercial fisheries production

The recorded production of commercial fisheries for 2000 is 946,000 metric tonnes. Figure 10 shows the production of commercial fisheries in major Philippine fishing grounds for 1970, 1977, 1987 and 1995. The figure shows that the Palawan Waters, Sulu Sea and the Visayan Sea are the most productive fishing grounds.

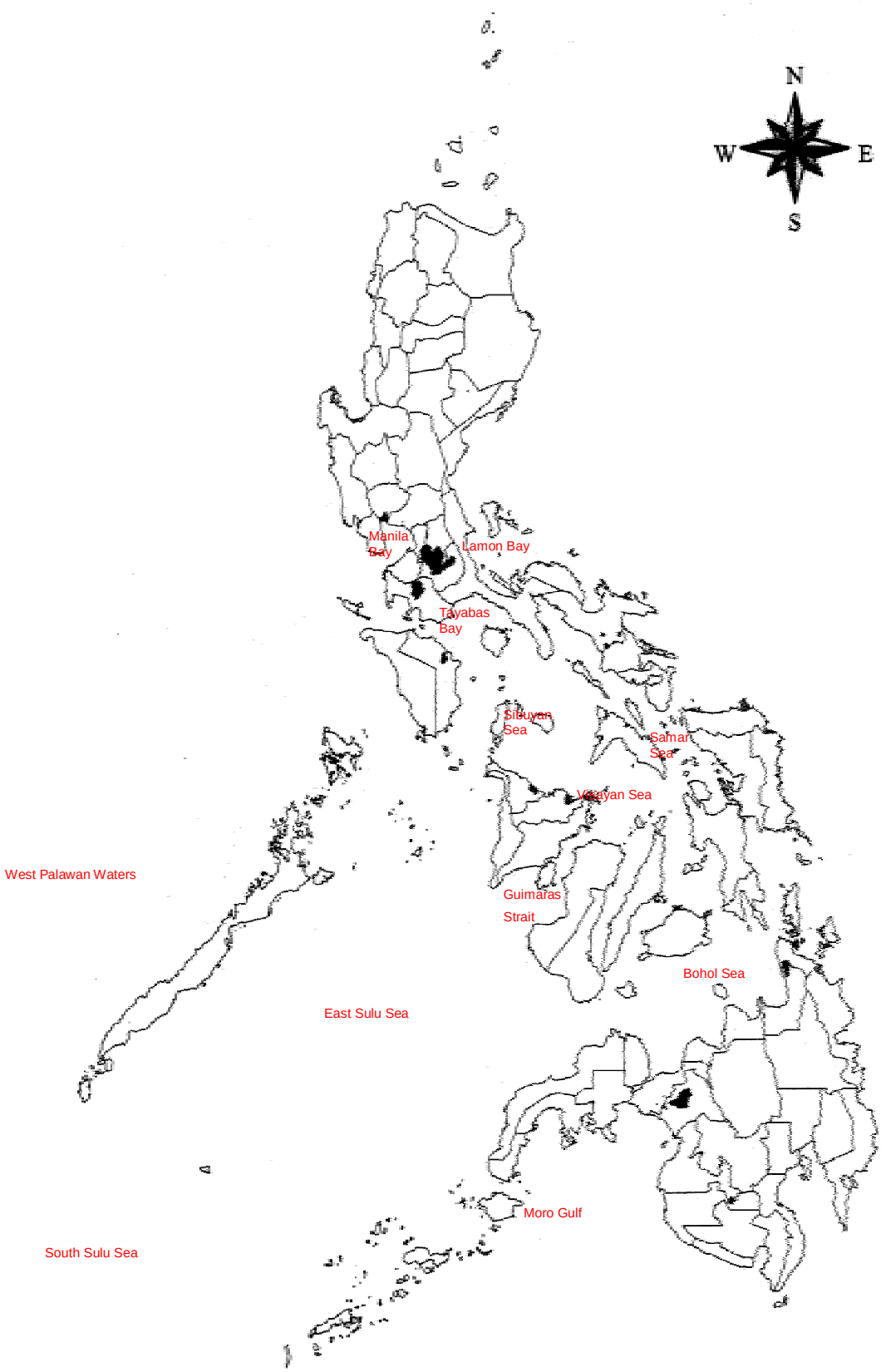
Figure 10: Production from commercial fisheries in major Philippine fishing grounds, 1970, 1977, 1987 and 1995



Source: Fisheries statistics of the Philippines, BFAR, 1970, 1977; Fisheries profile of the Philippines, BFAR, 1987, 1995

Figure 11: Major fishing grounds of the Philippines

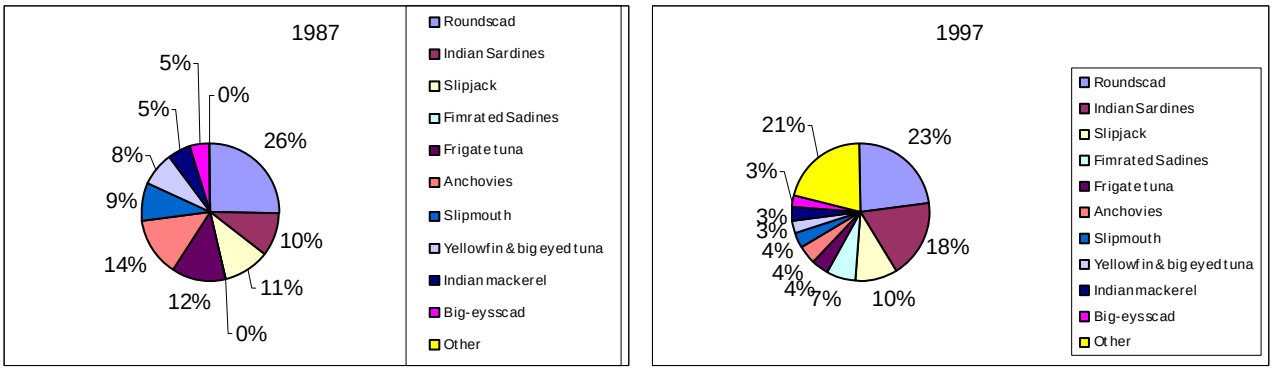
(See next page)


N
W
E
S
Manila Bay
Lamon Bay
Tayabas Bay
Sibuyan Sea
Samar Sea
Visayan Sea
West Palawan Waters
Guimaras Strait
Bohol Sea
East Sulu Sea
Moro Gulf
South Sulu Sea

4.2.2 What do commercial fishers catch?

In terms of volume, the species caught by commercial fishers is very similar to that of municipal fishers (compare Figures 9 and 12).

Figure 12: Species of fish caught by commercial fishers in terms of volume, 1987 and 1997

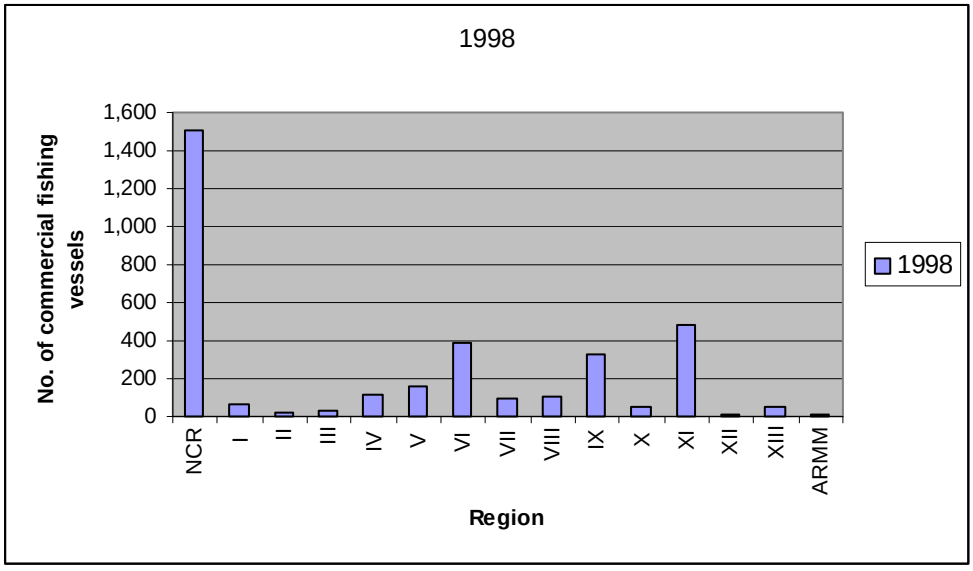


Source: Fisheries profile of the Philippines, BFAR, 1987, 1997

4.2.3 How many commercial fishing boats are there?

There were 3,416 boats registered by BFAR in 1998. Figure 13 shows the number of registered commercial fishing boats by region. Most of the fishing vessels (1,502) were registered in the National Capital Region.

Figure 13: Number of commercial fishing boats by region, 1998

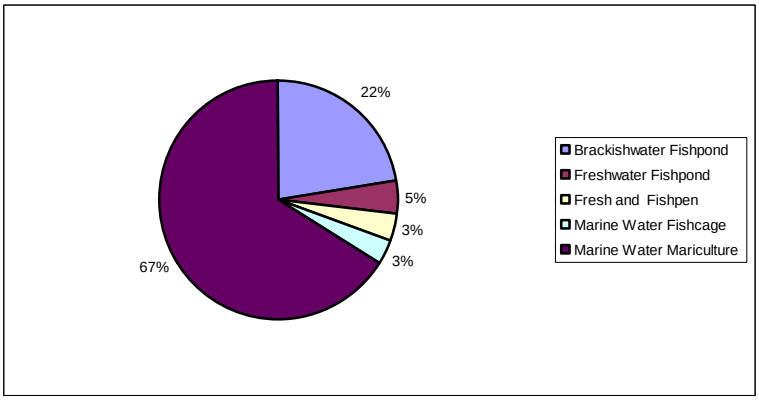


Source: Fisheries profile of the Philippines, BFAR, 1998

4.3 Aquaculture

Aquaculture production in 2000 was recorded at 978,169 mt. This production came from five (5) major culture systems: brackishwater ponds, freshwater ponds, fishpens, fish cages and mariculture. In terms of volume, mariculture (seaweed) production accounted for 67% of this production followed by production from brackishwater ponds and freshwater ponds at 22% and 5% respectively (see Figure 14).

Figure 14: Volume of aquaculture production by major culture systems, mt (2000)



Source: Fisheries Profile of the Philippines, BFAR, 2000

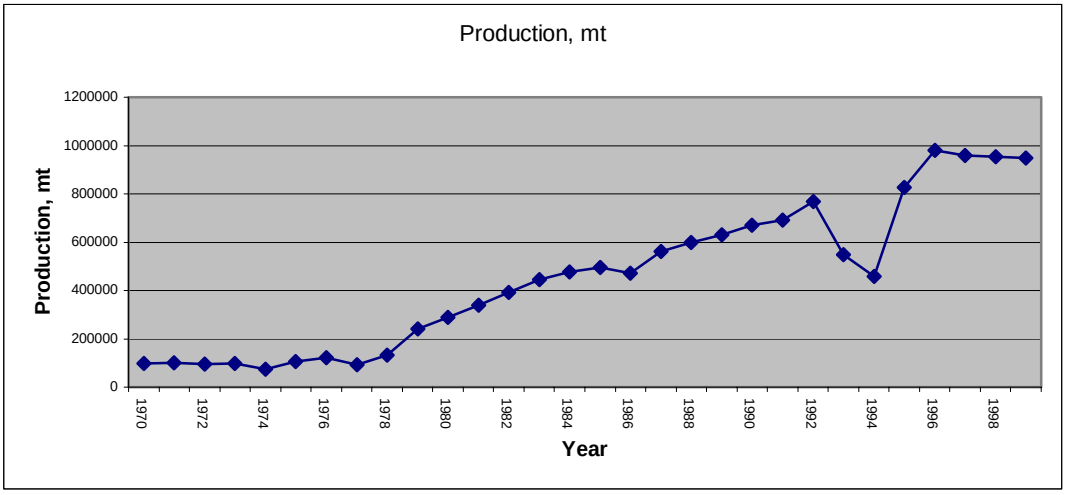
Table 11: Summary of aquaculture production by culture systems and region (mt), 2000

Region	Total Aquaculture	Brackishwater Fishpond	Freshwater Fishpond	Fresh and Fishpen	Marine Water Fishcage	Mariculture
NCR	1,050	372	0	622	56	0
CAR	1,581	0	470	0	1,111	0
I	30,258	17,530	1,610	5,549	2,308	3,261
II	3,380	872	1,721	0	779	8
III	112,922	71,987	37,873	101	51	2,910
IV	216,742	15,404	1,096	26,762	21,403	152,077
V	18,281	2,614	86	0	4,191	11,390
VI	91,574	62,162	205	0	15	29,192
VII	19,179	8,409	4	0	5	10,761
VIII	4,409	1,812	50	0	23	2,524
IX	117,240	10,417	58	43	63	106,659
X	2,364	2,099	203	2	23	37
XI	16,271	12,211	937	369	2,184	570
XII	10,152	8,651	589	0	805	107
XIII	5,014	2,984	39	26	37	1,928
ARMM	327,752	1,884	36	17	13	325,802
TOTAL	978,169	219,408	44,977	33,491	33,067	647,226

Source: Philippine Fisheries Profile,2000
Department of Agriculture
Bureau of Fisheries and Aquatic Resources

In 1970, fisheries production was recorded at 99,274 metric tonnes only. Twenty years later, in 2000, this has dramatically increased to 978,169 metric tonnes (see Figure 15 for graph of fish production in the Philippines).

Figure 15: Fisheries production (mt), 1970 to 2000

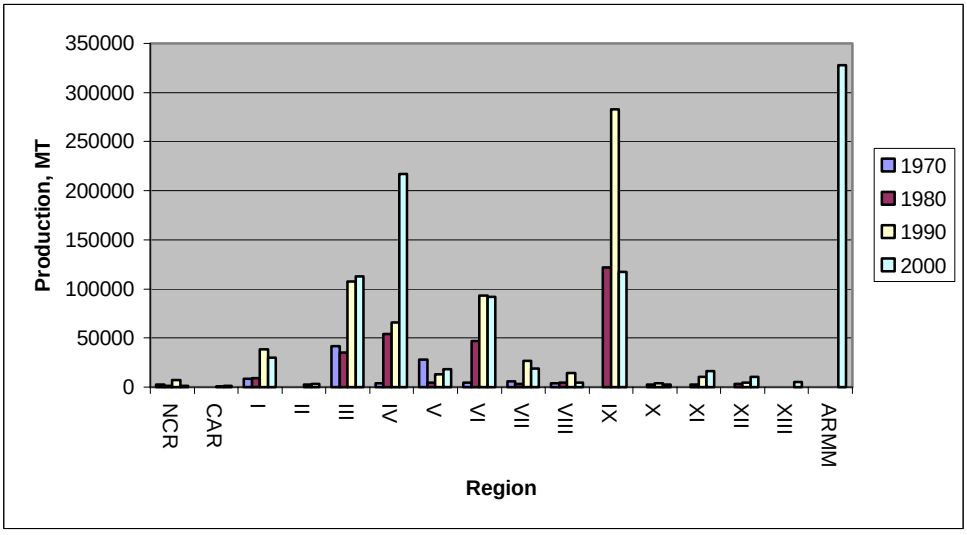


Source: Fisheries profile of the Philippines, BFAR, 1970, 1980; Fisheries profile of the Philippines, BFAR, 1990, 2000

4.3.1 Aquaculture production by region

Regions 3[3], 4, 6, and 9 are the consistent top aquaculture producers. ARMM has recently recorded high aquaculture production, mostly from mariculture.

Figure 16: Total aquaculture production, by region, 1970, 1980, 1990 and 2000



Source: Fisheries statistics of the Philippines, BFAR, 1970, 1980; Fisheries profile of the Philippines, 1990, 2000

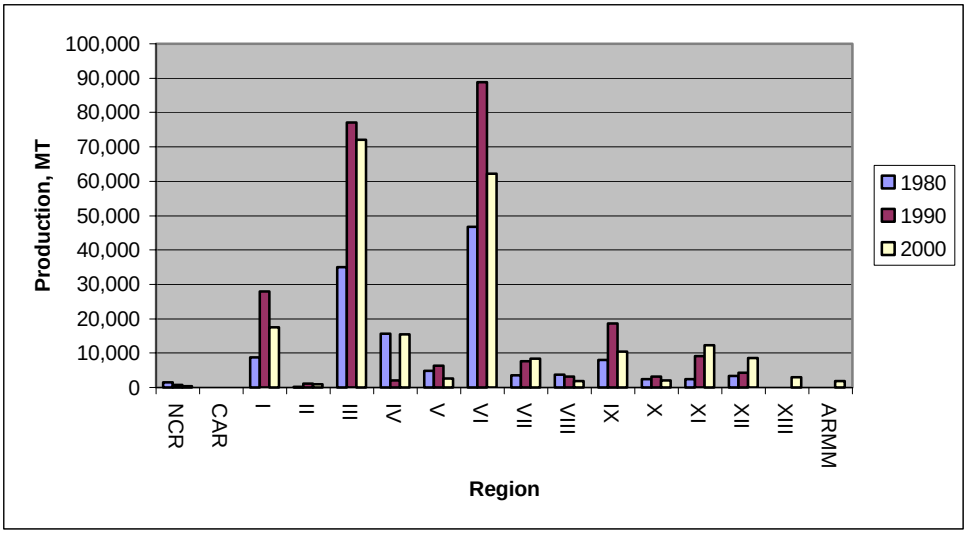
[3] Region 3 is composed of the following provinces: Bataan, Bulacan, Nueva Ecija, Pampanga, Tarlac and Zambales.

4.3.2 Aquaculture production by culture systems

4.3.2.1 Production of brackish water fishponds

Brackish water fishponds contributed 22% of the 978,169 metric tonnes of aquaculture production in 2000. Figure 17 shows total production of brackish water fishponds in 1980, 1990 and 2000. Regions 3 and 6 are the top producers.

Figure 17: Production of brackish water fishponds by region, 1980, 1990, 2000

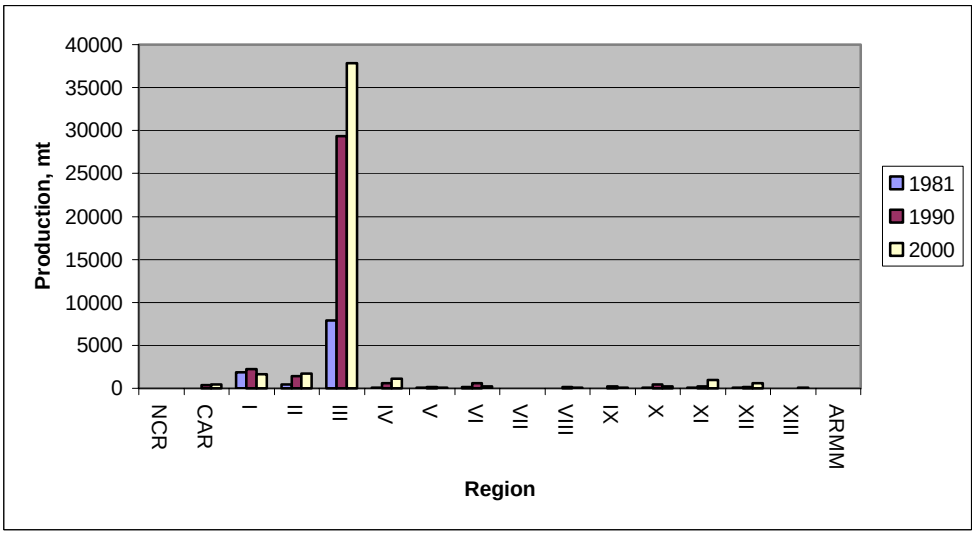


Source: Fisheries statistics of the Philippines, BFAR, 1980; Fisheries profile of the Philippines, 1990, 2000

4.3.2.2 Production of freshwater fishponds

Freshwater fishponds contributed 5% to aquaculture production in 2000. Figure 18 shows the production of fresh water fishponds by region in 1981, 1990 and 2000. Region 3 consistently recorded the highest production.

Figure 18: Production of freshwater fishponds by region, 1981, 1990, 2000

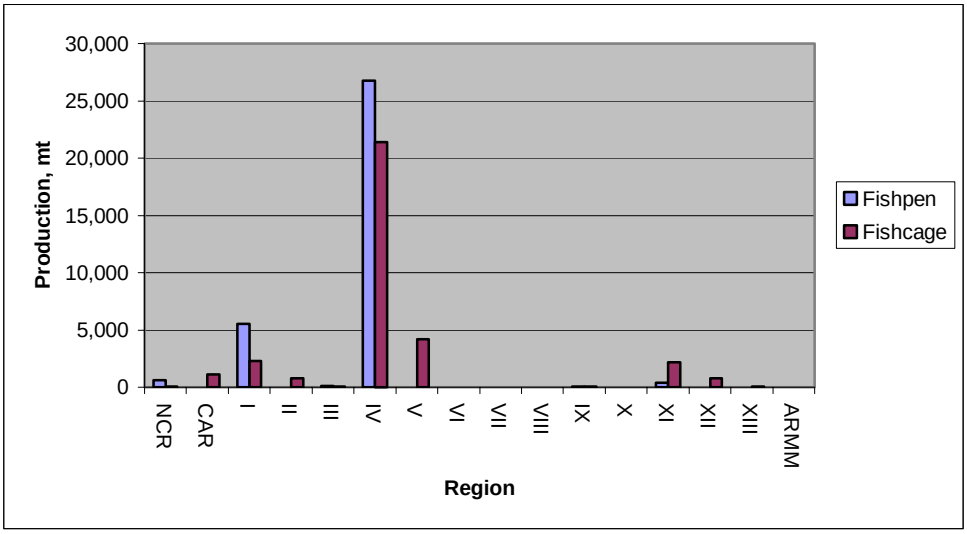


Source: Fisheries statistics of the Philippines, 1981; Fisheries profile of the Philippines, 1990, 2000

4.3.2.3 Production of fishcages and fishpens

Fishpens and fish cages together contributed 6% (3% each) to aquaculture production in 2000. Production from fishpens and fishcages was 33,941 and 33,067 mt respectively. Region 4, where Laguna Lake, the largest lake in the Philippines, and Taal Lake are found, posted the highest production in both fishpens and fishcages.

Figure 19: Production of fishpens and fishcages by region, 2000

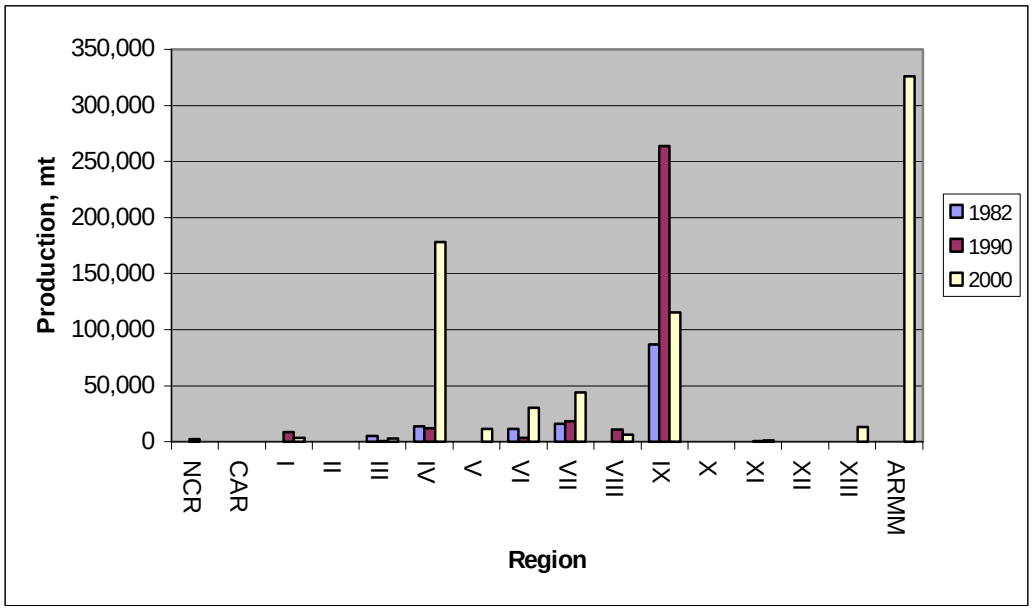


Source: Fisheries profile of the Philippines, 2000

4.3.2.4 Production of mariculture

Mariculture contributed 67% to aquaculture production in 2000. ARMM recorded the highest production in mariculture in 2000, although it has no production in 1990 and 1982. Mariculture started in ARMM only in 1993.

Figure 20: Production of mariculture by region, 1982, 1990, 2000

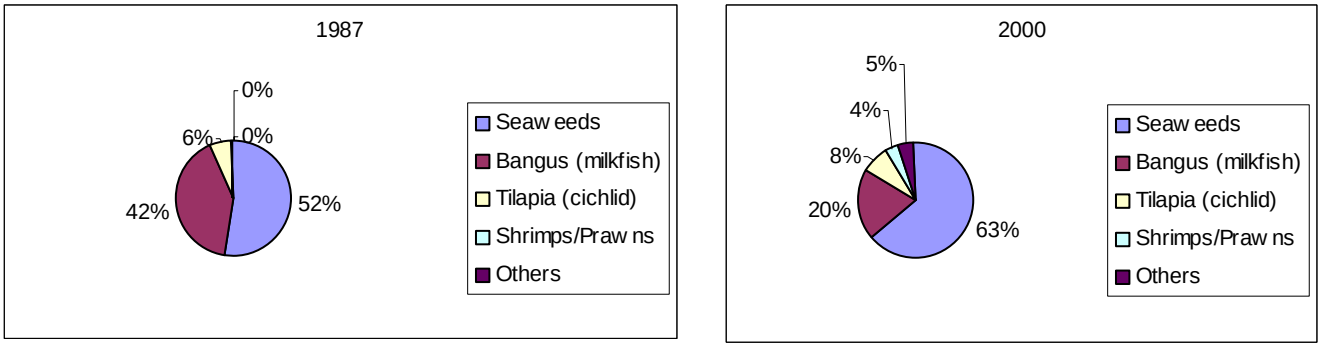


Source: FSP 1982; Fisheries profile of the Philippines, 2000

4.3.3 Major species produced by aquaculture

In terms of volume, seaweeds account for 52% of aquaculture production in 1987 and 63% in 2000. Milkfish accounts for 42% (1987) and 20% (2000), see Figure 21. There are other species grown in the Philippines, but the volume must be so insignificant, these may have been lumped under the category "others."

Figure 21: Major species produced by aquaculture (in metric tons), 1987 and 2000



5 People involved in the aquatic resources sector

It is quite common to hear from conferences and read in studies on fisheries that the number of persons dependent on fisheries in the Philippines is estimated at about 1 million (out of a total population of 76 million), with another 5 million involved in fisheries as a secondary source of

income. Section 3.3 of this report cites a BFAR report that places the number of those employed in fisheries at fewer than 1 million.

"There are no full time fishers," is another common remark heard in fisheries circles. Which probably explains the difficulty in determining a more accurate number of people dependent on fisheries.

This section describes the persons involved in the aquatic resources sector (mainly fisheries) as currently classified by the Philippine government: ie municipal, aquaculture and commercial fisheries.

5.1 Municipal fisheries

There are an estimated 374,000 persons employed in municipal fisheries in 2000. The number could be higher. In the coastal communities or villages, municipal fishers are not only those who do actual fishing activities. Often, it also includes other sectors or groups that may or may not be directly dependent on fishing as their main livelihood (van Mulekom, 1997). For example, the fisheries sector in a community includes fish processors, fish vendors, and fish buyers. There are also non-fishing livelihood activities that depend on fishing in a community such as boat building, net making and store vending. The women in municipal fisheries are often in the pre- and post-production activities.

A typical small-scale fisher operates a small dugout boat called a *banca*. A *banca* is usually made of marine plywood and are relatively narrow and lightly constructed. Most are furnished with outriggers for stability, while some others, especially those with motors, prefer to have outriggers for greater speed due to less water surface friction. Fishers with motorized bancas usually use the Briggs and Stratton gasoline engine in the 10-16 Hp range. On the other hand, non-motorized *bancas* or bamboo rafts that are moved by paddle are also used for fishing close to the shore. In some cases, women who fish near the shore use the bamboo rafts (Smith, 1980).

Fishing is generally done the whole year but specific fishing gears are used depending on the climatic conditions and target species. Fishing is also characterized by lean and peak season. Fishers may also use a variety of gears, often shifting dependent on the season. For example, in Ulugan Bay, Palawan, fishers normally own an average of 6 different fishing gear (Rivera-Guieb, 2000). Capitalization for fishing can be as low as PhP30 for those who use spears and as high as PhP150,000 for owners of fish corrals. Women in the area glean and fish using torches in the tidal flats.

In situations when some fishers do not have a boat, they often go with their relatives or friends when fishing. In a boat with two fishers, the boat owner normally gets 1/3 of the catch and the remaining 2/3 are divided amongst the two fishers. In areas where tourism abounds, some fishers also rent their boat to tourists.

Overall, the size of municipal fishing operations is designed for areas near the coastline. Since a number of fishing grounds is now overfished, this results to overcrowding and low productivity among municipal fishers. It is estimated that fishers catch an average two kilos/day (Quicho, Mislang & Batay-an). This roughly translates to an income of about PhP714/month (£10).

Sepulveda's review of related literature on community property rights (1998) suggests that the fisherfolk could be differentiated in terms of socio-economic status by looking at differences in terms of gears and (passive or active) and vessels (motorized or non-motorized, municipal or commercial) used. In addition, one need to know whether (1) fishers own or rent their boats, or join fishing trips as crewmembers (2) fishers have access to production capital, and (3) fishers have other sources of income.

Van Mulekom's study (1997) is instructive on some of the cultural traits of fishers. His study notes that fishers are said to be individualistic, not too open to strangers, and relatively conservative in their views regarding social values and lifestyles. They live on a day-to-day survival and have limited alternative livelihood opportunities. Whenever possible, municipal fishers will utilize whatever available resources there are and harvest as much fish as they can. Fishers are economically insecure because of the unpredictable nature of fisheries resources. To be able to cope, they engage in a diversity of livelihood activities like farming and working in construction sites as seasonal labourers.

Finally, it is also observed that many fishing communities are made up of various migrant groups. De la Cruz (1994) suggests that the sea is regarded as a "last resort" chance at survival since entering into fishery activities is easy because of it open access nature. Thus, migration to the coast is a common occurrence in the rural areas. In most cases, the migrant groups, particularly those who are originally non-fishers, do not comprehend the underlying ecological processes of fisheries resources and their proper management (van Mulekom, 1997). They do not "see" nor understand the damage done to the environment, and neither do they appreciate the value of sustainable use of fisheries resources.

5.2 Commercial fisheries[4]

There are an estimated 358,000 persons employed in commercial fisheries in 2000. The most common commercial fishing operation is that of a purse seine. About 40-50 individuals are employed in one purse seine operation. All of them are male. The crewmembers are usually kin members or friends of the operator, called *encargado* (master fisherman). In some cases, the fish workers are former subsistence fishermen who have abandoned small-scale fishing. Many have sold their vessels, gears, and other equipment due to the low yield. Other crewmembers are enjoined to be fish workers because they have no other means of income.

5.2.1 Different roles in a purse seine operation

The ***operator*** or the capitalist of a purse seine operation provides the capital and technology. He shoulders all expenses incurred during the fishing operation plus all other expenses, which may be incurred in regular maintenance and repair of the fishing outfit. Most operators are directly involved in the management and financial accounting aspects of their business. There are those, however, who simply provide the capital and delegate the management role to other members of their family or to one of their employees. The operator is often in charge of crew selection for the different tasks in the fishing operation although in some cases, a master fisherman would already have his own group of crewmembers. Since capitalization is high (e.g. the net alone will cost more than half a million pesos[5]), a majority of the operators are also big landowners or wealthy families with enough capital to invest in this type of business. In Estancia, Iloilo, for example, most of the operators are Filipino- Chinese capitalists. This group is not only involved in the extraction and production aspects of commercial fishing but also in other fishery related enterprises.

After the operator, the next in line is the ***encargado*** who oversees the outfit's operations whenever the operator is absent, and looks after the crewmembers during fishing operations. For this reason, the operator often selects someone he trusts to be the *encargado;* in most cases, he selects someone related to him. The *encargado* joins the fishing trip only as a "look out" for the owner. The *encargado* supervises and records the daily catch. He is also responsible for supervising the transfer of catch from the mother boat to the carrier boats and its transport to the fish port or private jetty of the operator. Finally, the *encargado* is in-charge of accounting for repairs and maintenance of the outfit, and facilitates the release of requests for the supplies.

Some purse seine operators do not have an *encargado*. Instead, the master fisherman, sometimes called the boat captain becomes the highest-ranking member of the purse seine

[4] Based on a study made by Hingco (1994) of Tambuyog Development Center in Estancia, Iloilo.
[5] UK sterling 7,100.

fishing outfit is. Together with the operator, the master fisherman is mainly responsible for the hiring and firing of crewmembers. He is in command of the fishing outfit during its operations. He is in charge of directing the course of the fishing outfit, and identifying the fishing ground. He is also responsible for organizing the different tasks of crewmembers and directing their activities. As the head, the master fisherman is expected to have specialized skills and knowledge in identifying productive fishing grounds. A skilled master fisherman is able to consistently deliver high fish catches and becomes an object of envy among operators. He also needs to have good leadership skills for effective supervision and in maintaining good interpersonal relationships with the crew to motivate them to do their tasks well.

The next in command are the ***segundo*** and the ***tersero***. The former literally means second or next in line while the latter means third. The *segundo* takes over operations whenever the master fisherman is unavailable or unable to join the trip. He supervises all activities at the prow or bow of the vessel, including the supervision of the operation of the winch and the hauling of the net. The t*ersero*, on the other hand, takes on the role and responsibilities of the master fisherman or *segundo* when the situation requires it. He supervises all the operations and activities at the boat's stern during the operations.

The rank-and-file crewmembers are called the ***pansan*** or the ***lambateros***. They are responsible for hauling the net and sorting of the catch. They are further classified into groups, depending on whether they work in the stern, prow or center of the boat. There are about 20 *lambateros* in one purse seine operation.

The rest of the crew is made up of the ***bodegero, lawagero,* cook, chief mechanic** and his assistant and the ***boleros***. The *bodegeros* are in-charge of sorting the fish and packing them in ice in styrofoam boxes while the *lawageros* are responsible for the light boats that point to good locations for fishing with the use of high-powered light bulbs. There are usually 4 *bodegeros* and 3 *lawageros* in a light boat. On the other hand, the cook prepares all the meals for the crew and on certain occasions also assist in the hauling of the net. The chief mechanic and his assistant are responsible for the repair and maintenance work on the engines of the different vessels comprising the outfit. The lowest in rank are the *boleros*, who are not regular members of the crew and participate in fishing operations only on some occasions. Most of them are migrants who are young and single adult males who may not have any experience in fishing.

5.2.2 Sharing system

There are three types of sharing systems in a purse seine operation, which sometimes get intertwined - the *komon, dyaryo* and *remedyo* sharing systems. In the *komon* system, the total net income in one fishing trip is divided in a way where the operator gets 26.5 shares from the *komon*

while the rest is divided among the 40-50 crewmembers. In the *dyaryo* system, on the other hand, a small fraction of a night's catch is divided amongst the crewmembers. The *dyaryo* (the small fraction of the night's catch) is not fixed and is often dependent of what is perceived by the master fisherman as a "fair share" for the crewmembers. In the *remedyo* system, regular salaries are provided; on top of this, the crew are allowed to get the fish they caught using their own hand line, all the small fish that are entangled in the net and they are given fish by the master fisherman on occasions of very high catch.

On the average, an operator of a purse seine earns PhP22,000 a month (£306; 1994 figure), which at that time constituted a 51% return on investment rate[6]. The rest of the crewmembers earned varied income levels depending on their designation. Expectedly, the master fisherman and the *encargado* get the biggest share followed by the mechanic, cook, assistant mechanic and *bodegero*, in that order (See Table 10). The *lawageros* and the *pansans* get the lowest share in income.

Table 12: Share of crewmembers in a purse seine operations studied by Hingco (1994)

Number of Crewmembers	Designation	In Pesos		
		Share from the komon and other incentives/person	Salary	Total Income Per person (per month)
1	Master fisherman	5,676	-	5,676
1	Encargado	375	1,500	1,875
1	Segundo	266	-	266
1	Tersero	180	-	180
20	Pansans	20	-	20
4	Bodegero	1,086	-	1,086
9	Lawagero	15	-	15
1	Mechanic	1,071	1,500	2,571
1	Assistant Mechanic	1,071	100	1,171
1	Cook	1,091	300	1,391

Source: Hingco, 1994

5.3 Aquaculture

There are an estimated 75,000 persons employed in aquaculture in 2000. In fishponds, persons involved in production can be classified into two broad categories: caretakers (*bantay*) and workers, which are further subdivided into "permanent workers" paid on a daily basis (called *arawan)* and *pakyador* (seasonal workers paid on a piece rate basis). Fishpond caretakers sometimes share with an absentee owner a definite percentage of the net income or are given a fixed salary. They are directly involved in production and act both as workers and caretakers. Most of the workers are also subsistence fishers and fry gatherers.

[6] Hingco (1994) estimated the income of the purse seine owner on a monthly basis in order to compute the return on investment (ROI) rate. A purse seine operates for 3 weeks in a month the whole year round so it would be fair to assume that this monthly income is reflective of the operator's income/fishing trip.

In the case of large-scale fishpond operations, workers are recruited by *kontratistas* (contractors) who give them cash advances. They stay in the aquaculture ponds during production and often become indebted to these *kontratistas* and the aquaculture pond owners.

Workers are mainly employed when the ponds are still being developed and during the cleaning and harvesting periods. Only two or three workers per hectare are needed for these activities. These conditions are also similar to those that prevail in fishpens and freshwater fishponds. In the case of shell culture and seaweed farms, the operations are usually mostly small-scale wherein the operator also does most of the work. If additional labour is needed, the household of the operator usually provides it.

Box 2: Subsistence fishers and intensive shrimp farming

Despite the environmental value of mangroves, 55% of the total mangrove areas in Aurora are classified as alienable and disposable. The mangrove areas in Aurora therefore are open to private ownership. For example, the Diapitan Resources Development Corporation (DRDC) was able to acquire the private ownership of the mangrove areas in Dilasag and converted them into shrimp ponds.

The DRDC is an intensive shrimp farm which is one of only two industries in Dilasag, the other being large-scale commercial logging. It is also the largest and most intensive aquaculture operations in the whole of Aurora, with a total land area exceeding 140 hectares. Of these, 32 hectares are devoted to the monoculture of black tiger shrimps (*Penaeus monodon*), which it exports almost entirely to the Japanese market. The Lu family owns DRDC. They also own the Pacific Timber Export Corp. (PATECO), a logging company that operates in nearby Dinapigui, Isabela Province. The DRDC began operations sometime in 1989, employing a brackish water aquaculture system that is highly intensive and efficient.

The DRDC has been the subject of numerous complaints made by local farmers and fishers. Simple cost-benefit analysis show that the shrimp ponds give more negative returns if the external cost of intensive shrimp farming are internalized, and if all the direct goods and indirect services (e.g., protection of riverbanks provided by intact mangroves) are considered. Data show that the benefits of shrimp pond development did not trickle down to the local fishers. Usually only low-paid, unskilled jobs are available to local people with more lucrative managerial and technical posts going to outsiders, and company profits to the owner and shareholder. Small-scale fishers lose their livelihood as mangroves are cut and marine resources are degraded. The DRDC wants to expand to Casapsapan Bay, Casiguran, a proposed marine protected area with beautiful corals and an exceptionally diverse area of pristine mangrove forest. The communities have started to be more vigilant and are pushing for an investigation first of DRDC's violation of environmental laws, particularly its disregard for the environmental protection measures that should have been included in the Environmental Compliance Certificate. The residents have found a sympathetic ally in the provincial government. Led by the Committee on Environmental Protection and Natural Resources, the provincial government looked into the complaints against DRDC. It has also sought the help of the House of Senate and the DENR Secretary.

A support group of concerned academics, researchers, NGOs and church groups has also been formed to assist the communities. Called the Aurora Support Group, it advocates for a transparent and fair investigation on the alleged environmental damage caused by the DRDC. The group is also advocating for a re-thinking on the government policy that puts blind and unconditional support to aquaculture, particularly those practices that promote intensive aquaculture use and operation.

In the same manner, there is also a clamor for recognizing workable community-based management options that provide for resource stewardship programs to community groups. Possible marine and coastal protected areas in Aurora proposed. The residents of Maligaya and Masagana are thinking about pushing for an ordinance that would include the mangroves in a protected area which they will manage themselves. This is an option that is guided and mandated by the Local Government Code and the Fisheries Code.

In the Dilasag situation, as in similar cases elsewhere, it is the political and power configuration that largely accounts for the creation of poverty and dispossession. To respond to this, community groups need to be organized and strengthen, support organizations need to influence the policy makers and political processes have to be more transparent and participatory. The process is certainly not easy or short, as in the case of Dilasag. But as one resident puts it: We do not need DRDC to progress, we need to rely on ourselves.

DRDC Production Data

Aquaculture system	Intensive (i.e., uses high stocking density; concrete ponds; heavy equipment such as graders, bulldozers and trucks; aerators or paddle wheels; submersible pumps; chemical inputs; and formulated feeds)
Capitalization	P3 to 3.5 million per ha.
Stocking density	25-30 fries per sq. meter with a survival rate of 60-70 percent; *Penaeus monodon* fries are sourced from Calatagan, Batangas
Area	Actual pond area is 32 ha.; total land area is 140+ ha.
Production/ha.	12.58 metric tons (mt) average
Annual production	150 mt (1998) 224.9 mt (1999)
Frequency of harvest	3 harvest cycles in 2 years
Feed Management	Shrimps are given formulated feeds 5X daily; about 100 kgs of formulated feeds are alloted per ha.
Feed conversion rate	1.6-1.9 / 2.5 kg, depending on market specifications
Market	98% of shrimp production are exported to Japan, thru two Japanese-owned corporations, Maruha & Itochu; shrimp heads which are usually removed during processing, are sold to the community for P5 to P5.50 per kilo
Employment	Employs around 60 regular and 20 to 40 contractual employees
Chlorine use	used extensively during pond preparation, shrimp processing (30 parts per million or ppm), foot bath and hand sanitizer (100 ppm)
Teaseed use	A piscicide derived from the tea plant (active ingredient: saponin), used extensively in pond preparation, and during the culture phase for a period of 60 days

Source: Rivera-Guieb, R. 2000. From Public to Private Resource: The Mangroves In Aurora Province, Philippines. A paper presented in the 4th International Coastal Zone Conference held in Saint John, New Brunswick, Canada on 17-22 September 2000.

5.4 The situation of women in fisheries

Women are involved in variety of activities related to fishing, and in some occasions, do fishing as well. Tanyang (2001) enumerated the activities where women are involved in fisheries (see Table 11). The enumeration of these activities indicates the diversity of activities where women are engaged and the importance of their roles in fisheries.

Table 13: Different activities of women in fisheries (Tangyang, 2001)

Area/Aspect	Women Activities
Fish Capture	Some cases show women using hook and line, scoop nets, traps, fish baskets, and spears. Women involvement in actual fishing is limited because of gender expectations (i.e., women should seek permission to fish by her husband or father), the heavy manual work related to fishing, and gender biases (i.e., women bring bad luck to fishing). In Barangay Sillion, Bantayan Islands, Cebu, women participate in commercial and offshore fisheries using *sapyaw*, a locally developed fishing gear unique to the community. The gear employs some 20-30 individuals composed of men, women and sometimes children. Women set and haul the net, and scoop the catch using nets. Onboard, women also check the nets for tear and repair them.
Harvesting other marine and aquatic products	This includes gleaning shells, oysters, clams, harvesting crabs and shrimps, sea urchins, starfish, corals, etc., to be used for household consumption, making medicinal concoctions, and marketing.
Mangrove cutting and harvesting.	Women derive various economic and household utilities from mangroves such as honey, charcoal, firewood, and traditional medicine. Ornamental plants, particularly orchids are also harvested because of their high market value. During Christmas season, polished mangroves are sold as Christmas trees in major Metro Manila streets, where women may be involved in its processing.
Preparatory activities to fishing	Women play significant roles prior to actual fishing. In Naujan, Mindoro, wives prepare two kinds of baits and hooks used to capture *bisugo*[7], *dalagang bukid*, *hasa-hasa*, *galunggong* and *tulingan*. They also prepare packed meals for the fishing trip. In Navotas, Manila, a group of women mend nets used by commercial fishing vessels. In the nearby island of Panay, Bugtong Bato women help prepare and carry the boats and canoes before and after the fishing trip. Women in Kiamba, Sarangani help in preparing the fishing equipments, buying supplies and preparation of pack meals for the fishing tripl
Post-harvest activities	Marketing of fish is the domain of women in most rural communities. They are involved in vending, selling, hawking and trading. Vending or peddling requires women to walk from house to house from one barrio to another to sell the catch. Selling entails putting up a stall to market the produce or selling during "market days" in other municipalities. Hawking is a more aggressive strategy by calling aloud in public to attract buyers. Trading is buying produce directly from fishers or from other traders and selling them to other traders or directly at the market. Women are also involved in processing. This is because the activity is associated with food preparation. Technologies include salting, drying, smoking, fermenting, preserving (such as in brine), de-boning and packaging.
Commercial processing	A less studied area is commercial processing and manufacturing. Women are employed in producing value-added goods, including transforming fish into crackers, fish and squid balls, fish and shrimp sauce, boneless *bangus*, spanish sardines, and other goods. Women are also employed in canning fishery and marine products.
Aquaculture	In small-scale aquaculture, women share the work with men in feeding, guarding the area, harvesting, marketing and vending. In Batan, Panay Island, men, women and children are involved in feeding, sampling, cage cleaning and harvesting. Women are also tasked with financial recording and bookkeeping. In Sibuyan Island, Romblon, women are involved in seaweed culture. Their activities include planting and transplanting the sprout, and then harvesting.
Home-based entrepreneurial	One of the most common economic activities where women derive income is shell craft. They produce products such as chandeliers, household paraphernalia, personal effects. Women are

[7] Bisugo (monacle bream, *Nemipterus sp.*); dalagang bukid (fusilier, *Caesio sp.*); hasa-hasa (mackerel, *Rastrelliger sp.*); galunggong (round scad, *Decapterus marcosoma*); and tulingan (frigate tuna, *Tunus sp.*).

activities	also into producing honey or harvesting nipa leaves and branches for making wine, vinegar, additives, roof shingles, baskets, hats, bags, among many others.
Women in development work	Some women are involved in community development activities through membership in organizations and cooperatives. In some cases, women are elected as local political leaders. Where women are elected or appointed, they are usually designated as secretaries, treasurer, and chair of gender or women's committee.
Management of fishing households	Women in coastal communities have the primary role in the management of the household. This includes cooking, fetching water, firewood, cleaning the house and its surroundings, washing clothes and child rearing. Women also manage the household budget. Augmenting the limited household income is also a woman's role so she is likely engaged in livestock raising, backyard gardening, and networking with other women for financial support in times of need.
Social networking	Rural communities in general have strong features of maintaining social networks as a strategy for survival. In Prieto Diaz, it was found out that households decide to engage in a specific economic activity when such would provide or strengthen their social connections, which they could use later on for non-economic purposes. Social networks thus reinforce market relations among different parties in the community. One such example is the *suki*[8] relationship where the seller and buyer have an established market relation based on mutual trust. Women are also the ones who search for credit from informal sources.
Non-fishing production activities	Women are engaged in small-scale consumer store business (called *sari-sari,* or variety stores), food preparation and vending, livestock and poultry raising, doing laundry and other household chores for other well-off families, and other enterprising activities help sustain fishing as a local and national economy. Women also prefer to work in urban areas and overseas to find more regular source of income.
Agricultural production	Because of the seasonality of fishing, fishing households also distribute their household labor for agricultural production. In Kiamba, Sarangani, women are recognized to have management skills in agricultural production. Aside from planting, weeding and fencing the area for agriculture, they can argue with the men on what crops are feasible to plant, what fraction of land will be allocated for each crop, whom to sell the produce, where to buy the cheaper fertilizer.

Statistics on fishing community conditions are not gender-disaggregated, thus it is difficult to describe, at least, quantitatively, the conditions of women in fisheries. However, some reports like those of Polotan-de la Cruz (1994) and Tanchuling (1993) show that women contribute at least 54% to the total fisher household income and that in fact, the per capita income of women derived from fish marketing and processing is higher than the per capita income of their husbands and sons in fish capture. There is a similar situation in Ulugan Bay in Palawan where women's income from gleaning provides a steady income of PhP100/day[9] compared to an average of PhP150/trip for fishing, which is highly variable (Rivera-Guieb, 2000). Despite this, women continue to be invisible in many development projects and initiatives. Even well meaning NGOs tend to lump "women" as a singular category in the enumeration of stakeholders in coastal resource management and development, because of the lack of understanding of the multi-dimensionality of issues women in coastal communities face everyday.

[8] A *suki* literally means a regular customer.

[9] The minimun daily wage rate in Metro Manila is 250 pesos (£3.5). In the provinces, where Ulugan Bay is located, it is 180 pesos (£2.5) but it is common for fishpond operators not to pay the legally mandated daily wage rate. The authors personally know of cases where the daily wage rate is less than 100 pesos!

6 Policies relevant to aquatic resources management

This section presents the various laws and policies relevant to aquatic resources management in the Philippines from a historical perspective. The evolution of laws and policies in the way aquatic resources are managed in the Philippines can be divided into the following historical nodal points:

- localised and mainly communal management
- start of state control and centralised management
- stage of improving extraction methods for export and entry of foreign capital
- decentralisation and modernisation

6.1 Evolution of policies and laws in aquatic resources management

6.1.1 Localised and mainly communal management (pre 1500s[10])

Various ethnic groups organized into independent villages called *barangays* existed in the Philippines even before Spanish colonialisation. Early Spanish documents show that the *barangays* defined territorial rights over fisheries and had general jurisdiction over coastal resources and fishery limits. Lopez (1983) notes that some sections of the river were set aside by a *barangay* as trading centres and user fees were collected from non-*barangay* members. Kalagayan (1991) makes a similar observation when he suggested that the *barangays* during this period defined their own fishery limits exclusive of other *barangays*. Pre-colonial fishing practices indicate that fishery activities have traditionally been treated as locally based and formed an integral element of the Filipino's way of life. Some evidence further suggests that the use of fishery and aquatic resources is communally owned and hardly a "private" activity.

6.1.2 Start of state control and centralised management (1500 - 1900s)

During the 1500s, the *barangays* were slowly eradicated with the coming of the Spaniards. The strong tradition of local level management was replaced by a policy of state ownership over all natural resources within its jurisdiction, based on the Regalian Doctrine introduced by the Spanish colonisers. Based on this doctrine, the King of Spain effectively owned all resources in the Philippines[11].

[10] The Spaniards came to Philippine shorts on March 16, 1521.

[11] Some lawyers contend that the Regalian Doctrine is a "mythical and historically fallacious principle" (Leonen, 2000; Cruz, 1997). According to them, the common belief is that the sovereign rights of the Filipinos were unilaterally usurped by, and simultaneously vested in the Crowns of Castille and Aragon during an unspecified period of Spain's colonialization of the country. They contend that this belief is not supported by our legal and political history because for one thing, the country then was politically undefined and still a largely unexplained and unconquered archipelago. In addition, Cruz (1997) reports that when this doctrine was supposedly imposed, this did not cover the existing "native titles," which the Spaniards respected.

In addition, some historical documents report that as early as 1598, Antonio de Morga, a Spanish historian and ethnographer, suggested that the size of the nets used for fishing should be regulated because he noted that fine meshed nets were killing small fry and thus, was harmful to the environment. However, the earliest law documented came more than 250 years after Morga. This was the **Spanish Law on Waters of 03 August 1866**, which recognized the right of the public to fish from the shore and granted rights to Spanish registered seafarers and merchants. An extension of this law was named the **Royal Decree of 08 August 1866**, which declared that the shores, coasts and coastal seas are part of the national domain, although open to public use (La Viña, 1999).

While the state has control over fishery and aquatic resources as indicated by the laws that give it the right to grant access and use rights to particular sectors of society, it is possible that the colonial government then respected the communal use of these resources, which was considered open to public use. Local governments and communities may have exercised some aspects of control, although control and management of resources was already becoming largely centralized.

The **Administrative Code of 1917**[12] for instance provided the municipal council the authority, for purposes of profit, to grant the exclusive privilege of fishery or right to conduct a fish-breeding ground within any definite portion, or area, of the municipal waters except in areas that cover pearl farms and shell fisheries. In cases when no exclusive privilege is granted, the municipality was also authorized to impose a license tax on the privilege of taking fish with nets, traps, or other fishing gear. The license, however, does not mean an exclusive right of fishery.

This simple system for management of fisheries remained unchanged until 1932, when **Act No. 4003**, the first Fisheries Act was introduced. Act No. 4003 created a national administrative regime for fisheries. It contained provisions for the protection and conservation of fishery resources such as the declaration of open and closed seasons, protection of fry and fish eggs, prohibition of the use of poisonous substances and explosives in fishing and prevention of water pollution. The law also contained special provisions on the gathering of mollusks, sponges and hawksbill turtles. The regulatory mechanisms included the selective grant of licenses or permits, setting of minimum sizes of fish, shellfish or turtle that may be caught and restricting certain fishing practices to certain places or time of the year.

The passage of Act 4003 provided a straightforward fishery management system for government that carried with it the perspective of the Regalian Doctrine. In fact, the Philippine Constitution of 1935 is also noted to be in line with this doctrine of state ownership.

[12] This section is informed by a study made by Batongbacal, J. (2000) on the historical development of fisheries legislation.

6.1.3 Stage of improving extraction methods for exports and entry of foreign capital

A study by Goodman (1983), cited by La Viña (1999) suggests that the Fisheries Law of 1932 led to the domination of Japanese capital in the fishing industry. About 400 Japanese were already operating 64 power-fishing boats in Manila Bay and 36 deep sea power vessels in the Gulf of Davao. The law provided that commercial fishing vessels of more than 3 tons must be licensed only to Filipinos or Americans, and aliens may participate only by investing in the corporations which was 61% owned by Filipinos or Americans. However, the Japanese merely used Filipino dummies that owned the boats only in name.

When the Philippines became fully independent in 1947, the Bureau of Fisheries (BoF) under the Department of Agriculture and Commerce was created through **RA 177**. The office was granted broad powers to issue licenses and permits, conduct studies, supervise and control the demarcation, protection, management, development, reproduction, occupancy and use of all public fishery reserves and national and municipal fisheries and fishery reservation (RA 177, Sec 4). In 1963, **RA 3512** abolished the Bureau and replaced it with the Philippine Fisheries Commission (PFC).

The fishery regime remained essentially the same throughout the 1940s up to the 1960s, and outside of various amendments of specific provisions. The only major innovation in fishery management during this time was the creation of the special fishery jurisdiction over Laguna Lake through the creation of the Laguna Lake Development Authority (LLDA) by virtue of Republic Act 4850 in 1966. The LLDA was innovative in the sense that it was the first time a major fishing region was placed under the management of a corporate body operating independently from the Secretary of Agriculture.

At the start of the 70s, **PD 43 or the Fishery Industry Development Decree of 1973** was enacted and signalled the beginning of government's intention to maximize the exploitation of the country's fishery and aquatic resources. With PD 43, the government sought to promote, encourage and hasten the organisation and integration of the activities of all persons engaged in the industry so that the country could achieve self-sufficiency in the supply of fishery products. Sufficient and timely financial and training and extension services were committed by government. Under this law, the fishing industry became a pioneer investment priority of the Board of Investments for the purpose of promoting integrated and accelerated development of the sector. In fact, PD 43 effectively restored the BoF and replaced the PFC with the Fishery Industry Development Council (FIDC) where representatives from government banks and the head of the Board of Investments became part of the FIDC.

PD 704 or the Fisheries Code of 1975 was issued subsequently in order to revise and consolidate all laws and decrees affecting fishery resources and hasten the development of an integrated development program that is geared towards increasing fishery industry investments and maximizing resource use. The more significant impact of PD 704 was on the foreign involvement in Philippine catch fisheries. The law paved the way for the re-introduction of Japanese investment in the local fishing sector. By virtue of this law, Japan thus became the dominant partner of the Philippines in joint ventures in fisheries (La Viña, 1999). PD 704 also continued the policy of accelerated and integrated development of the fishery industry by emphasizing to keep the fishery production of the country at optimum levels and promoting maximum economic utilization of fishery resources by the private sector. The exportation of fish products was the key to incorporating fisheries production into the national development agenda.

In sum, this period is characterized by a seeming fixation of the government to optimize the utilization of fishery and aquatic resources for maximum "economic development." This vision and commitment is consistent with the passage of laws that allow the entry of foreign investment in the country by making fisheries a preferred area of investment and in optimizing fish exportation. All these elements combined indicate the government's viewpoint on how fisheries could contribute to the country's economic agenda.

6.1.4 Decentralization and modernisation (late 1970s to present)

During the late 1970s up to the 1980s, the perspective and language of management and conservation was slowly becoming evident in development and legislation. At the same time, governments have slowly been recognizing the value of devolving functions at the local level. The landmark legislation that began the move towards decentralization was the passage in 1991 of **RA 7169, otherwise known as the Local Government Code**. This law started the government's commitment to devolve most of the functions to the local government units, including that of fisheries. LGC also extended the municipal waters to 15 kilometres, effectively giving priority to municipal fishers in the granting of exclusive fishery privileges in municipal waters.

In 1997, the Philippine Congress passed the **RA 8435 or the Agriculture and Fisheries Modernization Act**[13]. The AFMA declares as State policy the empowerment of the agricultural and fisheries sector to develop and sustain them. AFMA provides that the State will ensure the development of the agriculture and fisheries sectors in accordance with the following principles: poverty alleviation and social equity; food security; rational use of resources; global competitiveness; sustainable development; people empowerment; and protection from unfair competition.

[13] The law became effective on February 9, 1998 slightly ahead of RA 8550.

Another significant policy development is the passage of **RA 8550 or the Fisheries Code of 1998[14].** This new law indicated a change in perspective as its provisions pertained more on the sustainable development of fishery resources. This law is regarded as a departure from blind resource exploitation and a beginning for more sustainable use of fishery and aquatic resources. For one thing, the law expanded the limits of municipal waters and also mandated the creation of Fisheries and Aquatic Resources Management Councils (FARMCs) where civil society groups could be involved in policy discussions and in other initiatives that were traditionally had been regarded as state affairs.

With regards mangrove utilization, **PD 705 of 1975** provides that mangrove strips in islands shall not be alienated. However, it is commonly known that the boom in shrimp culture in the 1980s paved the way for the conversion of mangroves into shrimp/fish ponds. Between 1970s-1980s, for example, there was an increase of 8,113 hectares of brackishwater ponds or about 5% of the total area of ponds at the start of the 70s (Primavera, 1997). The consistent decline in mangrove areas and the incessant advocacy for more mangrove protection subsequently produce more policies that provide for mangrove management. Consequently, government passed administrative orders that provided guidelines for conversion and on management and conservation of mangroves. (Refer to Table 1 and the discussion on policies related to mangrove management)

Related to general environmental protection, **PD 1586** was passed in 1978, which established the Environmental Impact Statement (EIS) System in the Philippines. This is a significant legislation that provides control over possible excessive abuse of the environment. In addition, **PD 984** and **PD 600** are laws that govern general pollution control and marine pollution, respectively.

Finally, two other significant laws passed during this period are the Indigenous People's Rights Act (IPRA) or **RA 8371 of 1997** and the National Integrated Protected Areas System Act of 1992 **(NIPAS Act)**. The former provides for the recognition, protection and promotion of the rights of indigenous people while the latter provides for the management identifiable portions of land and water known for their unique physical and biological significance

In sum, from the late 1970s up to the present, there seems to be more than enough laws and policies in the Philippines that provide for general environmental protection, and aquatic resource management in particular. This period is characterized as well by continuing devolution and decentralization of government functions, empowering local government units and agencies.

[14] This law became effective on March 23, 1998.

6.2 A closer look at some of the laws and policies

6.2.1 The 1987 Philippine Constitution

The general principle of state ownership, which was adopted in the Philippine Constitution of 1935 and was also carried over in the 1987 Constitution. Article 7, Sec II of the Constitution states that "All lands of the public domain, waters, minerals, coal, petroleum, and other mineral oils, all sources of potential energy, fisheries, forests, timbers, wildlife, flora and fauna, and other natural resources are owned by the State." This is particularly helpful in arguing for state support to environmental conservation and protection. For example, the landmark case of *Oposa v. Factoran* (224 SCRA 792) used the principle of state ownership of resources as the basis for its case against DENR Secretary Fulgencio Factoran in behalf of the minors of future generations. The case argued for the cancellation of Timber Licensing Agreements (TLAs) issued by the DENR. The Supreme Court ruled that the minors had a legal standing to sue DENR under Article II, Section 16 of the Constitution. The court also ruled so based on the minors' right in behalf of the future generation, the present generation acting merely as a custodian to the future generations of Filipinos (Bonpin et.al, 2000).

The other constitutional provisions that are relevant to fishery and aquatic resource management are:

Article XII, Section 2, paragraph 2 – "The state shall protect the nation's marine wealth in its archipelagic waters, territorial sea, and exclusive economic zone and reserve its use and enjoyment exclusively to Filipino citizens."

Article XII, Section 2, paragraph 3 – "The Congress may, by law, allow small-scale utilization of natural resources by Filipino citizens, as well as cooperative fish farming, with priority to subsistence fishermen and fishworkers in rivers, lakes, bays and lagoons."

Article XII, Section 7 – "The state shall protect the rights of subsistence fishermen, especially of local communities, to the preferential use of the communal marine and fishing resources, both inland and offshore."

6.2.2 RA 7160 or the Local Government Code[i]

RA 7160, otherwise known as the Local Government Code (LGC) of 1991 provides for the transfer of political power and responsibility from the national to the local government units is expected to push the motion towards greater people empowerment.

The following are some of the important provisions to note in the LGC with regards to general protection of the environment:

- The local government units (LGUs) shall participate with national government agencies to manage and protect the environment within their jurisdiction (Section 16).
- Each agency of the government or any government-owned and controlled corporation shall consult with and explain to the local government any project or program that has an effect on the environment (Section 26).
- Each branch of the local government will use powers granted by the LGC to advance the general interest such as health, security and development and the right of the people to a balanced ecology (Section 16).

Bonpin et.al. (2000) also noted that each *Sangguniang Bayan, Sangguniang Panglungsod* and *Sangguniang Panlalawigan* (legislative councils) have the power to make ordinances, resolutions or decisions and appropriate funds for the general welfare of the people, relative to the protection of the environment and nature. For instance, these bodies have the power to draft and enact ordinances and decisions imposing the appropriate penalties for acts detrimental to the environment such as:

- Dynamite fishing and other destructive fishing methods
- Unlawful trade in products of the environment and in endangered animals and plants
- Farming through *kaingin* (swidden agriculture) or the burning of plants and trees
- Other acts that may cause pollution, drying up of lakes and rivers, or destruction of the balance of ecology

With regard to relations with NGOs and POs, the LGC has the following important provisions:

- Local government units shall promote the establishment and operation of people's and non-governmental organizations to become active partners in the pursuit of the local autonomy (Chapter 4, Section 34**)**.
- Local government units may enter into joint ventures and such other cooperative arrangements with people's and non-governmental organizations to engage in the delivery of certain basic services, capability-building and livelihood projects and to develop local enterprises designed to improve productivity and income, diversify agriculture, spur rural industrialization, promote ecological balance, and enhance the economic and social well-being of the people (Chapter 4, Section 35**)**.
- A local government unit may through its local chief executive and with the concurrence of the *Sanggunian* concerned, provide assistance, financial or otherwise to such people's and non-

governmental organizations for economic, socially-oriented, environmental, or cultural projects to be implemented within its territorial jurisdiction (Chapter 4, Section 36**)**.

Finally, Section 131 of the LGC puts forward a definition of "municipal waters," which was used as basis for subsequently defining these waters in the Fisheries Code of 1998, to wit:

Municipal waters include not only streams, lakes and tidal waters within the municipality, not being the subject of private ownership and not compromised within the national parks, public forest, timber lands, forest reserves or fishery reserves, but also marine waters included between two lines drawn perpendicular to the general coastline from points where boundary lines of the municipality or city touch the sea at low tide and a third line parallel with the general coastline and fifteen (15) kilometers from it. Where two municipalities are so situated on the opposite shores that there is less than 15 kilometers of marine waters between them, the third line shall be equally distant from opposite shores of the respective municipalities (Section 131).

6.2.3 Republic Act 8550

The Philippine Congress passed RA 8550 on 19 February 1998 and subsequently signed by then President Fidel Ramos on 25 February. The law, otherwise known as the Fisheries Code of 1998 became effective on 23 June 1998.

RA 8550 is a product of at least a decade of struggle of the NGOs and POs working in fishing communities to advocate for a law that is more attuned to the changes of the present time. PD 704 was clearly not consistent with the needs of the fishery sector and not at all helpful because of its orientation towards the generic and wholesale development of the fishing industry. A study by Quicho, Mislang and Batay-an (2000) cites some of the positive provisions of RA 8550 that were not present in PD 704s:

- Section 2, paragraph (a) – "to achieve food security as the overriding consideration in the utilization, management, development, conservation and protection of fishery resources xxx"
- Section 2, paragraph (b) – "to limit to the fishery and aquatic resources of the Philippines for the exclusive use and enjoyment of Filipino citizens."
- Section 2, paragraph (c) – "to ensure the rational and sustainable development, management and conservation of the fishery and aquatic resources in Philippine waters xxx"
- Section 2, paragraph (d) – "to protect the rights of the fisherfolk, especially the local communities with priority to municipal fisherfolk, in the preferential use of municipal waters xxx"

- Section 2, paragraph (e) – "to manage fishery and aquatic resources, in a manner consistent with the concept of an integrated coastal area management in specific fishery management areas xxx"

One relevant provision of the Fisheries Code of 1998 is the creation of Fisheries and Aquatic Resource Management Councils (FARMCs) in the country. Sections 68-79 mandates the following, among others:

- A FARMC is a recommendatory body composed of representatives from the government, fisherfolk and non-government organizations.
- FARMCs shall be established at municipalities and *barangays* surrounding coastal waters. Integrated FARMCs shall also be constituted in geographical areas abutting bays, gulf, lakes and dams.
- A National FARMC shall be established to assist in the implementation of the National Fisheries and Industry Development Plan and in formulating policies that will protect and manage fishery and aquatic resources.

Fishery Administrative Order (FAO) 196 was subsequently passed and provided the guidelines on the creation and implementation of FARMCs. Section 9 of FAO 196 shows that the M/CFARMCs should have the following functions:

- Assist in the preparation of the municipal fisheries development plan and submit such plan to the Municipal Development Council. The M/CFARMCs shall also evaluate implementation of the plan and submit recommendations for effective implementation.
- Recommend the enactment of fishery ordinances to the *Sanggunian Bayan/Panglungsod* through its Committee on Fisheries.
- Assist in the enforcement of fishery laws, rules and regulations in municipal waters.
- Advise the *Sangguniang Bayan/Panglungsod* on fishery matters through its Committee on Fisheries, if such has been organized.
- Perform such other functions, which may be assigned by the *Sangguniang Bayan/Panglungsod*

The M/CFARMC have as members various representatives from government such as the Municipal/City Planning and Development Officer, the Chairperson, Agriculture/Fishery Committee of the *Sangguniang Bayan/Panglungsod* and representatives of the Municipal/City Development Council and the Department of Agriculture. One representative each from an accredited non-government organization and the private sector also sit as members of the

Council. A majority of the members are representative from at least 11 fisherfolk representatives – 7 municipal fisherfolk, 1 fishworker, and 3 commercial fishers in each municipality/city, which include representatives from youth and women sectors.

A most recent development is the DENR's passage of DAO 17, which provides guidelines for delineation, and delimitation of municipal waters in the Philippines. DAO 17 is regarded as an important step towards rationalising water boundaries that will ultimately contribute to lessening disputes between commercial and small-scale fishers. The commercial fishers represented by the Alliance of Philippine Fishing Federation last year petitioned against it but realising the futility of its claim, they eventually withdrew this petition. The legal infirmities of the DAO 17 was then challenged in the House of Congress and eventually elevated to the Department of Justice but its opinion only stated that they nor the Congress have jurisdiction over the matter. At the moment, the question on DAO 17's legality has waned and the order remains enforceable (de la Paz, 2001).

6.2.4 RA 8435 or the Agriculture and Fisheries Modernization Act (AFMA)

With AFMA, it has become state policy to modernize the agriculture and fisheries sectors by transforming these sectors from a resource-based to a technology-based industry while ensuring equitable access to assets, resources and services, and promoting higher-value crops, value-added processing, agribusiness activities, and agro-industrialization by enhancing the profits and incomes in the agriculture and fisheries sectors, particularly the small farmers and fisherfolk. The AFMA also clearly speaks about food security, with a particular aim to "ensure the accessibility, availability and stable supply of food to all at all times."

With AFMA, the state also wants to pursue a market-driven approach to enhance the comparative advantage of our agriculture and fisheries sectors in the world market

Among the major provisions of the law are:

- The identification and delineation of strategic agriculture and fisheries development zones (SAFDZ) within the network of protected areas for agricultural and agro-industrial development to ensure that lands are efficiently and sustainably utilized for food and non-food production and agro-industrialization;
- The establishment of a Bureau of Agriculture and Fisheries Products Standards (BAFPS) with the following functions
- Formulate and enforce standards of quality in the processing, preservation, packaging, labeling, importation, exportation, distribution, and advertising of agricultural and fisheries products;

- Conduct research on product standardization, alignment of the local standards with the international standards; and
- Conduct regular inspection of processing plants, storage facilities, abattoirs, as well as public and private markets in order to ensure freshness, safety and quality of products.
- Establishment of a Network of National Centers of Excellence in Agriculture and Fisheries Education; and
- Creation of a Agriculture and Fisheries Board in the Professional Regulation Commission to upgrade the Agriculture and Fisheries profession

6.3 Specific Laws Related to Fishery/Aquatic Resources Management

6.3.1 Environmental Impact Assessment

PD 1121, enacted in 1977, provided for the creation of the National Environmental Protection Council (NEPC), which was given the power to "review environmental impact assessments of projects submitted by government agencies" [PD1121, Sec. 2(6)]. However, it is Presidential Decree No. 1586 of 1978 which provides for the establishment of an Environmental Impact Statement (EIS) System in the Philippines. PD 1586 provided that all environmental impact statements were required only for undertaking or areas, which were declared by the President as environmentally critical. However, in 1981, Presidential Proclamation 2146 was issued and it identified heavy industries, resource extractive industries and infrastructure projects as environmentally critical projects. The environmentally critical areas were also identified and included all declared protected areas, critical areas of wildlife, prime agricultural lands, mangrove areas and coral reefs, areas of significant historical, cultural or aesthetic values and areas often hit by natural calamities, among others.

By requiring an ECC for all projects in all environmentally sensitive areas, most activities in marine and coastal areas would then require an ECC. In addition, the inclusion of environmental risk assessment and social acceptability in the EIA system is the most potent toll for decision-makers (La Viña, 1999).

6.3.2 Pollution Control

Pollution control in the country is generally governed by Presidential Decree No. 984 of 1976, which provides for the revision of Republic Act No. 3931, commonly known as the Pollution Control Law. Among others, PD 984 mandates the National Pollution Control Commission (NPCC) to formulate the policy, set pollution control standards, adjudicate violations and perform other regulatory functions. When the DENR was reorganized in 1987 with EO 192, the general regulatory functions were transferred to the regional offices, the policy formulation and standard

setting were assigned to the Environmental Management Bureau (EMB) and the quasi-judicial functions were given to the Pollution Adjudication Board.

On the other hand, marine pollution is governed by PD 600 and regulated by the Philippine Coast Guard (PCG). Under this law, it shall be unlawful to throw, discharge, or deposit, or cause, suffer, or procure to be thrown, discharged, or deposited either from or out of any ship, barge or other floating craft of any kind, or from the shore, wharf, manufacturing establishment, or mill of any kind, any refuse matter of any kind or whatever description other than that flowing from streets and sewers. The discharge of oil and other noxious substances is also prohibited. In cases of oil pollution, the polluter is liable for clean up in addition to criminal fines and imprisonment.

Because of overlaps in the above-mentioned laws, PD 600 was amended by PD 979 to delineate the functions of the concerned agencies. The DENR and PCG also entered into an agreement that all land-based sources of pollution will be regulated by the latter while the former will be in charged of all ship-based pollution sources.

6.3.3 Policies that Relate to Mangrove Management

Tables 11 and 13 show the different laws that relate with fishpond and mangrove conversion and mangrove conservation and rehabilitation, respectively[15]. In her paper, Dr. Primavera (1997) suggests that there is overlapping bureaucracy and legislative ambiguities in the laws that relate with mangrove management. For example, municipal and provincial offices would sometimes release permits even for permanent forests such that Walters (1995) notes that many large ponds in the country may have legal permits from local officials or FLAs issued by DA-BFAR but without necessarily having a formal consent from DENR. Dr. Primavera further notes that while there is a whole suit of administrative and fisheries orders, decrees and proclamations, effective enforcement of such is often hampered by the lack of human resources, overlapping jurisdiction and bureaucratic corruption in many levels of government.

In a recent development, the DA and DENR came up with a Joint Memorandum that aims to coordinate their efforts, harmonize their policies and cooperate in the implementation of the laws at the operational level (Art.I). Article III, Section 3 of the Memorandum, for instance, states that the enforcement of the Code of Practice for Aquaculture[16] shall be the primary responsibility of DA BFAR while DENR, on its own behalf or on behalf of interested parties, may file a complaint or initiate proceedings with the DA-BFAR for cancellation of the Fishpond Lease Agreement and such other aquaculture establishment in cases of violation of the standards or guidelines enumerated in the Memorandum and other DENR rules and regulations.

[15] This section is based on module on Governance of Coastal Environment of the UP Open University written by R. Bernardo and R. Rivera-Guieb (2001

[16] A Code of Practice for Aquaculture shall be promulgated by the DA-BFAR pursuant to Sec. 46, 47 and 48 of RA 8550.

Table 14: Philippine Laws on Fishponds and Mangrove Conversion

Law	Content/Focus
PD 705 of 1975	Revised Forestry Code which provides for the retention (and exclusion from pond development) of 20 m-wide mangrove strip along shorelines facing oceans, lakes, etc.
PD 953 of 1976	Fishpond/mangrove lease holders required to retain or replant 20-m mangrove strip along rivers and creeks
PD1586 of 1978	The EIS System which covers resource extractive industries such as fishponds
FAO 125-1979	Fishpond permits and 10-year Fishpond Lease Agreements (FLAs) were converted to 25 years to accelerate pond development
DAO 03-1982	Revision of guidelines in classification and zonation of forest lands
DAO 76-1987	Establishment of buffer zone: 50 m fronting seas, oceans and 20 m along river banks; lessees of ponds under FLA were required to plant 50 m-mangrove strip
RA 6657 of 1988	Comprehensive Agrarian Reform Law which exempted fishpond areas in the reform law for 10 years
FAO 125-1-1991	Increase in fishpond lease from USD2 to USD40/ha/year effective 1992
FAO 125-2-1991	Full implementation of FAO 125-1-1991 was delayed
DAO 34-1991	Guidelines for Environmental Clearance Certificate which are applicable to fishponds
DAO 21-1992	Implementing Guidelines for the EIS System
RA 7881 of 1995	Fishpond exemption from agrarian reform was extended

Source of Data: Primavera, J. (1997)

Table 15: Philippine Laws that Relate to Mangrove Conservation and Rehabilitation

Law/Policy	Content/Focus
PD 705 of 1975	Revised Forestry Code which provides that mangrove strips in islands shall not be alienated
Pres. Proc. 2151 and 2152 of 1981	Declaration of 4,326 ha. Of mangroves as wilderness areas and 74,767 ha as forest reserves
Pres. Proc. 2146 of 1982	Prohibition on mangrove cutting
DAO 42-1986	Expansion of mangrove forest belt in storm surge, typhoon prone areas: 50-100 m along shorelines, 20-50 m along riverbanks
PD 1067	3 to 20 m of riverbanks and seashore for public use; recreation, navigation, floatage, fishing and salvage; building of structures not allowed
DAO 77-1988	Implementing Guidelines of Integrated Social Forestry Program which provides incentives for co-management of forest resources through provision of legal tenure
DAO 15-1990	Policies on communal forests, plantations, tenure through Mangrove Stewardship Contracts; revert abandoned ponds to forest, ban cutting of trees in FLA areas; prohibit further conversion of thickly vegetated areas
DAO 09-1991	Policies and Guidelines for Mangrove Stewardship Agreement
RA 7160 of 1991	LGC which devolved management and implementation of community forestry projects, communal forests<500 ha and enforcement of community-based laws
DAO 30-1994	NGO Assistance in Community-Based Mangrove Forest Management

Source of Data: Primavera, J. (1997)

6.3.4 Laws that relate to protected areas

Some water bodies fall within protected areas. The centerpiece legislation on protected areas is RA 7586 or the National Integrated Protected Areas System (NIPAS) Act of 1992. With the NIPAS Act, the policy of the State provides that the management, protection, sustainable development, and rehabilitation of protected areas shall be undertaken primarily to ensure the conservation of biological diversity and that the use and enjoyment of protected areas must be consistent with that principle. It is further acknowledged that the effective administration of the NIPAS will require a partnership between the Government through the DENR, and other interested parties including the indigenous cultural communities.

This law establishes a National Integrated Protected Areas System which will encompass outstanding remarkable areas and biologically important public lands that are habitats of rare and

endangered species of plants and animals, biogeographic zones and related ecosystems, whether terrestrial, wetland or marine.

Among the major provisions of the law are the following:

- The designation of all proclaimed national parks, game refuge, bird and wildlife sanctuaries, wilderness areas, strict nature reserves, watersheds, mangrove reserves, fish sanctuaries, natural and historical landmarks, protected and managed landscapes/seascapes, and identified virgin forests, as initial components of NIPAS.
- The establishment of a Protected Area Management Board (PAMB) in each protected area, with the following composition: (1) the Regional Executive Director under whose jurisdiction the protected area is located; (2) a representative from the autonomous regional government, if applicable; (3) the Provincial Development Officer; (4) a representative from the municipal government; (4) a representative from each barangay covering the protected area; (5) a representative from each tribal community, if applicable; (6) at least three representatives from non-government organizations/local community organizations; and, if necessary (7) a representative from other departments or national government agencies involved in protected area management.
- The formulation of a comprehensive Protected Area Management Plan and Manual for each protected area;
- The designation of all protected areas under NIPAS as directly under the administrative control of DENR; and
- The recognition of Tenured Migrants within a protected area.

On 29 June 1992, the DENR issued DAO No. 25, which provides the implementing rules and regulations related with the NIPAS. Among others, DAO 25 provides detailed guidelines on establishing NIPAS areas and the preparation, approval and adoption of management plans for such areas.

Aside from this, two department administrative orders were issued in 1995 in connection with the NIPAS Act. First is DAO No. 03, Series of 1995 that provides the procedures and/or documentary requirements, guidelines and/or criteria to be observed and/or followed in the selection of LGUs, NGOs and POs to the Protected Area Management Board (PAMB). Secondly, DENR issued DAO 05 Series of 1995, which provides the guidelines in the selection, awards, monitoring, and evaluation of host NGO in the conservation of protected areas project.

6.3.5 Policies that relate to indigenous peoples

Some fishing communities are made of indigenous peoples. The single most significant law on this aspect is the Indigenous People's Rights Act (IPRA) or RA 8371 of 1997. IPRA is an act that is intended "to recognize, protect and promote the rights of indigenous cultural communities/indigenous people, creating a national commission of indigenous people, establishing implementing mechanisms, and appropriating funds therefore." With IPRA, the following have become state policies:

- The State shall recognize and promote the rights of ICCs/IPs within the framework of national unity and development;
- The State shall protect the rights of ICCs/IPs to their ancestral domains to ensure their economic, social and cultural well being and shall recognize the applicability of customary laws governing property rights or relations in determining the ownership and extent of ancestral domain;
- The State shall recognize, respect and protect the rights of ICCs/IPs to preserve and develop their cultures, traditions and institutions. It shall consider these rights in the formulation of national laws and policies;
- The State shall guarantee that members of the ICCs/IPs regardless of sex, shall equally enjoy the full measure of human rights and freedoms without distinctions or discriminations;
- The State shall take measures, with the participation of the ICCs/IPs concerned, to protect their rights and guarantee respect for their cultural integrity, and to ensure that members of the ICCs/IPs benefit on an equal footing from the rights and opportunities which national laws and regulations grant to other members of the population and
- The State recognizes its obligations to respond to the strong expression of the ICCs/IPs for cultural integrity by assuring maximum ICC/IP participation in the direction of education, health, as well as other services of ICCs/IPs, in order to render such services more responsive to the needs and desires of these communities.

Towards these ends, the State shall institute and establish the necessary mechanisms to enforce and guarantee the realization of these rights, taking into consideration their customs, traditions, values, beliefs, their rights to their ancestral domains.

Like RA 8550, IPRA has had oppositions from various sectors of society. In particular, a case was filed questioning its constitutional validity and arguing that granting ancestral domain claims is not consistent with the Regalian Doctrine. Fortunately, the Supreme Court denied this motion on 21 September 2001 and effectively upheld the constitutionality of the law. The decision is believed to mark the first time in Asia that a national government has legally recognized

indigenous peoples' territorial rights. This may not be the last time that the IPRA would be challenged but for the Legal Rights Resources, the real challenge will lie in its full implementation and its relevance to the daily lives of millions of indigenous peoples seeking recognition of their rights to resources (www.lrcksk.org).

6.4 Licensing

RA 8550 guides the licensing system for fisheries in the Philippines. A unique provision of the law, and considered by many as a good signal for environmental conservation and protection is contained in Chapter II, Section 6 of RA 8550. It states "the rentals for fishpond areas covered by the Fishpond Lease Agreement (FLA) and license fees for Commercial Fishing Boat Licenses (CFBL) shall be set at levels that reflect resource rent accruing from the utilization of resources and shall be determined by the Department."

6.4.1 Licensing in municipal fisheries

Based on RA 8550, license fees of fishery activity in municipal waters shall be determined by the Local Government Unit (LGU) in consultation with the Fisheries and Aquatic Resource Management Councils (FARMCs). The FARMCs may also recommend the appropriate license fees that will be imposed (Chapter II, Section 6). In addition, pursuant to Section 149 of the Local Government Code, duly registered fisherfolk organization/cooperatives shall have preferences in the granting of fishery rights in municipal waters. The only exemption is an area that is covered by a special law like the Laguna Lake Development Authority or the Palawan Council for Sustainable Development (Article 1, Sec. 17).

6.4.2 Licensing in commercial fisheries

The granting of license and any other applicable fishery fees beyond the municipal waters is the responsibility of DA-BFAR. Thus, it grants the Commercial Fishing Boat Licenses (CFBL) to the commercial fishing sector. The commercial fishing boat license shall be renewed every three (3) years (Art. II, Sec. 30). RA 8550 further provides that no commercial fishing vessel license shall be issued except to citizens of the Philippines partnerships or to associations, cooperatives or corporations duly registered in the Philippines at least sixty percent (60%) of the capital stock of which is owned by Filipino Citizens (Art. II, Sec. 27).

In addition, Art. II, Sec. 29 of RA 8550 provides that before a commercial fishing vessel holding a commercial fishing vessel license may begin fishing operations in Philippine waters, the fishing gear it will utilize in fishing shall be registered and a license granted therefore.

6.4.3 Licensing in aquaculture

The area released for fishpond purposes and the permit to cut mangroves is provided by the DENR. However, the Fishpond Lease Agreements (FLAs) are provided by DA-BFAR. Fishponds could be leased for 25 years and renewable for another 25 years (Art. III, Sec. 46a). No more than 50 hectares for individuals and 250 hectares for corporations or fisherfolk organizations could be leased (Art. III, Sec. 46b). Any transfer or assignment of rights to FLA shall be allowed only upon prior written approval of the Department (Art. III, Sec. 46f).

Aside from the FLAs, a fishpond owner pays a rental of PhP700/hectare to DA-BFAR. This amount is supposed to help fund the work of the National Fisheries Research and Development Institute (NFRDI). Since it has not been set up yet, the collected fees are reverted back to the National Treasury.

The permit to operate fish pens, fish traps and other structures for culture of fish and other fishery products in municipal waters is provided by the LGU. The area to be utilized for this purpose shall not be over 10% of the suitable water surface. Those located outside municipal waters shall be constructed and operated only within fish pen and fish cage belts designated by the DA-BFAR and and after corresponding licenses have been secured and the fees paid to the Department (Art. III, Sec. 51).

In the same way, pearl farm leases are also granted by the LGUs (Art. III, Sec. 52)

6.5 Law enforcement

In the Philippines violations of laws related to aquatic resources management is rampant, although there are no specific studies that would quantify its extent.

The DENR, BFAR, DILG Guidebook on Coastal Law enforcement (2001), categorises violations of coastal laws into: (a) fisheries-related, (b) protected aquatic resources-related, (c) coastal habitat-related, (c) foreshore and shoreline development-related, (d) coastal and marine pollution-related, (e) zonal and navigation-related, and (e) other violations/crimes.

Some of the more common fisheries-related violations are: (a) fishing in restricted/regulated areas, (b) fishing by use of explosives, (c) fishing by use of noxious or poisonours substances, (d) fishing by use of electricity, (d) marketing and buying illegally caught fish, (e) fishing by use of fine-mesh net, (f) fsihing by use of superlights, (g) unlawful activities associated with commercial fishing; (h) fishing without the necessary licenses, permits, and other documentary requirements. Figure 22, shows a map produced by CRMP through focus group discussions on the coastal law enforcement issues in Masbate (Region 5).

Figure 22: Map of Masbate islands coastal law enforcement issues

7 Poverty situation in the sector

7.1 Overview of poverty situation

There are no disaggregated estimates of the extent of poverty specific to the aquatic resource sector. What we have done in this report is to segregate provinces and municipalities with coastal areas and used the overall estimates of poverty incidence of families[17] used by the government to determine which areas are the poorest. In terms of determining who are the disadvantaged within the poorest areas, we've relied on the description of the fishery production process and those involved in it that shows how benefits are allocated.

The NSCB, the Philippine's coordinating body for statistical matters, puts the poverty incidence (proportion of families with income below the poverty line[18]) at 34.2% in 2002.

[17] We also used the ranking of provinces in terms of HDI and income class.
[18] The annual per capita poverty threshold in 2000 is 13,916 pesos or £186. The poverty threshold is defined as the food threshold and the non-food requirements of a family. The first time for an official poverty line to be set was in 1986, under the Aquino government; the line was applied to the latest available family income and expenditure (FIES) survey, that of 1985, in order to obtain an official poverty incidence rate for the first time. For more details, see www.sws.org.ph.

Table 16: Poverty thresholds and incidence by region, urban-rural (2000)[19]

		Poverty incidence					
		of population			of families		
Region	Poverty threshold (pesos)	Total	Urban	Rural	Total	Urban	Rural
Philippines	13,915.61	40.00	25.00	54.40	34.20	20.40	47.40
ARMM	14,016.86	73.90	69.80	75.10	68.80	63.90	70.20
Region 5	13,010.42	62.80	47.70	68.00	56.30	42.30	61.10
Region 12	12,247.43	57.90	47.70	62.70	50.90	39.50	56.20
Region 9	11,046.28	53.00	31.60	62.70	46.30	27.00	55.30
Region 10	12,130.56	52.20	37.00	62.90	45.70	31.80	55.40
Region 6	12,645.63	51.20	32.50	62.50	43.40	26.50	53.90
Region 8	10,868.38	50.50	31.90	58.00	43.00	26.70	49.40
Region 11	12,546.18	46.30	33.40	55.30	41.20	28.50	49.90
Region 7	11,089.06	43.90	27.50	57.70	38.90	23.60	51.00
Region 1	14,800.05	43.50	32.60	48.60	37.20	26.50	42.20
CAR	15,706.29	43.90	17.70	58.60	36.90	13.40	50.00
Region 2	12,488.34	36.30	33.00	37.20	30.60	28.80	31.10
Region 4	15,306.67	31.70	22.50	44.00	26.00	18.00	36.80
Region 3	14,653.29	22.90	21.60	24.50	18.60	17.40	20.10
NCR	18,001.38	12.70	12.70		9.70		

Source: NSCB, 2000

There are poverty incidence of families) estimates[20] per province (there are 78 provinces), but there are none for municipalities (there are more than 1500 municipalities[21]). In section 7.2, we ranked the provinces based on some available poverty indicators (APIS, PIDS, income class and HDI) and the consolidated result is generally similar to the ranking in Table 16, except for the provinces of Ifugao and Romblon which belong to Regions CAR and 4 which ranked low in Table 14 (meaning less poor).

[19] Ranked based on total poverty incidence of families.
[20] In 1999, the Annual Poverty Indicators Survey (APIS) included 41,000 sample households all over the country.
[21] Although municipalities can be classified into income classes, ie the amount of revenue they generate in the last 3 calendar years.

Table 17: Top poorest provinces using selected poverty indicators[22]

Region	Province	APIS rank	PIDS (Poverty incidence of families, %)	Income class	HDI	No of times to appear in top 20[23] poorest provs.
5	Masbate	76	74.7		0.487	3
ARMM	Sulu	75	72.5	3	0.331	4
ARMM	Lanao del Sur	73	57.6	3	0.408	4
ARMM	Maguindanao	71	66.2		0.403	3
9	Basilan	70		4	0.434	3
4	Romblon	69	73	4		3
12	North Cotabato	63	63.8		0.514	3
ARMM	Tawi-tawi	59		4	0.425	3
CAR	Ifugao		67.7	4	0.448	3
7	Siquijor		61.3	4	0.509	3
13	Agusan del Norte		60.7	3	0.512	3

Although the ranking of provinces differ for each set of poverty indicators used (see section 7.2).

Recently, the minimum basic needs (MBN) framework was introduced to refine the definition of poverty threshold. Basically poverty is still largely defined as "income poverty."

Recent discussions on poverty as more than income poverty and can include voice poverty (powerlessness), capacity poverty, poverty as exclusion (World Bank, 2001) is still confined to a few circles in the Philippines.

7.2 Ranking of Philippine provinces based on poverty levels

There are four (4) ways in which Philippine provinces may be ranked in terms of poverty levels based on statistics generated by the Philippine government: (a) through the annual poverty indicators survey (APIS) done by the NSO, (b) the poverty incidence of families done by the PIDS based on NSO data, (c) by income classification, and (d) through the human development index.

7.2.1 Annual Poverty Indicators Survey (APIS)

The Income and Employment Statistics Division of the National Statistics Office (NSO) conducts Annual Poverty Indicators Surveys (APIS). Two surveys have been conducted so far, the first one in 1998 and the second in October 1999. The survey was designed to provide access and impact indicators which can be used as inputs to the development of an integrated poverty indicator and monitoring system for the assessment of government program on poverty alleviation and for use in policy and planning. Covering 41,000 sample households all over the country, APIS gathered information on the socio-economic profile of sample families and other data related to their living conditions. The provinces were arranged based on the percentage of families meeting a

[22] Except for North Cotabato and Ifugao, these provinces have coastal areas.
[23] More than 20 for income classification as all third and above income class were included and top 25 for HDI.

particular minimum basic need (MBN) indicator or poverty correlate from highest to lowest. The province with the highest percentage of families meeting the MBN or were covered by the poverty correlate was ranked number 1 and the province with the lowest percentage of families meeting the MBN or were covered by the poverty correlate was ranked 77 (highest).

Table 18: APIS indicators (minimum basic needs or MBN indicators)

1. Survival Indicators	1 Families with married women 15-49 years old who were pregnant and lactating during the past 6 months and recipient of iron supplement 2 Families (same as above) who were recipient of iodine supplement 3 Families (same as above) who were recipient of tetanus toxoid injection 4 Families with access to family planning services 5 Families practicing family planning 6 Families with own sanitary toilet 7 Families with access to safe drinking water
2. Security Indicators	8 Families with owned or owner-like possession of housing units 9 Families with housed made of strong materials 10 Families with gainfully employed family head 11 Families with gainfully employed members 18 years and over
3. Enabling Indicators	12 Families with children 6-12 years old in elementary school 13 Families with children 13-16 years old in high school 14 Families with working children 5-7 years old 15 Families with members in PO/NGO/cooperatives

Table 19: Top 20 poorest provinces based on the APIS ranking, 1999

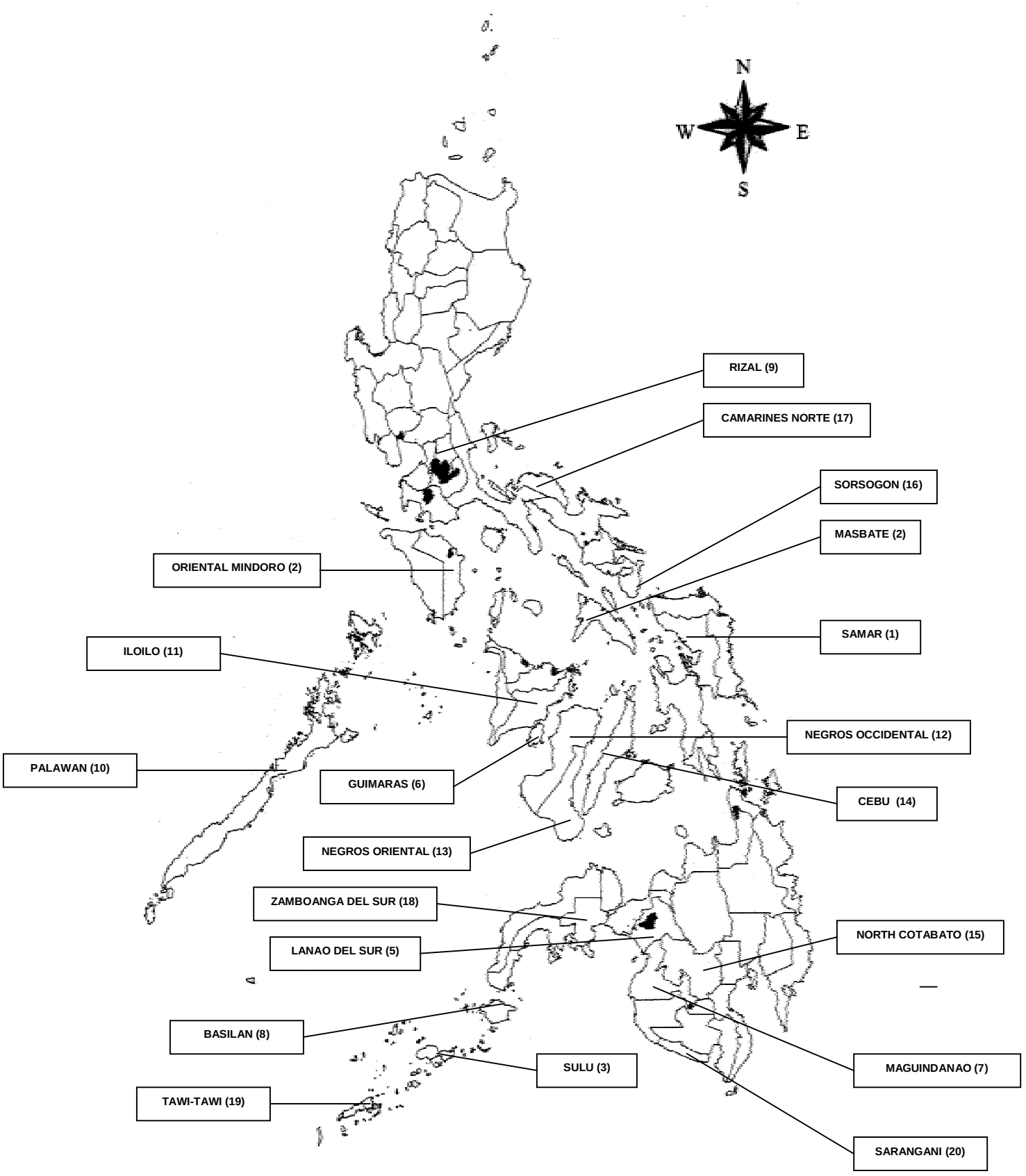
Region	Province	Population (1) (2000)	Rank on overall APIS indicators (1999)
8	Samar	641,124	77
5	Masbate	707,668	76
ARMM	Sulu	619,668	75
4	Oriental Mindoro	681,818	74
ARMM	Lanao del Sur	669,072	73
6	Guimaras	141,450	72
ARMM	Maguindanao	801,102	71
9	Basilan	332,828	70
4	Romblon	264,357	69
4	Palawan	755,412	68
6	Iloilo	1,925,002	67
6	Negros Occidental	2,565,723	66
7	Negros Oriental	1,130,088	65
7	Cebu	3,356,137	64
12	North Cotabao	958,643	63
5	Sorsogon	650,535	62
5	Camarines Norte	458,840	61
9	Zamboanga del Sur	1,935,250	60
ARMM	Tawi-tawi	322,317	59

Source: NSO

For a full list of the provinces and their ranking based on the selected indicators used here, see Appendix 5.

Figure 23: Top 20 poorest provinces based on APIS ranking

(See next page)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SORSOGON (16)
MASBATE (2)
ORIENTAL MINDORO (2)
SAMAR (1)
ILOILO (11)
NEGROS OCCIDENTAL (12)
PALAWAN (10)
GUIMARAS (6)
CEBU (14)
NEGROS ORIENTAL (13)
ZAMBOANGA DEL SUR (18)
NORTH COTABATO (15)
LANAO DEL SUR (5)
BASILAN (8)
SULU (3)
MAGUINDANAO (7)
TAWI-TAWI (19)
SARANGANI (20)

7.2.2 Poverty incidence of families

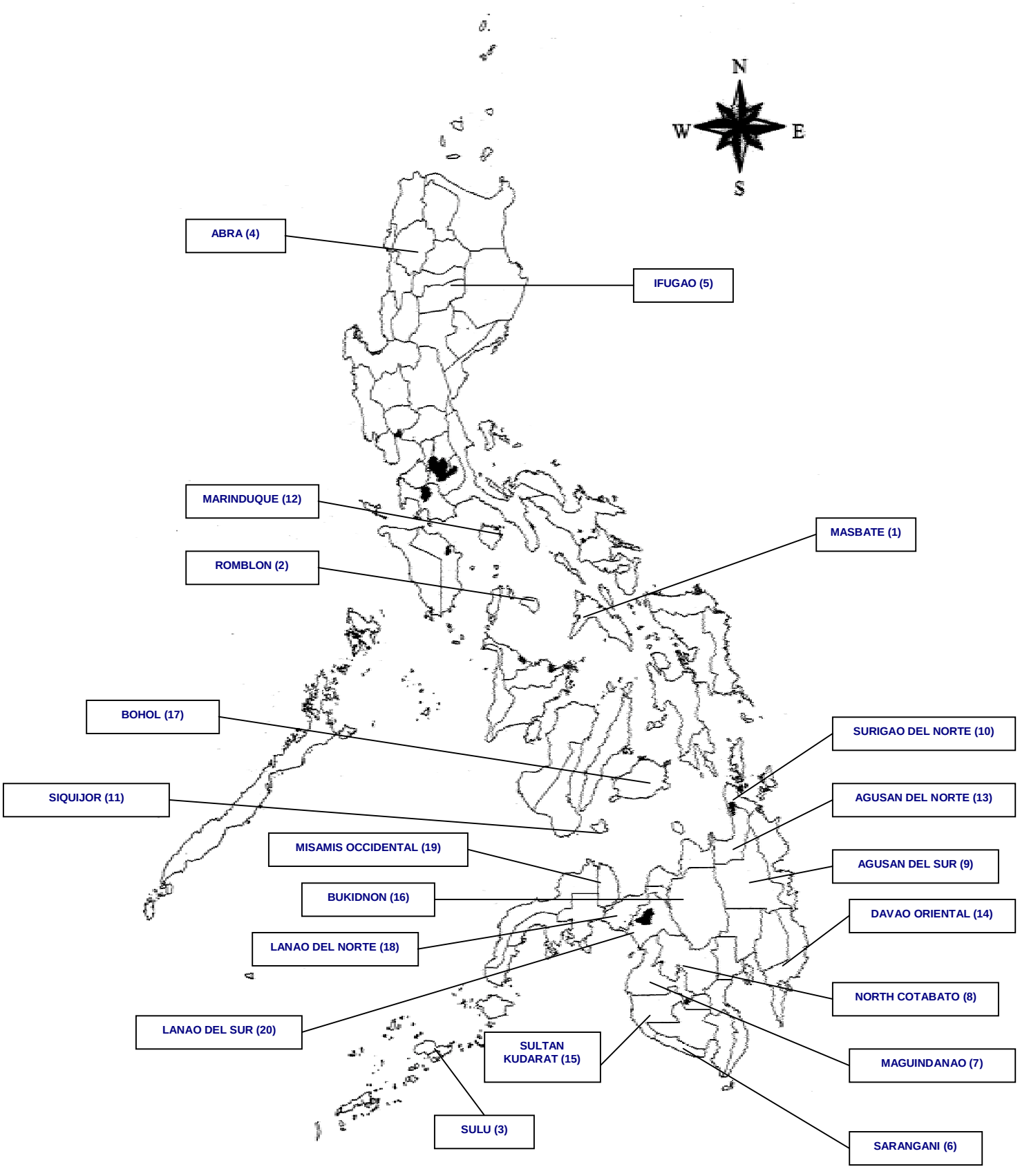
Table 20: Top 20 poorest provinces based on poverty incidence, 1998

Region	Province	Population (1)	Poverty incidence of families (%)
5	Masbate	707,668	74.7
4	Romblon	264,357	73.0
ARMM	Sulu	619,668	72.3
CAR	Abra	209,491	69.1
CAR	Ifugao	582,515	67.7
11	Sarangani	410,622	66.4
ARMM	Maguindanao	801,102	66.2
12	North Cotabao	958,643	63.8
13	Agusan del Sur	559,294	63.7
13	Surigao del Norte	481,416	63.3
4	Marinduque	217,392	61.3
7	Siquijor	81,598	61.3
13	Agusan del Norte	552,849	60.7
11	Davao Oriental	556,191	60.1
12	Sultan Kudarat	586,505	59.7
10	Bukidnon	1,060,265	59.4
7	Bohol	1,137,268	59.2
12	Lanao del Norte	889,213	58.9
10	Misamis Occidental	486,723	58.2
ARMM	Lanao del Sur	669,072	57.6

Source: PIDS

Figure 24: Top 20 poorest provinces based on PIDS estimates of poverty incidence (1998)

(See next page)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MISAMIS OCCIDENTAL (19)
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BUKIDNON (16)
DAVAO ORIENTAL (14)
LANAO DEL NORTE (18)
NORTH COTABATO (8)
LANAO DEL SUR (20)
SULTAN KUDARAT (15)
MAGUINDANAO (7)
SULU (3)
SARANGANI (6)

7.2.3 Income classification

Municipalities and provinces are ranked into first to sixth class, depending on their average annual income for the last 3 calendar years. The ability to generate income may be useful in determining the capacity of local governments in delivering services and enforcing policies, although local governments (municipal, provincial and city) are 80-90% dependent on the internal revenue allotment (IRA) taken from the national budget for their operations.

Table 21: Income classification of municipalities, provinces and cities

Income class	Average annual income for last 3 calendar years (pesos)		
	Municipalities	Provinces	Cities
First	20 M or more	150 M or more	120 M
Second	16 M or more but less than 20 M	100 M or more but less than 150 M	90 M or more but less than 120 M
Third	12 M or more but less than 16 M	70 M or more but less than 100 M	60 M or more but less than 90 M
Fourth	8 M or more but less than 12 M	40 M or more but less than 70 M	40 M or more but less than 60 M
Fifth	4 M or more but less than 8 M	20 M or more but less than 40 M	20 M or more but less than 50 M
Sixth	Below 4 M	Below 20 M	Below 20 M

Source: DILG

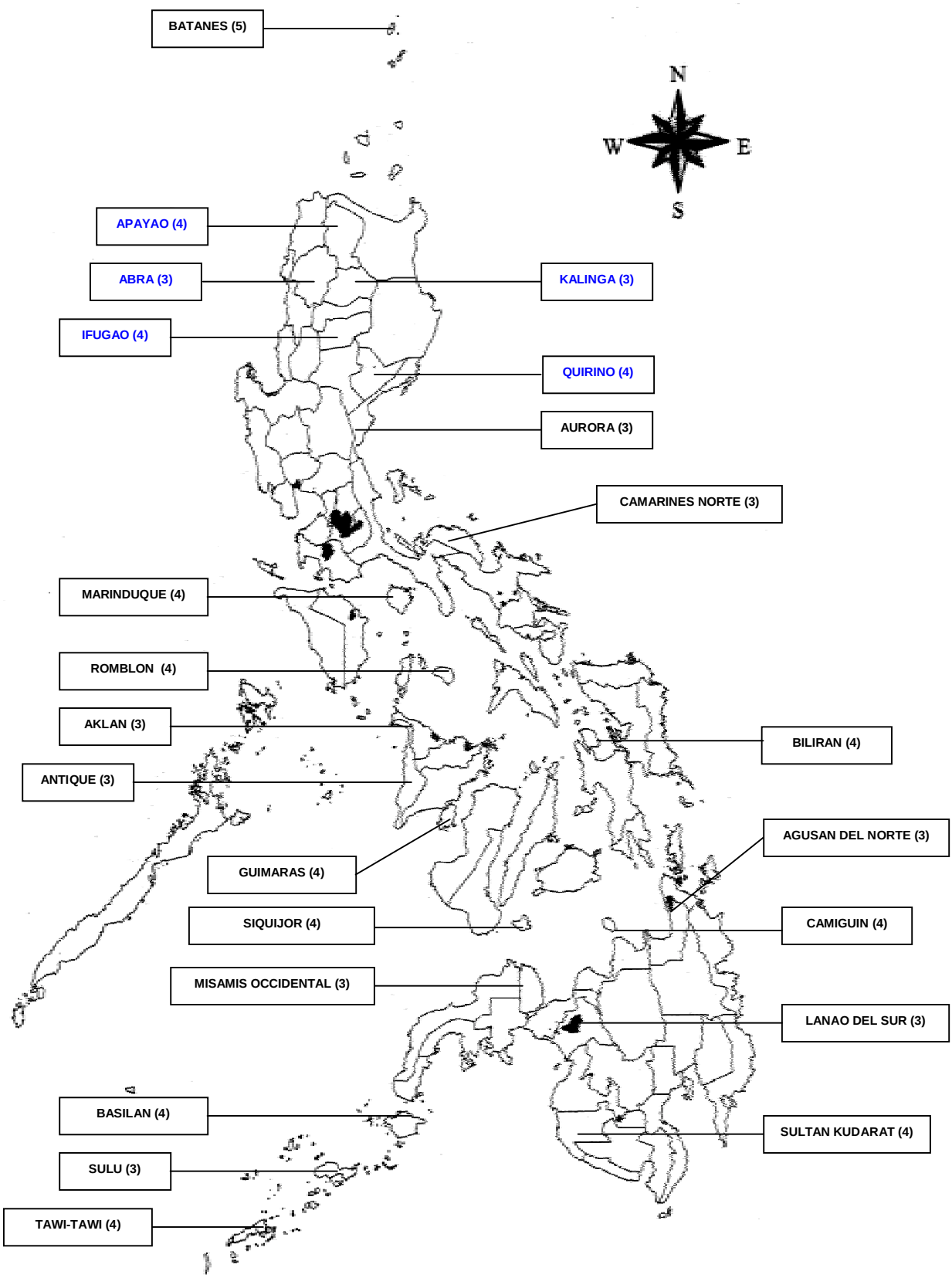
Table 22: Provinces classified as third to fifth class in terms of income, 1996

Region	Province	Population	Income class
2	Batanes	16,467	5
CAR	Apayao	97,129	4
CAR	Ifugao	582,515	4
2	Quirino	148,575	4
4	Marinduque	217,392	4
4	Romblon	264,357	4
6	Guimaras	141,450	4
7	Siquijor	81,598	4
8	Biliran	140,274	4
9	Basilan	332,828	4
10	Camiguin	74,232	4
12	Sultan Kudarat	586,505	4
ARMM	Tawi-tawi	322,317	4
CAR	Abra	209,491	3
CAR	Kalinga	174,023	3
4	Aurora	173,797	3
5	Camarines Norte	458,840	3
5	Catanduanes	215,356	3
6	Aklan	451,314	3
6	Antique	471,088	3
10	Misamis Occidental	486,723	3
13	Agusan del Norte	552,849	3
ARMM	Lanao del Sur	669,072	3
ARMM	Sulu	619,668	3

Source: DILG

Figure 25: Provinces with income classification from 3rd to 5th (1996)

(See next page [blue are provinces with no coastal areas])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AURORA (3)
CAMARINES NORTE (3)
MARINDUQUE (4)
ROMBLON (4)
AKLAN (3)
BILIRAN (4)
ANTIQUE (3)
AGUSAN DEL NORTE (3)
GUIMARAS (4)
SIQUIJOR (4)
CAMIGUIN (4)
MISAMIS OCCIDENTAL (3)
LANAO DEL SUR (3)
BASILAN (4)
SULTAN KUDARAT (4)
SULU (3)
TAWI-TAWI (4)

7.2.4 Human development index (HDI)

The HDI is used by NSCB to quantify the level of "development" attained by provinces by using three indicators: (a) life expectancy, (b) education and (c) income. The average life expectancy, functional literacy rate, combined enrolment rate, and real per capita income figures are transformed into index figures of 0 to 1. The higher the index, the greater the level of development attained.

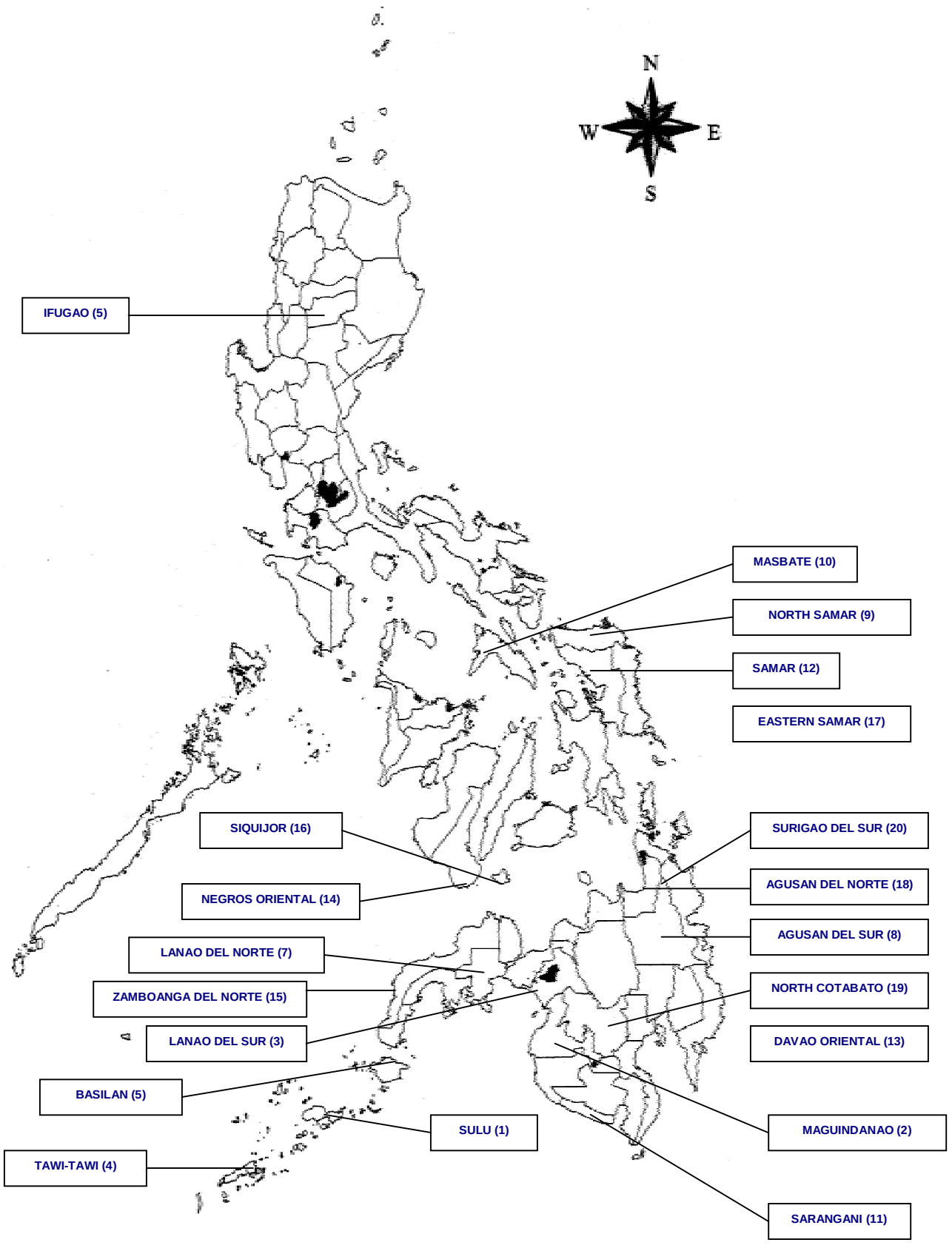
Table 23: Top 25 poorest provinces in terms of HDI, 1997

		Human		Percent
		Development		Change in
REG	PROVINCE	Index (HDI)		HDI
		1994	1997	1994-1997
CAR	Kalinga-Apayao	0.496	0.000	-100.0
ARMM	Sulu	0.347	0.331	-4.4
ARMM	Maguindanao	0.410	0.403	-1.7
ARMM	Lanao del Sur	0.427	0.408	-4.3
ARMM	Tawi-tawi	0.376	0.425	13.1
IX	Basilan	0.411	0.434	5.7
CAR	Ifugao	0.397	0.448	12.9
ARMM	Lanao del Norte	0.461	0.465	0.8
	Agusan del Sur	0.449	0.478	6.4
VIII	Northern Samar	0.457	0.482	5.5
V	Masbate	0.447	0.487	9.0
XI	Sarangani	0.285	0.489	71.7
VIII	Samar (Western)	0.457	0.492	7.6
XI	Davao Oriental	0.470	0.492	4.8
VII	Negros Oriental	0.495	0.494	-0.3
IX	Zamboanga del Norte	0.461	0.505	9.6
VII	Siquijor	0.510	0.509	-0.2
VIII	Eastern Samar	0.501	0.509	1.7
XIII	Agusan del Norte	0.508	0.512	0.6
ARMM	North Cotabato	0.503	0.514	2.2
	Surigao del Sur	0.533	0.516	-3.2
XI	Davao del Sur	0.490	0.517	5.6
VIII	Leyte	0.553	0.520	-6.0
IX	Zamboanga del Sur	0.502	0.521	3.8
CAR	Kalinga	0.496	0.522	5.1

Source: NSCB

Figure 26: Top 25 poorest provinces in terms of HDI ranking (1997)

(See next page)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SAMAR (12)
EASTERN SAMAR (17)
SIQUIJOR (16)
SURIGAO DEL SUR (20)
NEGROS ORIENTAL (14)
AGUSAN DEL NORTE (18)
AGUSAN DEL SUR (8)
LANAO DEL NORTE (7)
ZAMBOANGA DEL NORTE (15)
NORTH COTABATO (19)
LANAO DEL SUR (3)
DAVAO ORIENTAL (13)
BASILAN (5)
SULU (1)
MAGUINDANAO (2)
TAWI-TAWI (4)
SARANGANI (11)

The case of Agusan del Sur (a landlocked area but where the biggest marsh in the Philippines can be found) is interesting. It is a first class province but belongs to the top ten provinces with the lowest HDI!

8 Key actors in aquatic resources management

This section describes the key actors involved in fishery and aquatic resources, including government, non-government organizations, fishers organizations, cooperatives and other associations, academic groups and institutions and fishery and aquatic resource management councils.

8.1 Government Agencies

In general, policy making for fishery and aquatic resources is located among three government units/agencies, namely: the Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR), the Department of Environment and Natural Resources (DENR) and the local government units. The DA has jurisdiction over the conservation and proper utilization of agricultural and fishery resources.

LGUs, on the other hand, had been given the exclusive authority to grant fishery privileges under the LGC of 1991. At the same time, the DENR has overall responsibility for environmental protection and management of both marine and coastal environment. Aside from these agencies, a wide range of government offices is responsible for specific tasks in fishery resource management.

8.1.1 Department of Agriculture- Bureau of Fisheries and Aquatic Resources (DA-BFAR)

The Department of Agriculture is the principal agency responsible for the promotion of agricultural development. Its mission is “to help and empower the farming and fishing communities and the private sector to produce enough, accessible and affordable food for every Filipino and decent income for all”. In its 11-Point Agenda, the present administration puts particular emphasis on accelerating the implementation of the major provisions of the Agricultural Fisheries Modernization Act (AFMA) particularly research and development, extension. At the same time, the DA wants the full implementation of the Fisheries Code to ensure the dynamic participation of small fishers in fishery development.

RA 8550 restored the BFAR as a line bureau under DA. Sections 63-65 of Chapter III, Article 1 of the Code outlines a broad array of functions the BFAR has to do, all of which indicate certain responsibilities on policy making, standard formulation and overall supervision and control on

fishery and related matters. In fact, as an indication of this role, the BFAR is tasked to prepare and implement a Comprehensive National Fisheries Industry Development Plan. Finally, the position of Undersecretary for Fisheries and Aquatic Resources solely for the purpose of attending to the needs of the fishing industry was created (Sec. 63, Art. III). The President appoints this position.

The DA-BFAR lays down the following objectives:

- To improve aquaculture productivity within ecological limits;
- To optimize utilization of off-shore fisheries and deep-sea resources;
- To improve product quality and reduce post-harvest resources;
- To conserve, protect and sustain management of the country's fishery and aquatic resources;
- To alleviate the poverty among municipal fisherfolks and provide supplementary livelihood; and
- To provide a favorable policy environment conducive to increased investment and global competitiveness and people participation

To achieve these goals and objectives, DA-BFAR has laid out the following strategies:

- Empower LGUs to assume primary responsibility for food security and direct supervision of fish production activities within their respective areas by developing provincial and municipal level fish self-sufficiency programs;
- Provide technical support for LGUs to help them attain the target yield increase;
- Avail of trade and fiscal incentives by the private sector;
- Focus national government support on strategic areas;
- Promote production-intensifying but cost-reducing technologies within ecological limits;
- Develop complementation and counterparting schemes with LGUs;
- Increase in public investment particularly on post-harvest facilities;
- Improve the production-marketing systems to become more efficient and most effective;
- Produce quality broodstock, seeds and fingerlings available to fisherfolks at the right time;
- Promote fisherfolk organizations; and

- Conserve and protect the country's fisheries and aquatic resources.

8.1.2 Department of Environment and Natural Resources

The Department of Environment and Natural Resources was created in 1987 and is primarily the government agency responsible for the conservation, management, development and proper use of the country's environment and natural resources, including those in reservations, watershed areas and lands of the public domain, as well as the licensing and regulation of all natural resources utilization as may be provided by law.

- The DENR's mission is to be the dynamic force behind people's initiatives in the protection, conservation, development and management of the environment through strategic alliances and partnerships, participate processes, relevant policies and programs and appropriate information technology towards sustainable development. To accomplish the department's mandate, the following objectives serve as basis for formulating its policies:

- Assure the availability and sustainability of the country's natural resources through their judicious use and systematic restoration or replacement, whenever possible;

- Increase the productivity of natural resources in order to meet the demands for forest, mineral and land resources of a growing population in a manner consistent with environmental protection and enhancement;

- Enhance the contribution of natural resources for achieving national economic, political, social development and ecological integrity;

- Promote equitable access to natural resources by the different sectors of the populations;

- Maintain a desirable level of environmental quality;

- Conserve specific terrestrial and marine areas representative of the Philippine natural and cultural heritage for present and future generations.

The powers and functions of the DENR are outlined in Section 5 of EO 192 of 1987. These are generally indicative of its role in policy formulation, promulgation of rules and regulations and supervision and control over the country's natural resources. Related to fishery and aquatic resource management, the DENR has jurisdiction over pollution control and management, protected areas, mangroves and land use, including foreshore land use.

DENR has five (5) staff sectoral bureaus, namely the Forest Management Bureau (FMB) , Lands Management Bureau (LMB), Environmental Management Bureau (EMB), Ecosystems Research and Development Bureau (ERDB), and the Protected Areas and Wildlife Bureau (PAWB). In 1995, the passage into law of R.A. No. 7942, also known as the Philippine Mining Act of 1995, restored the line functions of the Mines and Geosciences Bureau.

At the operational level, DENR organization reflects a line structure under the direct supervision of the Field Operations Office. The line functions are decentralized down to three levels, namely the Regional Environment and Natural Resources Offices at the regional level, the Provincial Environment and Natural Resources Offices (PENROs) at the provincial level, and the Community Environment and Natural Resources Offices (CENROs) at the community/municipal level.

There are also three (3) attached agencies/corporations to DENR, namely the National Mapping and Resource Information Authority (NAMRIA), the Natural Resources Development Corporation (NRDC), and the Laguna Lake and Development Authority (LLDA).

Department of Science and Technology-Philippine Council for Aquatic and Marine Research and Development (DOST-PCAMRD)

Under the DOST, PCAMRD sets the directions for fisheries and aquatic resources research and development in the country. It coordinates, plans, monitors, and evaluates research and development activities related with aquatic resources. The functions of PCAMRD include the following:

- To formulate and manage the research and development programs on national fisheries and aquatic resources using a multi-disciplinary, inter-agency, and systems approach;
- To implement a system of research and development priorities and policy advocacy;
- To facilitate and program the allocation of government funds earmarked for fisheries and aquatic resources research and development; and
- To coordinate the nationwide network of institutions to avoid duplication of research and development work and fully harness human, financial and infrastructure resources.

At present, PCAMRD is able to consolidate the experiences of various fisheries institutions directed towards identifying practical fisheries technologies and advocating fisheries policy directions (Fellizar et al., 1997). However, this role may be duplicated once the National Fisheries Research and Development Institute (NFRDI) is set up, as mandated by RA 8550. The NFRDI is expected to form part of the National Research and Development Network of the DOST

while at the same time acting as an attached agency to the DA. The Executive Director of PCAMRD sits as a member of its Governing Board

8.1.3 Philippine Fisheries Development Authority (PFDA)

Responsible for fisheries-related infrastructure, the PFDA's functions include: 1) the provision of physical marketing facilities such as fishing ports, markets, and ice plants; 2) provision of market information; and 3) promotion of fisheries exports. Their other activities include monitoring of fish landings, price information, and related market developments. The private sector helps the PFDA in the networking of marketing information service (ADB 1993:23, in Fellizar et al., 1997).

The roles and functions of the PFDA are directly related to those of BFAR and PCAMRD, and closely resemble mandated functions of the Bureau of Agricultural Statistics (BAS) and the Department of Trade and Industry (DTI).

Department of the Interior and Local Government-Philippine National Police (DILG-PNP)

Police and law enforcement functions over Philippine territorial waters rest with the Maritime Command of the Philippine National Police. The Maritime Command's mandates are:

- To prevent and suppress illegal entry, smuggling, other customs frauds and violations of other maritime laws that may be committed within the waters subject to the jurisdiction of the Republic of the Philippines;
- To assist in the suppression of fishing by means of dynamite, explosives or toxic substances or other methods as may be declared destructive by proper authorities;
- To promulgate, administer and enforce all laws, ordinances and regulations for the protection and promotion of safety of life and property at sea;
- To perform investigation and inspection for the effective prosecution of criminal cases involving maritime laws; and
- To perform other duties and exercise such other functions as may be prescribed by law and/or assigned by the Chief of the PNP to effectively carry out its mission (Fellizar et.al. 1997)

8.1.4 Philippine Coast Guard (PCG)

The Philippine Coast Guard under the Philippine Navy is the law enforcement arm at sea of the Armed Forces of the Philippines. Since municipal waters (i.e., 15-km seaward from the shore) are technically under the PNP Maritime Command and the LGUs by virtue of the LGC, the Coast Guard provides law enforcement beyond the 15-km municipal waters. However, they also

provide support and assistance to LGUs even in municipal waters on certain occasions. In Palawan for instance, the Fourth Coast Guard District states its mission as "to promote safety of life and property at sea, protect marine environment, enforce and assist in the enforcement of all applicable laws, rules and regulations on the high seas and waters within Palawan area in order to support and contribute to the accomplishments of the Philippine Coast Guard and national development."

8.1.5 Department of Transportation and Communication-Maritime Industry Authority (DOTC-Marina)

The Maritime Industry Authority, or MARINA, is an attached agency to the Department of Transportation and Communication (DOTC). Its mandate is "to promote a favorable climate for economic activities through the promotion and development of a safe, efficient, economical, reliable and responsive water transport services to the public". It is responsible for the promotion and development of the maritime industry, the regulation of shipping, and maritime safety regulatory functions in collaboration with the Philippine Coast Guard (DENR/DILG/DA-BFAR/CRMP, 1997). The MARINA is in charge of and requires the registration of commercial fishing vessels in Philippine waters.

8.1.6 National Anti-Poverty Commission (NAPC)

The NAPC was created by virtue of RA 8425, an act aiming to institutionalise the social reform and poverty alleviation programmes of the government that was enacted on July 8, 1997.

In consultation with civil society organisations (May and July 2001), NAPC outlined the following key result areas for what it calls the fisherfolk sector:

Table 24: NAPC key result areas for fisherfolk sector, 2001

Asset reform	• Full implementation of RA 8550 • Preferential right to fisherfolk cooperativess, organisations in fish cages, fish corrals, mari culture, concessions (non0issuance of permits to non-small fishers) • Priority use of fishers, cooperatives, organisations, regarding expiring leases (FLAs) abandoned, underutilised ponds (amendent of RA 8550 on FLAs) • Stop conversion of coastal/foreshore areas (land and water use) • Strengthen and expand tenurial rights instruments (marine and inland) for fisheries cooperatives and organisations (review tenurial instrument proposals) • Strict implementation of section 108 of RA 8550 on fisherfolk settlement areas • Provide support mechanism for El Nino affected communities
Human Development Services	• Implementation of Comprehensive Delivery of Social Services (CIDDS) to fisherfolk communities
Social protection	• Intensification of law enforcement in municipal waters and support *bantay-dagat* (sea wardens) through (a) legal assistance, (b) capability building, (c) budget allocation • Support to FARMCs (local-national) - 100 M pesos budget for 2002[24], LGU fund counterpart (allocate IRA), inter-agency support to FARMCs • Scholarship programme for fisherfolk and their families • Access to credit (simplified requirements and application procedures) • Technology/skills transfer to fisherfolk organisations and cooperatives • Stope fish importation (covered by FAO 195) • Construction of cold storage, post harvest facilities
Security and protection from violence	• Stop human rights violations, pull out military units in coastal/fishing communites

8.1.7 Overall government roles and functions

Table 24 provides a summary of some of the general roles and functions of the preceding discussion. This summary shows the overlaps and to a large extent, fragmentation of government functions. La Viña (1999) notes that the fragmentation of fisheries administration between various agencies of the DA, and to some extent other departments, is considered the root cause of its weakness. He further noted that the history of BFAR is indicative of this fragmentation. The bureau moved from being a Division of Fisheries under the Bureau of Science in 1907 to a bureau under the Ministry of Agriculture and Commerce in 1933 and later on with the Fisheries and Game Administration and eventually ending as an attached agency of the Ministry of Natural Resources and of late, the Department of Agriculture. Throughout its history, BFAR has moved from a science office focusing on research to the commerce office, focusing on trade, to the natural resources office dealing with conservation, to the agriculture office focusing on food production. In every transfer, its focus changed as influenced by the thrust of its parent office.

Under the present system, the DA, through BFAR, including its regional offices and specialized agencies has jurisdiction over fisheries resources only. The department coordinates with the DENR when activities call for integration of other resources, such as mangroves.

[24] We were not able to confirm if they got this.

The broad gamut of functions and mandates on fishery and aquatic resource management the different government agencies are tasked with are clearly illustrated in Table 24.

Table 25: Institutional Mandates and Functions of Various Government Agencies

CRM Concerns/Activities	Institutions Mandated to Address Concern/s
Policy formulation	LGU, FARMC, DENR
Resource Assessments Coastal Marine	 DA-BFAR, DENR, PCAMRD DA-BFAR, DENR, PCAMRD
Statistics gathering and compilation Fisheries Mangroves Fishponds	 DA-BAS DENR DA-BFAR
Establishment of protected areas	LGU, DA-BFAR, DENR, Congress
Mangrove Reforestation	LGU, DENR
Fishery licensing Municipal Waters Offshore Waters	 LGU DA-BFAR, MARINA
Fishery law enforcement	LGU-PNP, PCG, DA-BFAR, Deputies
Pollution law enforcement	LGU, PCG, DENR
Land use management	LGU, DENR
Tourism management	LGU, DOT
Reclamation	DENR (LMB and EMB, PEA
Pollution monitoring, including marine waters	LGU, DENR-EMB, PCG
Establishment of municipal/fishing ports	PFDA, PPA, LGU
Research	DA-BFAR, DA-BAR, DOTC-PCAMRD, NFRDI

Source of Data: DENR/DILG/DA-BFAR/CRMP (1997)

8.2 Groups Involved in Technology Research and Development, Fisheries Schools and Academic Institutions

8.2.1 Fisheries Schools and Academic Institutions

There are 54 fisheries schools in the country, with most of it located in Region VI (See Table 2). Regions IV and V have 8 schools each while Regions II, IX, X and ARRM have only one school each. Most of these schools are also noted as science and technology-oriented and a number of them combined fisheries, agriculture and forestry. Among these schools and other academic institutions, some of the most reputable ones, which are known for its expertise in fishery and aquatic resources, are the University of the Philippines-Marine Science Institute (UP-MSI), UP in the Visayas, Silliman University and Central Luzon State University (for freshwater fisheries).

Table 26: List of Fisheries Schools (As of 2 May 2000)

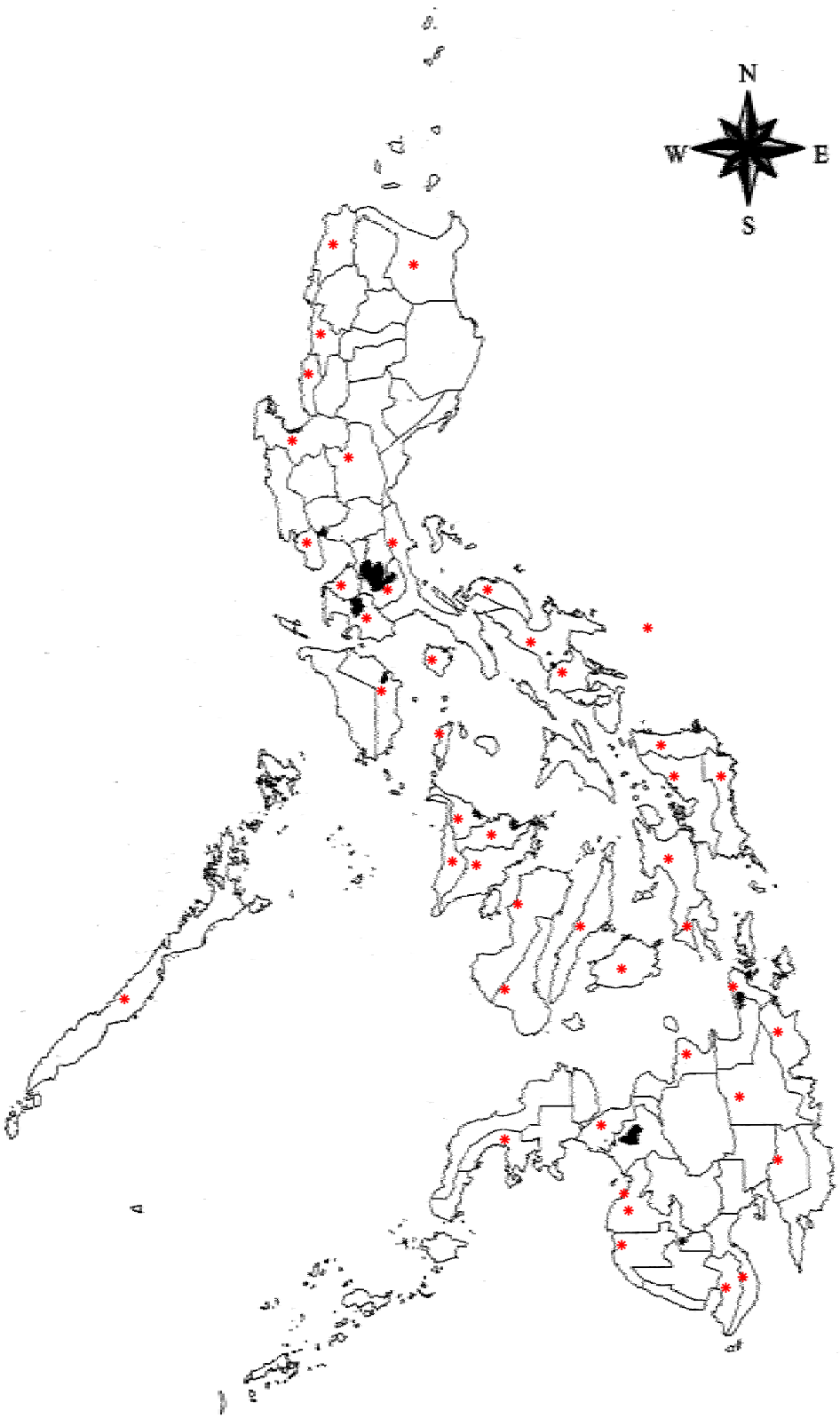
Region	Province	Names of Schools
I	Ilocos Norte	Mariano Marcos State University (Currimao Campus)
	Ilocos Sur	Ilocos Sur Polytechnic College (Candon Campus)
	La Union	DMMMSU (Sto. Tomas Campus)
	Pangasinan	Pangasinan State University (Binmaley Campus)
II	Cagayan	Cagayan State University
III	Bataan	Bataan Polytechnic State College
	Nueva Ecija	Central Luzon State University
IV	Batangas	Apolinario Apacible School of Fisheries
	Cavite	Cavite College of Fisheries
	Laguna	Laguna State Polytechnic College*
	Marinduque	Marinduqe State College (Gasan Campus)
	Or. Mindoro	Bongabong College of Fisheries
	Palawan	State Polytechnic College of Palawan
	Quezon	Judge Guillermo Eleazar Memorial School of Fisheries
	Romblon	Romblon College of Fisheries and Forestry
V	Albay	Bicol University
	Camarines Norte	Camarines Norte State College
	Camarines Sur	Bicol College of Agriculture
		Tinambac Polytechnic College
		Camarines Sur Institute of Fisheries and Marine Science
	Catanduanes	Catanduanes State College
	Sorsogon	Sorsogon State College
VI	Aklan	Western Aklan Polytechnic College
		Aklan National College of Fisheries
	Antique	Tario Lim Memorial School of Fisheries
	Capiz	Panay State Polytechnic College
	Iloilo	Northern Iloilo Polytechnic State College
		Conception Polytechnic College
		Iloilo State College of Fisheries
		University of the Philippines in the Visayas
	Negros Occidental	Northern Negros State College of Science and Technology
		Negros Occidental School of Fisheries
VII	Bohol	Cebu Visayas State College of Agriculture, Forestry and Technology (Candijay Campus)
	Cebu	Cebu State College of Science and Technology
	Negros Oriental	Central Visayas Polytechnic College
VIII	Eastern Samar	Eastern Samar State College
	Northern Samar	University of Eastern Philippines
	Western Samar	Samar Regional School of Fisheries
	Leyte	Carigara School of Fisheries
		Leyte State School of Fisheries
	Southern Leyte	Ruperto K.Kangleon Memorial Agro-Fisheries Institute
IX	Zamboanga del Sur	Zamboanga State College of Marine Science and Technology
X	Misamis Oriental	Mindanao Polytechnic State College
XI	Davao del Norte	Davao del Norte State College
	Davao del Sur	Southern Philippine Agribusiness and Marine Aqua Science and Technology
		MSU-General Santos
	South Cotabato	
XII	Cotabato City	Coatabato City State Polytechnic College
	Lanao del Norte	MSU-Marawi City
	Sultan Kudarat	Sultan Kudarat Polytechnic State College
CARAGA	Agusan del Sur	Agusan del Sur State College of Agriculture and Technology
	Surigao del Norte	Surigao del Norte College of Agriculture and Technology
	Surigao del Sur	Surigao del Sur Polytechnic College

ARMM	Maguindanao	MSU-Maguindanao

Source of Data: CHED Regional Offices (2000)

Figure 27: Location of fisheries schools in the Philippines

(See next page)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8.2.2 A Closer Look at Fisheries Schools

8.2.2.1 *The Central Luzon State University (CLSU)*

The Central Luzon State University at Muñoz, Nueva Ecija, Philippines started as a farm school. It was established in 1907 as the Central Luzon Agricultural School (CLAS) with the noble ideal of promoting agriculture and the mechanic arts. Later, the promotion of homemaking arts became another burning commitment. In 1954, the CLAS was converted into a college known as the Central Luzon Agricultural College (CLAC) with the mission to promote agricultural education. In 1964, it was elevated into a university, the Central Luzon State University to provide "**professional and technical training in agriculture and mechanic arts, provide advanced instruction, promote research, literature, philosophy, the sciences, technology and the arts**."

Over the years, CLSU has been known as an agriculture-oriented institution. Today, it has transformed into a comprehensive university offering various undergraduate and graduate courses. It has been designated as the Zonal University for Luzon as one of the more known institution of higher learning in the Philippines.

The College of Fisheries of CLSU offered the first baccalaureate program in fisheries in the Philippines in 1976. The College offers a Bachelor of Science in Fisheries, MS Aquaculture and PhD Aquaculture.

CLSU also offers a number of training courses on varied topics. For aquaculture, CLSU has courses on fish production and marketing, sex reversal, cage culture and pond culture of tilapia and catfish culture. The training courses are so designed that they will provide the participants with situations and experiences that will enhance their capabilities for development. The design of the courses is based on the units of theory building, experiential learning and application of newer knowledge and skill in real life situations (www2.mozcom.com/~clsu/).

8.2.2.2 Silliman University (SU)

Silliman University was founded in 1901. It has been regarded at the forefront of the environmental movement. Through its extension services, the university has attempted to address the environmental issue as well as health, agricultural productivity, and other related issues in various communities in Negros Oriental and in the country in general.

One environmental issue that Silliman University has focused on is coastal and marine degradation. In particular, the Marine Laboratory of Silliman University has been a pioneer in community-based coastal resources management, including coral reef preservation and rejuvenation. At present Silliman University is developing itself into a Center Resources

Management and with assistance from the United States Agency for International Development. The university wants to promote itself as a leader in the protection and improvement of coastal resources management in the Philippines and Asia.

Along this direction, the Silliman University College of Law has established the Legal Environmental Advocacy Program (LEAP), a legal research and extension program that specializes in the legal foundation and implications of a community-based resources management system. It caters to the needs of indigent who have been displaced or adversely affected by the degradation of the environment. At the same time, LEAP serves as a legal laboratory for the students of the College of Law to hone their skills in legal counseling, advocacy, negotiations, and conflict resolution. Part of LEAP's activities includes the conduct of research that will draw up legal instruments to implement community-based resources management systems. In addition, the university provides assistance to local communities in their legal problems on the environment, including conciliation of disputes.

LEAP operates interdependently with the SU Marine Laboratory and with other units of the University. This interdisciplinary collaboration is designed to enhance the program's effectiveness. LEAP also coordinates with LGUs and NGOs whose objectives and activities are consonant with LEAP (www.su.edu.ph/law/leap.html).

8.3 Other Technology and Research Support Institutions and Programs

Perhaps the primary institution known for its support to fishery and aquatic resources in the country, particularly aquaculture is the Southeast Asian Fisheries Development Center (SEAFDEC). This inter-governmental agency was established in 1967 with the mandate for promoting fisheries development in Southeast Asia.

The SEAFDEC's ultimate goal is to assist Member Countries to develop fishery potentials for the improvement of food supply in the region through training, research and information programs and services. The Member Countries of SEAFDEC are at present Brunei Darussalam, Indonesia, Japan, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam. Membership of the Center is still open to other Southeast Asian countries. Cambodia has expressed its interest in joining SEAFDEC as new Member Countries.

The policy-making body of SEAFDEC is the Council of Directors where all of the member countries are represented. Its Chief Administrator is the Secretary General and the Secretariat thathe heads in located in Thailand. The Secretary-General coordinates the activities of which the four technical departments of SEAFDEC, namely:

- The Training Department in Thailand which carries out research and training in marine fishing technology, marine engineering, marine fisheries extension and related subjects;
- The Marine Fisheries and Research Department in Singapore which undertake research and training in fishery post-harvest technology;
- The Aquaculture Department in the Philippines where research and training in aquaculture development are carried out; and
- The Marine Fishery Resources Development and Management Department in Malaysia which undertakes research and training in fishery resources development and management in the EEZs of the Member Countries.

Since 1996, the Aquaculture Department of SEAFDEC has been doing technology verification and extension (TVE) programs and has taken strides in the field-testing of culture systems. The program has also packaged aquaculture technologies in the form of extension manuals for dissemination to a larger clientele within the country and the region. TVE programs include developing environment-friendly schemes in intensive shrimp farming and modifying milkfish, tilapia and grouper cultures, among others. Another notable leap in technology support to fishery is the launching of the first Mariculture Park led by SEAFDEC, BFAR and the provincial government of Guimaras in August 2001. It is located at Igang Bay, Nueva Valencia, Guimaras. The concept of a mariculture park is akin to the industrial park where aquaculture spaces are made available for lease. At the moment, SEAFDEC has provided cages for demonstration purposes and baseline environmental assessments are being conducted in coordination with the DENR (www.seafdec.org.ph)

8.4 The Philippine National Aquaculture RDE Network

The National RDE Network in Aquaculture is composed of member institutions and agencies with established track records in aquaculture research and development activities. The network is mandated to organize, spearhead, orchestrate and coordinate aquaculture RDE activities under the “one system, one program” precept. Its mission is to improve fisheries productivity and profitability at sustainable levels through responsible aquaculture development and management. The network is currently composed of UPMSI, UPV, CLSU and Mindanao State University. Table 2 shows the network’s program thrust and objectives.

The network has five program thrusts, namely:

- Improvement of aquaculture systems
- Development of improved strains and new species for aquaculture

- Reduction of environmental impacts
- Establishment of database for aquaculture resources
- Formulation of appropriate regulations and policies

Some of its projects include the development of mitigating strategies for seaweed diseases, development of improved breeds of tilapia, strategies for sustainable prawn farming, development of marine environmental quality criteria for mariculture areas, and economic evaluation of freshwater aquaculture technologies and production systems.

The network also believes that the process of research is useless if the technology generated does not filter down to the end users. Thus, it stresses, strong and effective research-extension linkage requiring well-informed and well-trained human resources and state of the art information and communication materials, equipment and facilities. In coordination with BFAR, the network also produces Information, Education and Communication (IEC) materials that could facilitate the transfer of aquaculture technologies to the end users (http://www.bar.gov.ph/aquaculture/index/htm).

8.5 Breeders

The following species can be bred in captivity in the Philippines: milkfish, prawn, some species of siganid, some species of fresh water shrimp and tilapia. We were only able to get a list of milkfish breeders.

Table 27: List of captive milkfish breeders in the Philippines, 2001

Owner/Location	Rearing Facility	No. of broodstocks	Age	Remarks
Pacific Farms Alaminos Pangasinan	Cage	35	15 yrs	Spawning but no fry production
BFAR-National Integrated Fish Technology Demo Center Dagupan, Pangasinan	Tanks	200	5 yrs	Spawning recently reported
Good Fry Hatchery Masinloc, Zambales	Cage	40	15 yrs	Spawning but no fry production
JTV Farms Magsaysay, Occidental Mindoro	Pond	4,000	5 yrs	No spawning reported
BFAR Region IV Naujan, Oriental Mindoro	Pond	230	4 yrs	No spawning facilities
BFAR Region IV				

Searanching Station Puerto Princesa, Palawan	Cage	280	5-11yrs	No spawning reported
Santos Farm,Pagbilao, Quezon	Pen	200	3 yrs	No spawning facilities
BFAR Region V, Tabaco, Albay	Cage	100	11 yrs	Low fry production
Jalandoon Farms, Ajuy, Iloilo	Pen	400	5 yrs	No spawning facilities
Retcem Resources Inc. Dumangas, Iloilo	Pond	300	3 yrs	No spawning facilities
SEAFDEC/AQD, Tigbauan, Iloilo	Tanks Cages	292 846	6-19yrs 3-23 yrs	Consistent fry production
Jamandre Hatchery Inc. San Joaquin, Iloilo	Tank	200	6 yrs	Consistent fry production
Maranon Farms Sagay, Negros Occidental	Pond	17000	6 yrs	No spawning facilities
BFAR Region VI Himamaylan, Negros Occidental	Pond	800	4 yrs	No spawning facilities
Bayshore Aquaculture Pulupandan, Negros Occidental	Pond	190	7-8 yrs	No spawning reported
Central Visayas Polytechnic College, Bais, Negros Oriental	Cage	200	7-8 yrs	Low fry production
Negros Oriental Fisheries Demo Compex,Bais,Negros Oriental	Pond	500	7-8 yrs	No spawning facilities
Oversea Feeds, Inc Minglanilla, Cebu	Tank	150	5 yrs	Spawning reported
Southwestern Aqua Calape, Bohol	Cage	280	6 yrs	Consistent Fry production
BFAR Region VII, Calape, Bohol	Pond	700	4 yrs	No spawning facilities
BFAR Region VIII, Tacloban, Leyte	Pen	500	4 yrs	No spawning facilities
Forster Farm Dapitan, Zamboanga del Norte	Pond	1,000	5 yrs	No spawning facilities
Dupa Enterprise Mati, Davao Oriental	Cage	300	5 yrs	No spawning facilities
Finfish Enterprises Inc General Santos City	Pond	4000	6 yrs	Consistent Fry Production

Source: SEAFDEC Asian Aquaculture,Vol XXIII Nos. 3 & 4, May - August 2001

8.6 Non-government Organizations and People's Organizations (NGOs and POs)

The directory of CBNRM practitioners produced by the SPARK Program of Volunteer Service Overseas show that over a hundred NGOs, academic groups and NGO/GO programs are involved in community-based natural resource management. So far, this directory offers the most updated list of practitioners in the country. The focus of these groups cover a variety of aspects including organizing, research, enterprise development, gender work and policy advocacy and support (see www.essc.org.ph).

Among the NGOs, one broad formation that is working for fisheries reform and advocacy is the NGOs for Fisheries Reform (NFR). The NFR was formed in 1994 when the clamor for a new fisheries code was most felt in the early 1990s. From the time it started until 1998 when RA 8550 was passed, NFR (then called the NGO Technical Working Group) worked with fisherfolk groups, government and the media on several campaigns. Despite the many challenges that NFR had to face, including oppositions from the commercial fishery sector, the group had remain strong and committed to policy advocacy. At the moment, it is busy monitoring the implementation of DAO 17 and preparing for the mandatory review of RA 8550 in 2003 (Quicho, 1999).

With regards POs, the BFAR has a list of fishing cooperatives by region (See Table 3). It shows that there are 1,147 fishing cooperatives in the country. The most number of these cooperatives (374) is located in Region VIII, followed by Region V and Region VI with 121 and 118 cooperatives, respectively. There are very few cooperatives in Regions XIV (only 2) and II (18) but this is understandable because both areas area landlocked. This list, however, was based by BFAR on records from the Cooperative Development Authority and may need to be updated. There is no available information on the actual number of cooperatives that are still active. Also, no data exists on differentiating the types of cooperative and on aggregated information on membership i.e., number of women and men members.

Table 28: Fisheries Cooperative Profile in the Philippines

Region/Province	No. of Cooperatives	Region/Province	No. of Cooperatives
Region I	56	Region VII	59
La Union	26	Bohol	33
Pangasinan	30	Cebu	18
		Negros Oriental	4
Region II	18	Siquijor	4
Cagayan	12		
Isabela	6	Region VIII	374
		Biliran	13
Region III	27	Eastern Samar	56
Bataan	9	Leyte	143
Bulacan	6	Northern Samar	34
Pampanga	1	Western Samar	128
Zambales	11		
		Region IX	88
Region IV	55	Basilan	55
Aurora	1	Zamboanga del Norte	6
Batangas	6	Zamboanga del Sur	9
Cavite	4	Zamboanga City	18
Laguna	5		
Marinduque	2	Region X	79
Occidental Mindoro	9	Misamis Occidental	46
Oriental Mindoro	4	Misamis Oriental	30
Palawan	8	Camiguin	3
Quezon	4		
Rizal	10	Region XI	56
Romblon	2	Davao del Sur	14
		Davao City	1
Region V	121	Davao Oriental	15
Albay	5	General Santos City	9
Catanduanes	9	Sarangani	17
Camarines Sur	63		
Camarines Norte	6	Region XII	34
Masbate	25	Lanao del Norte	28
Sorsogon	13	Sultan Kudarat	3
		Cotabato City	3
Region VI	118		
Aklan	8	Region XIII (CARAGA)	60
Antique	15	Agusan del Norte	2
Capiz	10	Surigao del Norte	40
Guimaras	8	Surigao del Sur	18
Iloilo	21		
Negros Occidental	56	Region XIV (CAR)	2
		Ifugao	1
		Benguet	1
		ARMM	no data
GRAND TOTAL	1147	.	

Source of Data: Bobier-Banez, I. & M. Calangian (1998)

Aside from the list of cooperatives provided by BFAR, the data on the exact number of organized fishers is difficult to determine because organized groups are scattered in local areas and a few national coalitions or federations exist. Some of these national formations are PAKISAMA, KAMMPI, Pamalakaya, Pfishnet, etc. However, it may be worth looking closely into an emerging PO formation called the PAMANA KA since it is the first nationwide alliance that starts a movement for the protection of marine sanctuaries[25]. The *Pambansang Alyansa ng Maliliit na Mangingisda at Komunidad na Nangangalaga ng Santwaryo at Karagatan sa Pilipinas* or

[25] 431 marine sanctuaries have been compiled. The complete listing can be found in Smith et al (2000).

PAMANA KA is a national alliance of marine protected area managers who are mostly small fisherfolk and village-level local government unit officials organized by Haribon Foundation. Its 1st National Convention and General Assembly held in March 1999 initially consists of 33 community-based and managed marine protected areas all over the country. It is currently composed of 87 POs and groups of *barangay* officials. The organization's overall goal is to conserve and manage the Philippine coastal and marine ecosystem by building national community-based coastal resource managers (Haribon, unpublished document).

8.7 Fishery Resource Management Councils (FARMCs)

RA 8550 indicate that public or community participation is institutionalized through the FARMCs, especially the M/CFARMCs. This observation is based on a review of the powers, functions, and duties of local governments, noting that most of the policies and standards set by the local governments have to go through consultations with the FARMCs. Thus, it is often said that it is time for local governments, NGOs and municipal fisherfolk organizations to start working together since factual and legal bases for community participation have been laid down, (Batongbacal, 2000).

Table 25 shows that as of November 2000, 864 M/CFARMCs in 1,014 coastal municipalities and cities or 85% have been established. Regions I, II and III have M/CFARMCs in all its coastal areas while it is almost complete in Regions VII, IX and XI. In addition, there are 6,330 BFARMCs and 42 IFARMCs across the country to date. Among all regions, the ARMM and Region VIII have the least number of M/CFARMCs that have been established vis-à-vis the number of coastal cities/municipalities.

Some of the details on the conditions of the FARMCs are reported to be available at the Regional Offices of BFAR but this is yet to be verified. However, this monitoring list provided by the NFARMC Program Management Center under BFAR is helpful as initial information that provides a general picture on the accomplishment rate of government in facilitating the creation of the FARMCs. There would be a need to look closely at these figures and examine the memberships in these FARMCs and the process undertaken in their establishment. Also, despite the opportunities offered by FARMC, public participation remains to be a key concern. For one, it would be good to carefully examine if a particular FARMC broadly represents all the municipal fisherfolk in an area. In addition, one needs to consider the fact that there might be an absence of a fisherfolk organization in the area. In such situations, government, and in this case, the LGUs should make sure that the policies are responsive to the needs of the fisherfolk, particularly those that remain unorganized and thus, stay almost "invisible" to the political leadership.

Table 29: Status of FARMC Organizing in the Philippines, By Region (As of 15 November 2000)

Region	Total No. of Coastal Brgys.	Total No. of BFARMCs Organized	% Accom-plishment	Total No. of Coastal Muni/ Cities	Total No. of M/CFARMCs Organized	% Accomplish-ment	Total No. of IFARMCs Organized
CAR		7			20		1
1	378	335	89%	53	53	100%	1
2	197	240	122%	25	37	148%	1
3	223	201	90%	37	40	108%	1
4	1671	1054	63%	184	138	75%	12
5	1067	967	83%	94	91	87%	2
6	771	398	52%	83	70	84%	9
7	1023	318	31%	110	99	90%	3
8	1557	856	55%	122	68	56%	1
9	605	451	75%	61	59	97%	-
10	292	275	94%	44	36	82%	5
11	395	266	67%	37	33	89%	3
12	370	210	57%	34	27	79%	2
13	582	389	67%	65	50	77%	-
ARMM	615	363	59%	65	43	66%	1
TOTAL	**9746**	**6330**	**65%**	**1014**	**864**	**85%**	42

Source: National FARMC Program Management Center (2000)

8.8 Coastal resource management programmes

8.8.1 Fisheries Resource Management Programme[26]

The Fisheries Resource Management Project (FRMP) addresses the two critical and interconnected issues of fisheries resource depletion and persistent poverty among municipal fishers. The timeframe is not clear. The project has three major components:

(a) Fisheries Resource Management - comprises of various tools and systems for rational management of resources; including data management, nearshore monitoring, control and surveillance, fisheries legislation, enforcement and licensing, and coastal resource management planning and implementation.

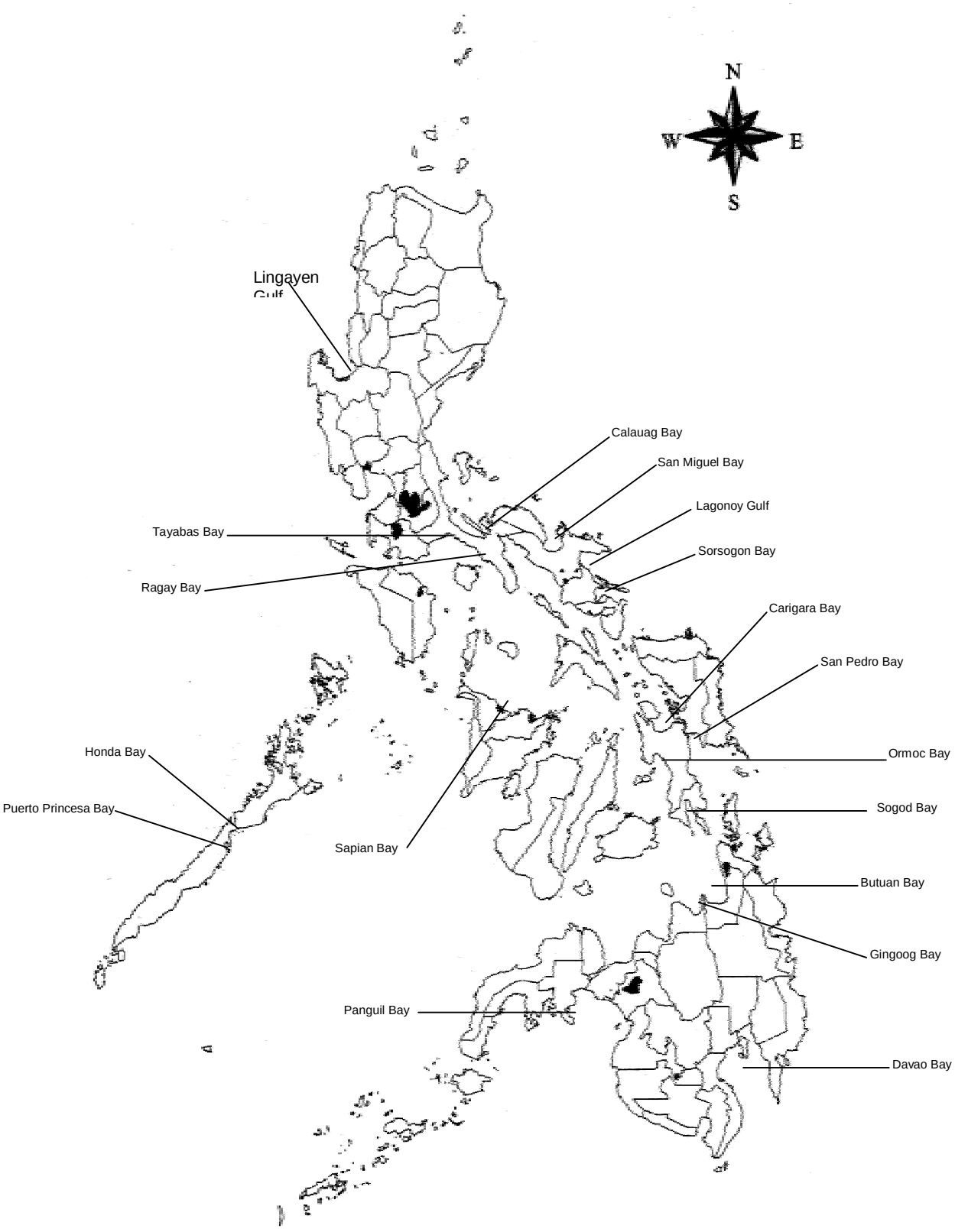
(b) Income Diversification - focuses on organisation, mobilisation and strengthening of fishers and coastal community groups that are savings-based and self-reliant, capable of carrying out CRM activities and income diversification on a long-term basis.

(c) Capability Building - consists of technical training programmes and on-site coaching for project implementors and beneficiaries to strengthen capacities for resource management and project implementation.

Figure 28: FRMP sites

(See next page)

[26] See www.frmp.org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Sorsogon Bay
Ragay Bay
Carigara Bay
San Pedro Bay
Honda Bay
Ormoc Bay
Puerto Princesa Bay
Sogod Bay
Sapian Bay
Butuan Bay
Gingoog Bay
Panguil Bay
Davao Bay

8.8.2 Coastal and Marine Management Office (former Coastal Environment Program)[27]

Coastal Environment Program is implemented by the Department of Environment and Natural Resources in 79 sites (see Table 29) in the country. It focuses on the preservation and conservation of marine and terrestrial resources of coastal areas nationwide. This project also focuses on the socio-economic upliftment of communities in the coastal areas through the provision of environment-technologies and livehood opportunities. The participation of the communities is more inclined to train them to become stewards of the marine resources and making them as partners in the development. It has no timeframe but talks of expansion sites, so it seems it will be implemented for a number of years.

CEP has the following components: conservation and management of coastal habitats; protection of endangered species; monitoring and control of coastal pollution; inventory/ assessment of coastal resources; applied research; development of special projects and establishment of coastal/marine protected areas

[27] See www.psdn.org.ph. The CMMO will soon have their own website.

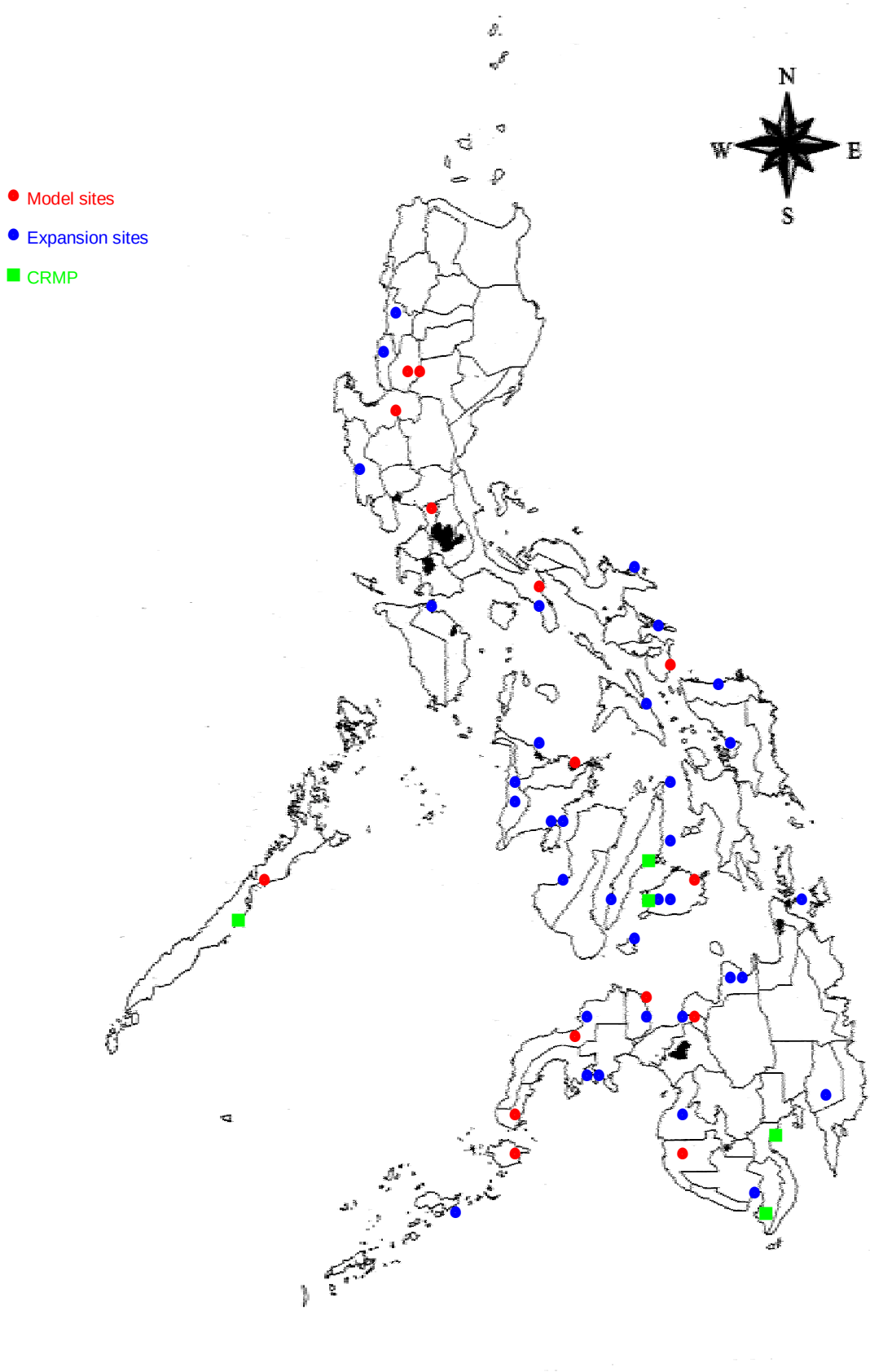
Table 30: CMMO project sites

CMMO model sites		
Region	Specific site (barangay and municipality)	Province/City
1	Telbang, Alaminos	Pangasinan
4-a	Pagbilao Bay	Quezon
4-b	Ulugan Bay, Puerto Princesa	Palawan
5	Prieto Diaz	Sorsogon
6	Sapian Bay Marine Sanctuary, Sapian	Capiz
7	Mahanay Island, Talibon	Bohol
9	Sibutad	Zamboanga del Norte
9	Malamawi Island, Isabela	Basilan
9	East coast of Zamboanga City	Zamboanga City
10	Balingao-Plaridel	Misamis Occidental
12	Lebak-Kalamansig Areas	Sultan Kudarat
12	Bacolod-Kauswagan Areas	Lanao del Norte
NCR	Tanza, Navotas	Metro Manila
CAR	Camps 1, 2, and 3 Tuba	Benguet
CAR	Gumatdang, Loacan, and Sabkil, Itogon	Benguet
Expansion sites		
1	Darigayos, Luna	La Union
1	Villamar and Tamurong, Cauayan	Ilocus Sur
1	Davila, Pasuquin,	Ilocos Norte
3	Sta Cruz	Zambales
4-a	Alibijaban Island, San Andres	Quezon
4-b	Puerto Galera	Oriental Mindoro
5	Quinalasag Island, Garchitorena	Camarines Sur
5	Dimasalang-Batuan Areas	Masbate
5	Jose Panganiban	Camarines Norte
6	Tangalan Fish Sanctuary, Tangalan	Aklan
6	Nogas Island Fish Sanctuary, Anini-y	Antique
6	Semirara Marine Sanctuary, Caluya	Antique
6	San Joaquin Seascape, San Joaquin	Iloilo
6	Pan de Azucar Seascape, Concecpion	Iloilo
6	Hulao-hulao Seascape, Cauayan	Negros Occidental
7	Enrique, Villanueva	Siquijor
7	Pangangan Island, Calape	Bohol
7	Mabini	Bohol
7	Bantayan Island	Cebu
7	Badian Areas	Cebu
7	Ayungon-Bindoy	Negros Oriental
8	BIRI-LAROSA group of islands	Northern Samar
8	Maqueda Bay	Western Samar
9	Naga	Zamboanga del Sur
9	Labason	Zamboanga del Norte
9	Mabuhay	Zamboanga del Sur
10	Sinooc, Sinacaban	Misamis Occidental
10	Tubajon, Laguindingan	Misamis Oriental
10	Jampason, Jasaan	Misamis Oriental
11	Mabini Coastal areas	Davao del Norte
11	Balut and Sarangani Islands	Sarangani and Davao del Sur
12	Kalanagan, Bukana	Cotabato City
12	Sultan Naga, Dimaporo	Lanao del Norte
13	Day-asan	Surigao City
ARMM	Panglima-Tahil (formerly Marungas Island)	Sulu
Protected areas		
2	Palui Island Protected Marine Reserve	
3	Masinloc-Oyon Bay Protected Seascape	
8	Guian Protected Landscape and Seascape	Eastern Samar
11	Pujada Bay Protected Seascape	

Source: CMMO brochure

Figure 29: Model and expansion sites of CMMO and CRMP sites

(See next page)


Model sites
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8.8.3 Coastal Resource Management Programme[28]

CRMP is a 7-year (1996-2001) - seems like the project will be extended - project that provides technical assistance and training to local governments and communities in coastal resource management. It is funded by the US Agency for International Development (USAID) and implemented by the Department of Environment and Natural Resources (DENR) in partnership with the Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR), the Department of Interior and Local Government (DILG), local government units (LGUs), non-governmental organizations (NGOs), and peoples organizations (POs). Project management and technical support is provided by
Tetra Tech EM Inc. and its team firms -- Global Vision, Inc. (GLOVIS); Coastal Ocean, Reef, and Island Advisors, Ltd. (CORIAL); Helber, Hasters, and Fee Planners; Mote Environmental Services, Inc. (MESI); Oceanic Institute; Pacific Management Resources, Inc (PACMAR); Plan Pacific; University of Hawaii; Economic Development Foundation (EDF); Pacific Rim Innovation and Management Exponents, Inc. (PRIMEX); and Woodward-Clyde, Philippines (WWC). The Project is also working with NGO partners, including the Asian Institute of Journalism and Communication, Inc. (AIJC); Haribon Foundation, Inc.; Institute of Environmental Science for Social Change (ESSC); Institute for Small Farms and Industries, Inc. (ISFI); Martin "Ting" Matiao Foundation, Inc. (TMF); and the University of San Carlos.

CRMP's mission: To catalyze coastal resource management to a threshold that expands nationwide and is sustained beyond the project.

The Project is initially being implemented in six learning areas -- Olango Island, Cebu; San Vicente, Palawan; Malalag Bay, Davao del Sur; Negros Oriental; Bohol; and Sarangani Province -- which will serve as strategic expansion nodes from which good CRM practices can be spread to other coastal areas in the country. To support the replication and sustainability of the project, activities are directed at enhancing the capability of national and local governments and the communities themselves to develop and implement resource management processes and systems.

CRMP includes the following project activity components:

- identification and development of coastal leaders
- development and institutionalization of community-based CRM processes and systems
- local government capacity-building

[28] See www.oneocean.org

- building constituency groups and empowerment of coastal communities
- training in skills relevant to CRM implementation
- policy analysis and formulation
- public education and social mobilization
- alternative enterprise development
- continuing research on and development of community-based CRM approaches

For CRMP, the overall strategic objective is expected to be achieved by the year 2000, when 2,000 km or 11% of the 18,000-km Philippine coastline (mainly in Palawan, the Visayas and Mindanao) will have been brought to sustainable resource use and enhanced management, and a critical mass of communities and leaders involved in CRM activities and living by the CRM philosophy of sustainable resource use will have been developed. From this threshold, we expect CRM practices and systems to spread to other municipalities.

We are using a two-pronged approach to achieving sustainable resource use: We aim to influence policy at the national level and at the same time implement specific CRM activities and systems at the local level. By collaborating with other donor agencies involved in CRM, we are able to expand our reach in a strategic way.

The Project assists national government agencies in finding practical solutions to four key problem areas in coastal resource management: jurisdictional issues management, mangrove management, commercial fisheries management, and biodiversity conservation. At the local level, it helps communities institutionalize CRM planning and implementation.

To achieve our objective of sustainable resource management in Philippine coastal areas, CRMP is mobilizing all sectors of society, the private sector, the Church, media, NGOs, schools and the government. It is also undertaking public education and social mobilization activities to ensure that CRM is prioritized in the national social agenda.

9 Analysis and recommendations

Based on the available information from the preceding sections, this section attempts to answer the following questions:

(a) Who are the poor in the aquatic resources sector?

(b) What are the issues in relation to the participation of the poor in aquatic resource management?

(c) Which geographical areas should be prioritised for poverty focused intervention, in terms of level of poverty incidence and absence of programmes in these areas?

(d) What are the possible forms of poverty focused interventions?

9.1 Who are the poor in the aquatic resources sector?

Section 5 provides a very general picture. The poor (or the disadvantaged) in the aquatic resources sector may be gleaned from the description of the production arrangements in the three fisheries sectors. Table 29 lists the types of persons involved in the three fisheries sectors, identifies their presence in that sector, and suggests (through dots) which type of persons may be disadvantaged, based on the practical knowledge of the authors and their experience in working in these sectors[29].

[29] The suggestion on which type of person is poor is also based on the authors' knowledge of livelihood assets - ie financial, natural, physical, human and social - and vulnerabilities. Those identified as poor in Table 27 are deemed as having less livelihood assets and are more vulnerable to shocks, etc. This listing is by no means comprehensive.

Table 31: The disadvantaged[30] in the fisheries sector

Type of persons involved	Presence (with check)		
	Aquaculture	Commercial	Municipal
Total estimated population[31] (2000)	74,537 persons	357,984 persons	374,408 persons
Absentee landlord	✔		
Non-working capitalist		✔	✔
Technical advisers	✔	✔	
Overseers	✔ ●	✔	✔
Regularly paid fishworkers	✔ ●	✔ ●	✔ ●
Share fishers		✔ ●	✔ ●
Seasonal fishpond workers	✔ ●		
Boat owners			✔
Non-boat owners			✔ ●
Gleaners			✔ ●
Shell gatherers			✔ ●
Fish trappers			✔ ●
Fish pen operators			✔
Fish corral operators			✔
Farmers integrating aquaculture in aqriculture	✔		✔
Part time fishers for home consumption			✔
Fish traders	✔	✔	✔
Fish vendors			✔ ●

Key: ● most likely to be disadvantaged

Except for 5 provinces (Batanes, Bulacan, Pampanga, Rizal, and Cavite[32]), all provinces have poverty incidences of more than 20%. But the highest levels of poverty incidence are found in Mindanao provinces.

Poverty statistics are generated based on surveys with a sample population, which is then extrapolated. Some provinces conduct their own poverty research based on the MBN framework. A problem with the generation of statistics is often the discrepancy between nationally generated statistics and those generated by LGUs[33]. Some LGUs often serve as data collectors for national agencies, without really thinking carefully about how the information can be useful for their local purposes. The quality of the information they get and use for local planning purposes therefore is very poor.

[30] There is no distinction made between economically disadvantaged or socially disadvantaged.
[31] Based on employment in fisheries estimates, but the number could be higher as there are part time fishers who usually are not captured by surveys and registration systems.
[32] The last 4 provinces belong to Region 4, which is adjacent to Metro Manila.
[33] For example, a VSO volunteer database management specialist for the province of Bohol who helped them put together a natural resource database, told us that they had problems reconciling locally generated data with nationally generated ones.

9.2 What are the issues in relation to the participation of the poor in aquatic resource management?

9.2.1 Policy issues

9.2.1.1 Non-implementation of policies

The policy environment in terms of aquatic resource management in the Philippines as written seems to be generally pro-poor. Some of these policies are:

- RA 8850[34] (fisheries code) and RA 8435 (Agriculture and Fisheries Modernization Act) - the two main policies in relation to fisheries - both speak of "poverty alleviation" and "social equity" as objectives, although they differ in other areas;
- The law restricts application for new FLAs, thereby allowing vast tracts of former mangrove areas to regenerate and make these available to poor fisher for gleaning, catching crabs, and other aquatic fauna protecting by a tenurial instrument called community-based forest management agreement (CBFMA);
- Municipal waters has been extended from 7 km to 15 km, expanding the fishing ground of municipal fishers or artisanal fishers;
- The law (RA 8550) encourages participation of local communities in aquatic resource management through FARMCs;
- There are programmes such as the FRMP and CRMP that focuses on income diversification thereby responding to the twin objectives of reducing fishing pressure, but at the same time improve the socio-economic well being of coastal communities.

But the problem is implementation of these policies. There are still cases of illegal fishpond operations[35]. Reports of encroachment by commercial fishing vessels in municipal waters are still heard, and the implementation of DAO 17 (that would delineate municipal waters in the entire country) is being delayed by protests from commercial fishers. The implementation of development programmes in fisheries is still generally focused on resource management rather than poverty alleviation.

9.2.1.2 Globalisation

The government seems to be sending mixed signals with it comes to responding to the issue of globalisation (whether one sees globalisation as a threat or opportunity). On the one hand, through RA 8435, the government (or some quarters in government) promotes "modernisation" and "global competitiveness" which seems to be development of more technology for intensive

[34] RA 8550 is a result of a long-drawn lobby effort by concerned fisheries-related NGOs and POs.
[35] Based on some cases we personally know. This aspect requires a more detailed study.

aquaculture and mariculture especially that may threaten the ecological carrying capacities of aquatic ecosystems. The negative result of this would be felt by the poor most.

In the Medium Term Development Plan of the Philippines (2001 to 2004), there is no specific plan for fisheries; it is integrated with agriculture. The plan for agriculture and fisheries is to create one million new jobs[36] through: (a) implementation of the AFMA and the Fisheries Code of 1998, specifically targeting public investments in the identified key Strategic Agriculture and Fisheries Development Zones (SAFDZs) and (b) broad-based development with targeted policies and programmes to shelter the most vulnerable groups from th adjustment shocks attended to development, specially safety nets for sectors affected by globalisation.

On the other hand, the government, through RA 8550 is promoting decentralisation (localised management) and pro-poor fisher policies such as the ones mentioned in the preceding section. This would expectedly lead to tensions and conflicts in interpreting and enforcing the laws[37]. One key area of conflict is the process of planning for SAFDZs that will be done by national agencies and LGUs. It is not clear yet which areas have been identified as SAFDZs, and how LGUs have been involved in the plans for identified specific sites.

9.2.1.3 Recognition of the role of women in fisheries

There is nothing at all in the fisheries laws and policies that distinguish the difference in the roles women and men play in the fishing industry. There are no indications that the laws provide for identifying and responding to the needs and priorities of women as differentiated from men. Even the implementing rules and regulations of these laws do not show this.

9.2.2 Local capacity

With the trend towards devolving more resource management responsibilities to LGUs, Batongbacal (2000) notes that this will necessarily require supporting capability-building efforts for fisheries management of local governments. If the national government cannot respond to this, guidance and support to local governments may need to come from NGOs and private organizations that have long track records in CRM.

It is possible that the continuing devolution and decentralization trend will lead to more complex dispute problems amongst stakeholders. These conflicts are already being felt in the interpretation of the laws that have been put in place (e.g. the constitutional challenge to IPRA and potential areas of conflict between RA 8550 and 8435) and also the enforcement of these

[36] This seems to show the bias of the plan for "industrialisation", ie fishers transformed into workers receiving wages. Their basic needs are to be satisfied with wages derived from "jobs", ie increasing financial capital mainly rather than by increasing the five livelihood assets.

[37] For a more detailed discussion on the possible key areas of conflicts between RA 8435 and RA 8550, see Batongbacal, J. *Agriculture and Fisheries Modernisation Act and the Fisheries Code of 1998: key areas of conflict and recommended courses of action,* in www.oneocean.org

laws. Primavera (1997) had studied specific cases of conflict in the enforcement of laws, even between government agencies. For example, she cites the Cogtong Bay, Bohol experience when the DA-BFAR issued FLAs to mangroves that the DENR refused to grant a cutting permit in 1982. The continuing struggle to implement DAO 17 is another case in point as commercial fishing industry players continue to challenge the law and search for ways to delay its implementation. Hence, while there are laws and policies that generally encourage the participation of the poor, these could still be interpreted in favour of those who hold economic, social and political influence in society.

9.2.3 Participation in resource management

Philippine fishery laws allow local communities to participate in aquatic resource management through FARMCs. Most FARMCs, however, are non-functional. There is no comprehensive assessment done on FARMCs yet. Perhaps this is one of the things that need to be done - to assess what keeps FARMCs from functioning well and in representing the interests of small - scale fishers.

9.2.4 Exclusive control of municipal fishing grounds

Some groups advocate for granting municipal fishers tenurial rights over their municipal fishing grounds (Quicho, Mislang & Batay-an, 1999), as opposed to just delineating municipal waters as protected against commercial fishing activities. A 25-year (renewable for another 25 years) tenurial right over mangroves is already being awarded to organised fishers. Fishing grounds and mangroves are both multi-use resources that require processes of consensus building in the making of management plans. Although fishing grounds have a resource that is itinerant (the fish), which perhaps would make the process of consensus building on its management more complicated. The implication of granting tenurial rights over fishing grounds is the subject of discussions by NGOs, government and academic groups in the Philippines.

Some groups, however, are investing in exploring methods of improving processes for consensus building in the management of common pool resources.

9.3 Which geographical areas should be prioritised for poverty-focused intervention?

There may be three criteria for answering this question: (a) extent of poverty, (b) absence of internationally or nationally funded development programmes, (c) peace and order situation that would make external intervention possible, and (d) receptiveness of local government units and civil society organisations to poverty-focused programmes.

Section 7 may be used to answer question (a), but the ranking should not be used as a guide by itself[38]. Section ( ) may be used to answer question (b). It is, however, beyond the scope of this report to describe the activities of each programme on each site. This information is important to know to decide possible collaboration with existing programmes. Question (c) requires a thorough security assessment. The poorest provinces it seems are those were the peace and order situation are worst. This does not mean, however, that working in these areas is not possible[39].

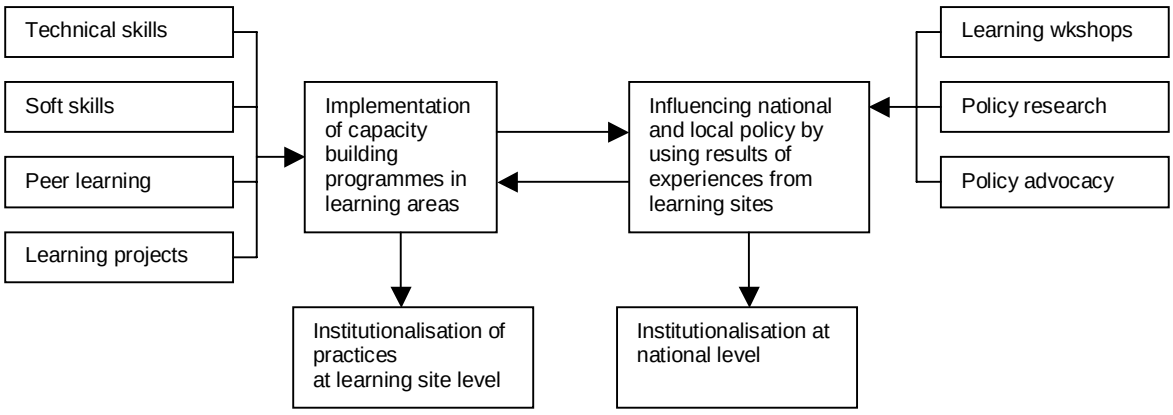
Question (d) is a bit tricky. LGU leaders face elections every three years. If an LGU leader is not re-elected, the new LGU leader usually brings his/her own set of people and starts a new programme that will be identified with him/her. It is therefore difficult, if not impossible, to "embed an institution[40]" (or to make socially equitable allocation rules the norm). Development initiatives usually lose momentum, if there is a leadership change, as these are not impervious to the changing leadership. This aspect requires further study and discussion.

9.4 What are the possible forms of poverty focused interventions?

The Philippines has lots of experiences (positive and negative) to share in terms of (a) organisation of coastal communities and their participation in coastal resource management, (b) policy advocacy by NGOs and POs for pro-poor policies, and (c) best practices by some LGUs in CRM or resource governance. The Philippines, however, as the preceding sections attest, especially the section on poverty, still needs support from international development agencies.

The CRMP seems to provide a possible model framework for a poverty-focused intervention, although its focus is principally "sustainable resource use" instead of "poverty alleviaton[41]." Our interpretation of this framework is shown in the figure below:

Figure 30: Possible poverty focused intervention framework



[38] For instance, VSO can place volunteers in provinces or municipalities that are not in the top 20 poorest provinces.
[39] VSO for instance is implementing a programme for displaced communities in Western Mindanao. So does OXFAM GB.
[40] Some experts claim that it takes at least 30 years to 'embed' and institution.
[41] The subtle differences between the two focuses can be easily dismissed, but should be recognised.

What this framework seems to lack, which is an important agenda for STREAM, is regional sharing of learning across countries.

9.4.1 Capacity building in learning sites

Section 9.3 deals with selecting possible learning sites. What specific forms of intervention may be done in these learning sites of course depends on an assessment of local capacity. Our personal knowledge of LGUs, peoples organisations, NGOs, private sector, etc in the Philippines and the preceding sections of this report suggest that assistance may be needed in the following:

(a) Establishing simple information systems and databases on natural resources and socio-economic profiles that can be used for planning, monitoring and evaluation (to scale identified problems and to generate meaningful trends) at the local level (by LGUs, local NGOs and POs and other customary resource management structures) consistent with information systems already in place (this can be done with the help of NGOs[42] and in coordination with national agencies such as the DA, BFAR, and NAPC). This looks like a big task. Our experience with putting together this report is that it is quite difficult to break down information beyond the level of regions or provinces. And it is possible that locally-generated information used for local planning wouldn't match nationally-generated estimates (based on local information) used for planning at the national level.

(b) Facilitating coordination amongst the different groups involved in the aquatic resources sector. There are so many government and civil society groups involved in aquatic resource management conducting separate planning for the same areas for their own mandates without knowledge or reference to the other groups. This is quite common in the Philippines and is not confined to the fisheries sector. RA 8550 reconstituted BFAR as a line agency and provides for some integration of functions. The DA-DENR Joint Memorandum is also an effort in clarifying governmental jurisdictions through departmental agreements. A first step for any poverty-focused programme would be to know the different groups involved in similar programmes. This report is an attempt towards making that first step at the national level, and its points readers to some existing initiatives at the national level. But there is still a need to do this kind of profiling of initiatives especially at the local level[43].

(c) Increasing capacity for soft skills. We specifically refer to skills in strategic planning (programme development, problem analysis), policy formulation, monitoring and evaluation, documentation of learning, communicating learning, etc. within local government units to give more emphasis to poverty alleviation in their programmes. Again NGOs may be of help here. A

[42] One example is the database created by VSO volunteer Richard Alexander for the province of Bohol.
[43] One initiative along this line is the book published by Stuart Green (former VSO volunteer), Richard Alexander (VSO volunteer database management specialist) for CRMP in Bohol, with some support from SPARK and many other groups, that profiles all the existing CRM initiatives in the island to encourage coodination of activities.

big obstacle is the fact that usually in LGUs at the municipal level, there is no fisheries officer. And if there is one, s/he is lumped with the Municipal Agricultural Office, and usually does not have a fisheries background. Another obstacle is the fact that projects are not impervious to leadership change.

Another area is increasing the capacity of NGOs and POs (including FARMCs) to participate in poverty-focused CRM programmes. Fisheries schools also need to increase their capacity in integrated the learning of soft skills in their curricula. So do the extension departments of NGAs.

(d) Technical skills (resource inventory, resource management planning, identification of possible fishery-related livelihood projects) are still required, even with the number of existing fisheries schools, especially in areas not reached by existing development programmes.

(e) Peer learning through community visits to other sites and LGUs who have formulated local ordinances and have successfully implemented CRM projects.

9.4.2 Influencing policy

Based on the description of the policy environment for aquatic resource management, two possible areas of intervention in relation to influencing policy are emerging: (a) helping the poor to participate in initiatives towards harmonising existing national policies especially in relation to potential areas of conflict between RA 8550 and RA 8435, (b) improving the capacity of LGUs and national agencies to enforce policies and monitor the impact of policies on the poor.

9.4.2.1 Participation of the poor in harmonising existing policies

The biggest concern it seems is that the pro-modernisation (more extraction, intensification of aquaculture) provisions of AFMA will overshadow the pro-poor provisions of the Fisheries Code and LGUs cannot do anything about it, or they do not represent the interests of poor fishers. Fisheries is still subsumed under agriculture. BFAR, the implementing agency of the Fisheries Code is a subordinate bureau of the implemented of AFMA (Batongbacal, 2001). Batongbacal has written an excellent policy paper on the key areas of conflict between RA 8550 and RA 8435 (see www.oneocean.org) but where poverty alleviation (an objective of both Acts) may figure in these potential conflicts is not addressed. There seems to be a need to ensure that the interests and concerns of poor fishers (who are mostly unorganised) are heard in planning discussions in identified SAFDZs, for instance. This sounds like a very simple task, but which have been proven to be very difficult to do. LGUs, national agencies, and even NGOs (who claim to practice participatory techniques but do it in a mechanical way) may need to improve their capacity in participatory techniques or in consensus building involving various stakeholders so that they are able to represent the interests of the poor and other legitimate stakeholders.

9.4.2.2 Improving capacity of LGUs and NGAs to enforce policies

When policies are not implemented, the poor suffer the consequences the most. For example, the delay in the implementation of DAO 17 that would delineate municipal waters for the exclusive use of small-scale fishers have encouraged rampant encroachment of commercial fishers in municipal waters, resulting to less "space" for fishing for small scale fishers. When fishers including poor ones (financed by local businessmen) practice destructive fishing, the ecosystem is destroyed and this results to declining fish catch for the entire population of poor fishers, including the majority who do not practice illegal fishing. When corporations convert mangroves to fishponds, these areas become not accessible to small fishers.

The Philippines seems to be very good at formulating policies, but very poor at implementing these policies and monitoring and assessing its impact. This is perhaps where intervention is needed. A first step along this line may be to assess why policies are or are not implemented in different situations, and from there identify possible courses of action, document good practice, and share these to others.

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www.bwf.org

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www.ciel.org

11 Appendices

Appendix 1: Status of coral reefs in selected stations , 1981 and 1991

LOCATION	No. of Stations		Excellent				Good				Fair				Poor			
	1981	1991	1981		1991		1981		1991		1981		1991		1981		1991	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
LUZON																		
1. Albay	9	9	0	0	0	0	1	11	1	11	5	56	5	56	3	33	3	33
2. Bataan	10	10	0	0	0	0	0	0	0	0	0	0	0	0	10	100	10	100
3. Batangas	25	35	0	0	0	0	6	24	13	37	11	44	14	40	8	32	8	32
4. Cagayan	4	4	0	0	0	0	2	50	2	50	2	50	2	50	0	0	0	0
5. Camarines Norte	13	13	0	0	0	0	1	7.7	1	7.7	7	54	7	54	5	39	5	39
6. Camarines Sur	2	2	0	0	0	0	0	0	0	0	2	100	2	100	0	0	0	0
7. Cavite	9	9	0	0	0	0	0	0	0	0	6	67	6	67	3	33	3	33
8. Isabela	3	3	0	0	0	0	2	67	2	67	1	33	1	33	0	0	0	0
9. La Union	5	5	0	0	0	0	1	20	1	20	2	40	2	40	2	40	2	40
10. Marinduque	5	5	0	0	0	0	0	0	0	0	4	80	4	80	1	20	1	20
11. Mindoro Occidental	31	31	1	3.2	1	3.2	8	26	8	26	15	48	15	48	7	23	7	23
12. Mindor Oriental	11	66	1	9.1	4	6	2	18	11	17	4	36	33	50	4	36	18	27
13. Palawan	49	71	6	12	7	9.9	17	35	23	32	20	41	29	41	6	12	12	17
14. Pangasinan	37	53	0	0	0	0	8	22	18	34	14	38	19	36	15	41	16	30
15. Quzon	4	8	0	0	0	0	2	50	4	50	2	50	4	50	0	0	0	0
16. Zambales	12	12	0	0	0	0	2	17	2	17	3	25	3	25	7	58	7	58
Sub Total	229	336	8	3.5	12	3.6	52	23	86	26	98	43	146	43	71	31	92	27
VISAYAS																		
1. Antique	12	12	2	17	2	17	10	83	10	83	0	0	0	0	0	0	0	0
2. Bohol	22	22	0	0	0	0	6	36	8	36	8	36	8	36	6	27	6	27
3, Cebu	51	64	5	9.8	6	9.8	13	26	14	22	19	37	27	42	14	27	17	27
Hilutangan Island	4	4	0	0	0	0	1	25	1	25	0	0	0	0	3	75	3	75
Mactan Island	15	15	1	6.7	1	6.7	3	20	3	20	3	20	3	20	8	53	8	53

Olango Island	7	7	0	0	0	0	1	14	1	14	2	57	2	57	2	29	2	29
Sumilon Island	4	4	0	0	0	0	3	75	3	75	0	0	0	0	1	25	1	25
4. Iloilo	64	64	9	14	9	14	18	28	18	28	27	42	27	42	10	16	10	16
5. Leyte	12	15	0	0	0	0	0	0	0	0	6	50	6	40	6	50	9	60
6. Negros Occidental	18	18	1	5.6	1	5.6	2	11	2	11	5	28	5	28	10	56	10	56
Refugio Island	4	4	0	0	0	0	1	25	1	25	1	25	1	25	2	50	2	50
7. Negros Oriental	98	98	5	5.1	5	5.1	20	20	20	20	41	42	41	42	32	33	32	33
Apo Island	5	5	0	0	0	0	5	100	5	100	0	0	0	0	0	0	0	0
8. Siquijor	31	31	0	0	0	0	9	29	9	29	9	29	9	29	13	42	13	42
Sub Total	347	363	23	6.6	24	6.6	94	27	95	26	123	35	131	36	107	31	113	31
MINDANAO																		
1. Misamis Occidental	9	9	0	0	0	0	0	0	0	0	4	44	4	44	5	56	5	56
2. Misamis Oriental	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	100	1	100
3. Zamboanga del Norte	18	18	1	5.6	1	5.6	3	17	3	17	6	33	6	33	8	44	8	44
Aliquay Island	8	8	2	25	2	25	3	38	3	38	2	25	2	25	1	13	1	13
Selinog Island	7	7	0	0	0	0	0	0	0	0	1	14	1	14	6	86	6	86
Sub Total	43	43	3	7	3	7	6	14	6	14	13	30	13	30	21	49	21	49
TOTAL	619	742	34	5.5	39	5.3	151	24	187	25	234	38	290	39	200	32	226	31

Source: Gomez, E. D (1991) Coral Reef Ecosystem and Resources of the Philippines, Philippine Technology Journal, Volume XVI Number 4, October to December, 1991

Appendix 2: Major fishery exports in terms of value, 1999

Commodity/Kind	Quantity	FOB Value	
		PhP 000	US$ 000
Tuna	**79,133**	**5,536,140**	**137,382**
Fresh/chilled/frozen	42,023	2,345,524	58,205
Smoked	253	42,867	1,064
Canned	36,857	3,147,749	78,113
Shrimp/Prawn	**11,058**	**5,142,229**	**127,608**
Fresh/chilled/frozen	10,925	5,091,511	126,349
Other than frozen	133	50,718	1,259
Seaweeds	**41,831**	**3,486,105**	**86,509**
Seaweeds and other algae	32,311	1,774,865	44,044
Seaweeds and algae for food	555	28,015	695
Carrageenan	8,184	1,674,073	41,543
Kelp powder	781	9,152	227
Octopus	**11,127**	**1,273,375**	**31,599**
Frozen/dried/salted	11,127	1,273,375	31,599
Crabs/crab fat	**3,396**	**536,988**	**13,326**
Frozen	128	17,674	439
Other then frozen	3,083	473,204	11,743
Prepared/preserved	185	46,110	1,144
Pearls	**8**	**456,574**	**11,330**
Natural	n	2,191	54
Cultured	1	454,383	11,276
Cuttlefish/squid	**1,310**	**290,360**	**7,205**
Fresh/chilled	19	2,878	71
Frozen/dried/salted	1,271	283,397	7,033
Prepared/preserved	20	4,085	101
Ornamental fish, live	**5,558**	**260,919**	**6,475**
Lobster	**782**	**228,279**	**5,665**
Frozen	196	79,760	1,979
Other than frozen	586	148,519	3,686
Lapu-lapu, live	**3,721**	**186,282**	**4,623**
TOTAL MAJOR COMMODITIES	**157,917**	**17,397,251**	**431,722**
TOTAL OF OTHER COMMODITIES	**14,928**	**1,940,253**	**48,149**
GRAND TOTAL	**172,845**	**19,337,504**	**479,871**

Source of Data: BFAR, 2000

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Appendix 3: Per capita food consumption of fish and fishery products, 1993

Fish and Other Products	Total (Kg/Year)
1. FISH	36
1.1 Fresh Fish	24
Tulingan (Frigate Tuna)	4
Bangus (Milkfish)	1
Galunggong (Roundscad)	4
Dilis, Buo (Anchovy)	1
Alumahan (Indian Mackerel)	1
Tamban (Sardines)	2
Dalagang Bukid (Fusilier)	
Sapsap (Slipmouth)	1
Bisugo (Threadfin Bream)	1
Tilapia (Cichlid)	1
Albakora/Tambakol	1
Balila/Espada	n
Hasa-hasa	n
Lapu-lapu	n
Matangbaka	1
Maya-maya	n
Salay-salay	n
Silinyasi/Tunsoy	n
Tanigue	n
Others (fresh fish &cooked fish recipe)	4
1.2 Dried Fish (as fresh fish)	4
1.3 Processed Fish	4
Bagoong (as fresh fish)	1
Patis	n
Canned Fish (sardines,mackerel,salmon	2
Smoked fish (all tinapa type)	1
1.4 Crustaceans and Mollusks	4
Shrimp (all type)	n
Crabs	1
Squid/Octopus	1
Tahong	1
Others (fresh)	1
Dried and Processed (as fresh)	n
Bagoong (as fresh)	n

Notes:
Raw as purchased weight or as available in the kitchen including inedible and edible wastage
Breakdown do not add up to total due to rounding
N-negligible (less than 0.5 grams)

Source of Data: BFAR, 2000

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Appendix 4: Municipal fisheries Production, mt

YEAR	NCR	CAR	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	ARMM	Total
2000	3,982	1,075	23,392	17,037	11,176	257,835	73,803	134,227	47,482	37,203	122,479	17,079	48,119	19,673	66,599	62,790	943,951
1990	9,791	457	18,955	14,339	32,279	341,774	70,572	177,047	20,162	28,226	241,422	80,901	52,195	43,866			1,131,986
1980	5,070		12,033	3,380	12,585	93,642	121,906	103,575	49,230	34,725	223,431	53,077	33,251	15,695			761,600
1976	4,191		16,432	3,834	15,416	84,938	136,642	52,319	65,436	32,275	105,999	59,461	40,303	13,154			630,400

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Appendix 5: Ranking of Philippine provinces based on selected indicators

Entry no.	Region	Province	Population (2000)	APIS rank (high means poor) (1999)	Poverty incidence of families %) (1998)	HDI (1997)	Income class (1996)
1	CAR	Abra	209,491	45	69.1	0.579	3
2	CAR	Apayao	97,129	24	50.1	0.529	4
3	CAR	Benguet	97,129	16	30.2	0.624	2
4	CAR	Ifugao	582,515	44	67.7	0.448	4
5	CAR	Kalinga	174,023	31	57.4	0.522	3
6	CAR	Mountain Province	140,439	1	55.5	0.541	2
7	1	Ilocos Norte	514,241	2	29.6	0.644	2
8	1	Ilocos Sur	594,241	7	43.2	0.615	1
9	1	La Union	657,945	49	50.2	0.617	2
10	1	Pangasinan	2,434,086	9	52.4	0.611	1
11	2	Batanes	16,467	48	9.7	0.750	5
12	2	Cagayan	993,580	9	41.1	0.552	1
13	2	Isabela	1,287,575	34	38.1	0.603	1
14	2	Nueva Viscaya	366,962	19	30.3	0.576	2
15	2	Quirino	148,575	6	51.1		4
16	3	Bataan	557,659	3	27.9	0.723	1
17	3	Bulacan	2,234,088	22	19.1	0.700	1
18	3	Nueva Ecija	1,659,883	4	42.0	0.602	1
19	3	Pampanga	1,882,730	13	19.0	0.646	1
20	3	Tarlac	1,068,783	39	33.9	0.604	1
21	3	Zambales	627,802	29		0.598	2
22	4	Aurora	173,797	17	43.9	0.552	3
23	4	Batangas	1,905,348	57	23.2	0.681	1
24	4	Cavite	2,063,161	11	16.1	0.773	1
25	4	Laguna	1,965,872	27	21.2	0.673	1
26	4	Marinduque	217,392	40	61.3	0.528	4
27	4	Occidental Mindoro	380,250	51	55.6	0.553	2
28	4	Oriental Mindoro	681,818	74	45.8	0.592	2
29	4	Palawan	755,412	68	57.3	0.535	1
30	4	Quezon	1,679,030	24	46.0	0.599	1
31	4	Rizal	1,707,218	69	19.4	0.722	1
32	4	Romblon	264,357	38	73.0	0.533	4
33	5	Albay	1,090,907	23	52.5	0.556	1
34	5	Camarines Norte	458,840	61	53.7	0.549	3
35	5	Camarines Sur	1,551,549	56	52.5	0.568	1
36	5	Catanduanes	215,356	26	52.2	0.550	3
37	5	Masbate	707,668	76	74.7	0.487	2
38	5	Sorsogon	650,535	62	55.6	0.589	2
39	6	Aklan	451,314	43	44.1	0.553	3
40	6	Antique	471,088	33	53.2	0.550	3
41	6	Capiz	654,156	28	50.2	0.543	2
42	6	Guimaras	141,450	72	46.3	0.555	4
43	6	Iloilo	1,925,002	67	45.3	0.584	1
44	6	Negros Occidental	2,565,723	66	54.9	0.535	1
45	7	Bohol	1,137,268	15	59.2	0.543	1
46	7	Cebu	3,356,137	64	34.6	0.556	1

47	7	Negros Oriental	1,130,088	65	52.1	0.494	1
48	7	Siquijor	81,598	5	61.3	0.509	4
49	8	Biliran	140,274	36	39.7	0.522	4
50	8	Eastern Samar	375,822	31	56.4	0.509	2
51	8	Leyte	1,592,336	52		0.520	1
52	8	Northern Samar	500,639	54	53.3	0.482	2
53	8	Samar	641,124	77		0.492	2
54	8	Southern Leyte	360,160	41	46.3	0.550	2
55	9	Basilan	332,828	70	48.6	0.434	4
56	9	Zamboanga del Norte	823,130	56		0.505	1
57	9	Zamboanga del Sur	1,935,250	60		0.521	2
58	10	Bukidnon	1,060,265	18	59.4	0.533	1
59	10	Camiguin	74,232	25	51.5	0.532	4
60	10	Misamis Occidental	486,723	51	58.2	0.533	3
61	10	Misamis Oriental	1,125,676	20	44.3	0.540	1
62	11	Compostela Valley	580,244				
63	11	Davao del Norte	743,811	10	51.3	0.525	1
64	11	Davao del Sur	1,905,917	38	39.1	0.517	2
65	11	Davao Oriental	556,191	42	60.1	0.492	2
66	11	Sarangani	410,622	58	66.4	0.489	2
67	11	South Cotabato	1,102,550	42	48.8	0.532	2
68	12	Lanao del Norte	889,213	31	58.9	0.465	2
69	12	North Cotabao	958,643	63	63.8	0.514	1
70	12	Sultan Kudarat	586,505	14	59.7	0.529	4
71	13	Agusan del Norte	552,849	46	60.7	0.512	3
72	13	Agusan del Sur	559,294	47	63.7	0.478	1
73	13	Surigao del Norte	481,416	21	63.3	0.527	2
74	13	Surigao del Sur	501,808	53	52.5	0.516	2
75	ARMM	Lanao del Sur	669,072	73	57.6	0.408	3
76	ARMM	Maguindanao	801,102	71	66.2	0.403	2
77	ARMM	Sulu	619,668	75	72.3	0.331	3
78	ARMM	Tawi-tawi	322,317	59		0.425	4
	NCR	Metro Manila	9,932,560			0.885	
			73,940,710				

Note: Provinces in red are landlocked provinces, but they have aquatic freshwater resources.

Sources: NCSB, PIDS

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Appendix 6: Income classification of coastal municipalities in the Philippines

Region	Province	Municipality	Land Area (sq km)	Population 1995	Population 2000	Income classification
1	La Union	Itbayat	92.90	3,129	3,616	6th class
1	La Union	Ivana	16.54	1,024	1,293	6th class
1	La Union	Mahatao	12.90	1,556	1,895	6th class
1	La Union	Sabtang	40.70	1,434	1,678	6th class
1	La Union	Uyugan	16.28	1,265	1,268	6th class
1	La Union	Santa Praxedes	110.00	2,709		6th class
2	Isabela	Dinapigue	934.00	3,046		6th class
4	Aurora	Dinalungan	316.85	8,187	9,711	6th class
4	Occidental Mindoro	Magsaysay	296.70	26,947	28,740	6th class
4	Palawan	Agutaya	37.31	7,250	10,422	6th class
4	Palawan	Cagayancillo	26.39	6,717	6,348	6th class
4	Quezon	Jomalig	56.65	4,371	5,817	6th class
4	Quezon	Patnanungan	139.20	9,638	11,034	6th class
4	Quezon	Plaridel	35.05	8,666	9,501	6th class
4	Romblon	Banton	32.48	6,069	6,769	6th class
4	Romblon	Concepcion	23.30	5,126	4,683	6th class
4	Romblon	Corcuera	28.53	9,658	10,972	6th class
4	Romblon	Ferrol	32.30	5,772	-	6th class
4	Romblon	San Fernando	196.87	18,551	21,214	6th class
4	Romblon	San Jose	28.90	7,713	8,226	6th class
4	Romblon	Santa Fe	66.10	12,665	14,140	6th class
4	Romblon	Santa Maria	32.40	7,785	7,324	6th class
6	Aklan	Buraunga	88.50	12,665	15,077	6th class
7	Bohol	Albuquerque	26.98	7,709	8,715	6th class
7	Cebu	Alcantara	35.20	10,224	11,532	6th class
7	Cebu	Malabuyoc	57.80	17,090	17,015	6th class
7	Siquijor	Enrique Villanueva	28.60	4,868	5,364	6th class
8	Biliran	Maripipi	27.83	7,853		6th class
8	Eastern Samar	Hernani	49.42	8,055	7,642	6th class
8	Eastern Samar	Mercedes	23.32	5,473	11,741	6th class
8	Northern Samar	Biri	28.80	8,866		6th class
8	Northern Samar	Mapanas	121.70	9,377		6th class
8	Northern Samar	Rosario	31.60	8,626		6th class
8	Northern Samar	San Antonio	27.00	7,984		6th class
8	Northern Samar	San Vicente	15.80	5,970		6th class
8	Samar	Almagro	51.36	10,270		6th class
8	Samar	Daram	140.25	33,745		6th class
8	Samar	San Sebastian	27.30	6,381		6th class
10	Camiguin	Guinsiliban	18.52	4,919	5,092	6th class
10	Misamis Oriental	Binuangan	30.43	5,374	5,924	6th class
10	Misamis Oriental	Sugbongcogon	26.50	6,957	7,362	6th class
ARMM	Maguindanao	Matanog	146.50	16,018	19,006	6th class
ARMM	Sulu	Hadji Panglima Tahil	49.50	4,419	5,314	6th class
ARMM	Sulu	Indanan	101.90	46,140	53,425	6th class
ARMM	Sulu	Kalingalan Caluang	108.80	19,320	22,688	6th class

ARMM Sulu	Lugus	35.40	16,330	18,839	6th class
ARMM Sulu	Luuk	167.12	31,705	38,819	6th class
ARMM Sulu	Maimbung	66.00	21,692	24,982	6th class
ARMM Sulu	Panamao	61.10	28,549	35,906	6th class
ARMM Sulu	Pandami	86.90	18,181	19,964	6th class
ARMM Sulu	Panglima Estino	45.00	18,597	21,443	6th class
ARMM Sulu	Pata	59.20	10,065	11,791	6th class
ARMM Sulu	Patikul	179.30	30,699	34,396	6th class
ARMM Sulu	Tapul	62.00	12,392	14,881	6th class
ARMM Sulu	Tongkil	124.00	12,971	15,933	6th class
ARMM Tawi-tawi	Sapa Sapa	52.01	17,728	26,242	6th class
ARMM Tawi-tawi	South Ubian	50.13	20,180	27,301	6th class
ARMM Tawi-tawi	Turtle Islands	23.30	2,359	3,600	6th class
13 Surigao del Norte	Burgos	33.35	2,785	3,043	6th class
13 Surigao del Norte	Dinagat	139.94	8,609	9,883	6th class
13 Surigao del Norte	San Benito	53.30	4,498	4,750	6th class
13 Surigao del Norte	San Isidro	58.30	5,791	6,058	6th class
13 Surigao del Norte	San Jose	27.80	27,481	25,532	6th class
13 Surigao del Norte	Santa Monica	17.40	7,219	7,757	6th class
1 Ilocos Norte	Bangui	163.59	13,774	14,327	5th class
1 Ilocos Norte	Burgos	128.90	8,227	8,534	5th class
1 Ilocos Norte	Currimao	33.08	10,133	10,615	5th class
1 Ilocos Norte	Pagudpud	194.90	17,168	19,315	5th class
1 Ilocos Norte	Pinili	89.48	14,817	15,903	5th class
1 Ilocos Sur	Caoayan	26.00	15,799	17,199	5th class
1 Ilocos Sur	San Esteban	19.62	6,508	7,174	5th class
1 Ilocos Sur	San Vicente	12.60	9,848	10,877	5th class
1 Ilocos Sur	Santa	109.10	12,801	13,918	5th class
1 Ilocos Sur	Santa Catalina	9.68	11,228	12,537	5th class
1 Ilocos Sur	Santiago	46.36	14,843	15,876	5th class
1 La Union	Caba	46.31	18,234	19,565	5th class
1 La Union	Burgos	131.32	17,003	18,142	5th class
1 La Union	Infanta	254.29	18,839	20,632	5th class
1 La Union	Labrador	90.99	16,706	19,115	5th class
1 La Union	Sual	151.77	20,929	25,832	5th class
1 La Union	Basco	49.46	5,772	6,717	5th class
1 La Union	Pamplona	173.30	18,107		5th class
1 La Union	Santa Teresita	25.00	12,566		5th class
2 Isabela	Divilican	889.49	2,593		5th class
3 Bataan	Morong	108.64	18,731	21,273	5th class
3 Bataan	Pilar	37.60	28,207	33,368	5th class
3 Pampanga	Sasmuan	91.80	2,146	23,359	5th class
3 Zambales	San Felipe	111.60	16,837	17,702	5th class
4 Aurora	Casiguran	715.43	19,578	21,459	5th class
4 Batangas	San Luis	39.20	26,423	26,924	5th class
4 Batangas	Tingloy	33.07	14,897	17,028	5th class
4 Marinduque	Buenavista	81.25	17,358	19,271	5th class
4 Occidental Mindoro	Looc	132.30	9,031	9,132	5th class
4 Occidental Mindoro	Lubang	113.10	23,819	22,896	5th class
4 Palawan	Araceli	204.30	10,556	10,894	5th class
4 Palawan	Cuyo	84.95	16,694		5th class
4 Palawan	Linapacan	195.44	7,269		5th class
4 Palawan	Magsaysay	27.70	10,714		5th class
4 Quezon	Agdangan	31.54	9,025	9,946	5th class

4 Quezon	Alabat	57.61	13,787	14,204	5th class
4 Quezon	Buenavista	161.35	21,376	22,840	5th class
4 Quezon	Burdeos	209.43	20,246	19,635	5th class
4 Quezon	Gen. Luna	101.02	20,956	21,068	5th class
4 Quezon	Macalelon	124.05	23,094	22,935	5th class
4 Quezon	Padre Burgos	69.10	17,635	18,962	5th class
4 Quezon	Panukulan	217.00	10,351	11,311	5th class
4 Quezon	Perez	57.46	10,264	10,454	5th class
4 Quezon	Pitogo	73.39	18,832	20,558	5th class
4 Quezon	Quezon	71.22	13,200	14,594	5th class
4 Quezon	San Andres	172.93	25,948	27,184	5th class
4 Quezon	Unisan	124.15	21,509	21,252	5th class
4 Romblon	Alcantara	71.90	12,246	14,144	5th class
4 Romblon	Cajidiocan	201.85	17,511	19,369	5th class
4 Romblon	Calatrava	86.70	7,734	8,878	5th class
4 Romblon	Looc	132.82	19,196	19,898	5th class
4 Romblon	Magdiwang	111.90	11,447	12,032	5th class
4 Romblon	San Agustin	140.48	20,160	21,643	5th class
4 Romblon	San Andres	112.00	13,204	13,460	5th class
5 Albay	Malilipot	48.09	26,834		5th class
5 Albay	Manito	107.40	18,451		5th class
5 Albay	Santo Domingo	76.60	25,586		5th class
5 Camarines Norte	Talisay	47.19	17,841	21,509	5th class
5 Camarines Norte	Vinzons	90.60	33,182	37,893	5th class
5 Camarines Sur	Balatan	93.09	21,075	22,537	5th class
5 Camarines Sur	Cabusao	46.80	15,966	16,201	5th class
5 Camarines Sur	Presentacion	143.80	15,346	16,410	5th class
5 Camarines Sur	Sagnay	154.76	26,530	26,619	5th class
5 Camarines Sur	San Fernando	71.76	24,196	27,433	5th class
5 Camarines Sur	San Jose	43.07	31,362	32,512	5th class
5 Camarines Sur	Siruma	141.27	13,870	16,339	5th class
5 Catanduanes	Bagamanoc	93.90	10,407	9,684	5th class
5 Catanduanes	Baras	109.50	11,843	11,653	5th class
5 Catanduanes	Bato	48.62	16,535	17,761	5th class
5 Catanduanes	Gigmoto	187.00	6,736	7,055	5th class
5 Catanduanes	Pandan	119.90	15,725	17,696	5th class
5 Catanduanes	Panganiban	79.96	8,480	8,877	5th class
5 Catanduanes	Viga	158.23	18,569	18,105	5th class
5 Masbate	Baleno	169.20	18,105	19,897	5th class
5 Masbate	Batuan	53.40	12,705	12,038	5th class
5 Masbate	Dimasalang	120.00	20,566	21,550	5th class
5 Masbate	Esperanza	80.70	17,023	16,209	5th class
5 Masbate	Mobo	148.40	25,049	28,233	5th class
5 Masbate	Monreal	128.67	18,775	19,832	5th class
5 Masbate	Palanas	171.10	23,580	24,666	5th class
5 Masbate	Pio V. Corpuz	105.50	20,649	21,519	5th class
5 Masbate	San Fernando	67.70	18,722	19,179	5th class
5 Masbate	San Jacinto	122.40	24,048	24,780	5th class
5 Sorsogon	Barcelona	61.18	18,405	19,041	5th class
5 Sorsogon	Bulusan	96.30	19,501	20,469	5th class
5 Sorsogon	Casiguran	87.13	25,804	28,057	5th class
5 Sorsogon	Juban	121.49	23,803	26,848	5th class
5 Sorsogon	Matnog	162.40	29,309	32,712	5th class
5 Sorsogon	Prieto Diaz	49.07	18,106	18,925	5th class

5 Sorsogon	Santa Magdalena	43.50	13,900	14,623	5th class
6 Aklan	Altavas	109.40	21,475	22,496	5th class
6 Aklan	Batan	79.22	26,415	27,889	5th class
6 Aklan	Makato	96.30	21,955	22,777	5th class
6 Aklan	Nabas	96.82	21,391	25,014	5th class
6 Aklan	Numancia	28.84	22,356	24,614	5th class
6 Aklan	Tangalan	80.70	16,172	17,606	5th class
6 Antique	Anini-y	66.17	18,657	19,623	5th class
6 Antique	Barbaza	154.29	17,313	18,597	5th class
6 Antique	Belison	37.50	11,174	11,621	5th class
6 Antique	Laua-an	207.80	21,069	23,258	5th class
6 Antique	Libertad	76.00	13,274	12,955	5th class
6 Antique	Pandan	137.00	24,978	27,647	5th class
6 Antique	Sebaste	96.90	12,438	14,973	5th class
6 Antique	Tibiao	246.70	19,628	21,772	5th class
6 Antique	Tobias Fornier	111.70	26,155	-	5th class
6 Capiz	Ivisan	54.20	22,720	24,256	5th class
6 Capiz	Sapian	231.25	22,534	22,912	5th class
6 Iloilo	Anilao	100.31	20,711	22,170	5th class
6 Iloilo	Balasan	54.27	22,949	25,474	5th class
6 Iloilo	Batad	53.10	15,345	17,009	5th class
6 Iloilo	Guimbal	44.50	26,316	27,707	5th class
6 Iloilo	San Joaquin	234.84	44,368	47,826	5th class
6 Iloilo	Zarraga	82.50	17,519	18,252	5th class
6 Negros Occidental	San Enrique	21.00	20,649	22,091	5th class
7 Bohol	Anda	62.69	16,108	17,863	5th class
7 Bohol	Baclayon	42.00	12,808	17,996	5th class
7 Bohol	Bien Unido	37.79	19,185		5th class
7 Bohol	Buenavista	96.00	24,215	25,960	5th class
7 Bohol	Candijay	103.90	25,729	30,389	5th class
7 Bohol	Clarin	73.17	15,961	18,040	5th class
7 Bohol	Cortes	43.40	11,133	12,702	5th class
7 Bohol	Dauis	43.33	24,041	26,415	5th class
7 Bohol	Dimiao	135.75	12,372	14,151	5th class
7 Bohol	Duero	97.30	14,299	16,485	5th class
7 Bohol	Garcia-Hernandez	151.61	21,323	21,428	5th class
7 Bohol	Getafe (Jetafe)	179.17	23,927	26,826	5th class
7 Bohol	Guindulman	127.60	26,945	29,166	5th class
7 Bohol	Lila	40.50	9,014	10,322	5th class
7 Bohol	Loay	48.24	12,450	14,433	5th class
7 Bohol	Mabini	105.04	23,370	27,250	5th class
7 Bohol	Maribojoc	49.35	14,664	16,786	5th class
7 Bohol	Panglao	47.79	18,015	21,337	5th class
7 Bohol	Pres. C.P. Garcia	54.82	19,096	20,744	5th class
7 Bohol	Trinidad	196.00	20,893	25,683	5th class
7 Bohol	Valencia	116.67	22,423	24,363	5th class
7 Cebu	Alcoy	61.63	11,539	13,497	5th class
7 Cebu	Alegria	113.30	18,403	20,677	5th class
7 Cebu	Aloquinsan	56.29	21,472	24,180	5th class
7 Cebu	Boljoon	111.20	12,318	13,380	5th class
7 Cebu	Borbon	88.30	26,020	28,571	5th class
7 Cebu	Catmon	96.30	21,647	25,083	5th class
7 Cebu	Compostela	53.90	26,499	31,446	5th class
7 Cebu	Cordova	17.15	26,613	34,032	5th class

7 Cebu	Ginatilan	70.30	11,924	14,073	5th class
7 Cebu	Madridejos	40.40	26,506	29,020	5th class
7 Cebu	Moalboal	124.86	22,021	23,402	5th class
7 Cebu	Oslob	na	21,686	22,472	5th class
7 Cebu	Pilar	na	na	11,226	5th class
7 Cebu	Ronda	57.10	16,561	16,808	5th class
7 Cebu	Samboan	56.00	15,770	16,659	5th class
7 Cebu	Santa Fe	30.24	21,720	22,956	5th class
7 Cebu	Santander	35.70	12,382	19,842	5th class
7 Cebu	Sogod	72.90	25,186	27,432	5th class
7 Cebu	Tabogon	101.35	27,735	27,827	5th class
7 Cebu	Tabuelan	141.10	16,936	19,373	5th class
7 Cebu	Tudela	33.02	9,358	10,401	5th class
7 Negros Oriental	Amlan	111.85	16,573	19,227	5th class
7 Negros Oriental	Bacong	40.30	19,177	23,219	5th class
7 Negros Oriental	Dauin	114.10	19,609	21,077	5th class
7 Negros Oriental	Jimalalud	139.50	23,514	26,756	5th class
7 Negros Oriental	San Jose	54.40	14,952	15,665	5th class
7 Negros Oriental	Zamboanguita	85.50	18,905	23,338	5th class
7 Siquijor	Larena	41.11	11,212	11,861	5th class
7 Siquijor	Lazi	70.00	16,339	18,314	5th class
7 Siquijor	Maria	75.20	11,105	12,275	5th class
7 Siquijor	San Juan	38.90	11,371	12,198	5th class
7 Siquijor	Siquijor	90.70	18,860	21,150	5th class
8 Biliran	Almeria	31.27	13,420		5th class
8 Biliran	Biliran	70.30	13,775		5th class
8 Biliran	Cabucgayan	47.52	16,498		5th class
8 Biliran	Caibiran	83.55	18,582		5th class
8 Biliran	Culaba	73.42	12,703		5th class
8 Biliran	Kawayan	61.02	16,424		5th class
8 Eastern Samar	Arteche	182.20	12,538	13,024	5th class
8 Eastern Samar	Balangiga	190.05	11,100	10,662	5th class
8 Eastern Samar	Balangkayan	207.05	8,849	8,134	5th class
8 Eastern Samar	Can-avid	273.70	15,759	17,228	5th class
8 Eastern Samar	Gen. MacArthur	117.29	10,041	10,452	5th class
8 Eastern Samar	Giporles	109.30	10,050	10,218	5th class
8 Eastern Samar	Lawa-an	162.56	9,725	9,855	5th class
8 Eastern Samar	Quinapondan	67.95	12,644	11,721	5th class
8 Eastern Samar	Salcedo	113.80	16,026	16,971	5th class
8 Eastern Samar	San Julian	115.80	11,858	21,383	5th class
8 Eastern Samar	San Policarpio	80.00	11,565	12,403	5th class
8 Eastern Samar	Sulat	150.01	14,010	14,193	5th class
8 Eastern Samar	Taft	239.70	16,613	16,435	5th class
8 Leyte	Babatngon	115.18	19,653	20,946	5th class
8 Leyte	Barugo	84.62	26,171	26,919	5th class
8 Leyte	Calubian	100.95	31,074	28,421	5th class
8 Leyte	Hindang	50.04	16,567	18,493	5th class
8 Leyte	Inopacan	94.62	18,864	18,680	5th class
8 Leyte	MacArthur	57.57	16,645	16,844	5th class
8 Leyte	Mayorga	144.29	11,073	12,650	5th class
8 Leyte	Merida	95.21	23,822	25,326	5th class
8 Leyte	San Isidro	122.50	33,204	29,410	5th class
8 Leyte	San Miguel	145.11	14,504	15,153	5th class
8 Leyte	Tolosa	22.54	13,927	14,539	5th class

8 Northern Samar	Allen	47.60	17,972		5th class
8 Northern Samar	Bobon	130.00	15,800		5th class
8 Northern Samar	Capul	35.56	9,964		5th class
8 Northern Samar	Gamay	115.10	19,457		5th class
8 Northern Samar	Lapinig	57.30	9,813		5th class
8 Northern Samar	Lavezares	119.50	20,492		5th class
8 Northern Samar	Palapag	179.60	24,947		5th class
8 Northern Samar	Pambujan	163.90	22,152		5th class
8 Northern Samar	San Jose	29.85	12,556		5th class
8 Northern Samar	San Roque	152.98	18,094		5th class
8 Northern Samar	Victoria	186.70	11,291		5th class
8 Samar	Jiabong	67.70	14,484		5th class
8 Samar	Marabut	143.55	10,355		5th class
8 Samar	Motiong	174.40	13,177		5th class
8 Samar	Pagsanghan	30.00	7,350		5th class
8 Samar	Pinabacdao	183.06	11,590		5th class
8 Samar	Santa Margarita	144.40	19,146		5th class
8 Samar	Santa Rita	222.50	28,930		5th class
8 Samar	Santo Nino	29.53	12,761		5th class
8 Samar	Tagapul-an	28.70	7,949		5th class
8 Samar	Talalora	27.96	6,565		5th class
8 Samar	Tarangan	132.49	18,791		5th class
8 Samar	Villareal	98.54	22,390		5th class
8 Samar	Zumarraga	38.55	14,505		5th class
8 Southern Leyte	Anahawan	58.09	6,471		5th class
8 Southern Leyte	Bontoc	102.10	24,047		5th class
8 Southern Leyte	Hinundayan	59.90	10,617		5th class
8 Southern Leyte	Libagon	98.62	10,754		5th class
8 Southern Leyte	Liloan	96.30	17,160		5th class
8 Southern Leyte	Macrohon	77.78	20,093		5th class
8 Southern Leyte	Malitbog	140.42	17,976		5th class
8 Southern Leyte	Padre Burgos	48.60	7,593		5th class
8 Southern Leyte	Pintuyan	56.60	8,388		5th class
8 Southern Leyte	Saint Bernard	100.20	21,363		5th class
8 Southern Leyte	San Francisco	68.60	9,543		5th class
8 Southern Leyte	San Juan	68.30	11,392		5th class
8 Southern Leyte	San Ricardo	45.00	7,869		5th class
8 Southern Leyte	Silago	215.05	9,785		5th class
8 Southern Leyte	Tomas Oppus	49.26	12,609		5th class
9 Basilan	Lantawan	377.50	25,613		5th class
9 Basilan	Maluso	145.10	26,844		5th class
9 Basilan	Tuburan	545.00	31,249		5th class
9 Zamboanga del Norte	Rizal	80.03	14,363	13,501	5th class
9 Zamboanga del Norte	Sibutad	15.04	16,295	15,635	5th class
9 Zamboanga del Norte	Siraway	222.50	22,093	16,534	5th class
9 Zamboanga del Sur	Dimataling	141.80	23,116	25,843	5th class
9 Zamboanga del Sur	Dinas	121.10	28,364	31,570	5th class
9 Zamboanga del Sur	Kumalarang	1511.49	24,446	24,926	5th class
9 Zamboanga del Sur	Mabuhay	82.85	19,512	25,199	5th class
9 Zamboanga del Sur	Payao	127.70	25,013	27,036	5th class
9 Zamboanga del Sur	Pitogo	95.94	19,870	21,064	5th Class
9 Zamboanga del Sur	San Pablo	149.90	23,147	23,450	5th class
9 Zamboanga del Sur	Tabina	88.90	20,210	21,882	5th class
9 Zamboanga del Sur	Talusan	58.15	15,012	18,394	5th class

9 Zamboanga del Sur	Tungawan	473.28	28,552	33,194	5th class
9 Zamboanga del Sur	Vicenzo A. Sagun	63.00	17,410	19,072	5th class
10 Camiguin	Catarman	53.75	14,756	15,386	5th class
10 Camiguin	Mahinog	32.60	11,351	12,592	5th class
10 Camiguin	Sagay	44.13	9,243	10,356	5th class
10 Misamis Occidental	Aloran	118.06	22,275	23,127	5th class
10 Misamis Occidental	Baliangao	81.72	13,139	14,552	5th class
10 Misamis Occidental	Clarin	74.30	26,202	27,810	5th class
10 Misamis Occidental	Lopez Jaena	94.70	20,444	20,948	5th class
10 Misamis Occidental	Panaon	46.80	8,655	7,441	5th class
10 Misamis Occidental	Sapang Dalaga	89.20	21,084	17,794	5th class
10 Misamis Occidental	Sinacaban	75.59	14,735	16,030	5th class
10 Misamis Occidental	Tudela	187.30	22,805	23,047	5th class
10 Misamis Oriental	Alubijid	103.45	21,765	23,397	5th class
10 Misamis Oriental	Balingoan	57.80	7,548	8,197	5th class
10 Misamis Oriental	Gitagum	43.40	11,327	13,522	5th class
10 Misamis Oriental	Initao	101.33	23,340	27,035	5th class
10 Misamis Oriental	Kinoguitan	42.56	10,406	10,519	5th class
10 Misamis Oriental	Lagonglong	83.78	15,258	16,882	5th class
10 Misamis Oriental	Laguindingan	16.74	16,521	18,451	5th class
10 Misamis Oriental	Libertad	22.47	9,258	10,231	5th class
10 Misamis Oriental	Lugait	27.45	13,012	14,704	5th class
10 Misamis Oriental	Magsaysay	147.70	23,730	24,550	5th class
10 Misamis Oriental	Na-awan	88.50	14,578	16,173	5th class
10 Misamis Oriental	Salay	92.79	18,923	19,664	5th class
10 Misamis Oriental	Talisayan	140.33	19,742	19,959	5th class
11 Davao del Sur	Sarangani	97.72	16,648	18,391	5th class
11 Davao del Sur	Sulop	100.00	25,968	27,340	5th class
12 Lanao del Norte	Baroy	72.35	32,063	20,392	5th class
12 Lanao del Norte	Kauswagan	60.37	18,349	15,364	5th class
ARMM Sulu	Pangutaran	258.10	22,846	25,908	5th class
ARMM Sulu	Parang	163.30	48,124	54,994	5th class
ARMM Sulu	Siasi	102.54	50,555	59,069	5th class
ARMM Sulu	Talipao	166.50	66,568	73,015	5th class
ARMM Tawi-tawi	Panglima Sugala	281.10	24,398	33,315	5th class
ARMM Tawi-tawi	Languyan	281.83	32,738	42,040	5th class
ARMM Tawi-tawi	Simunul	67.90	29,254	31,962	5th class
ARMM Tawi-tawi	Sitangkai	187.50	36,027	52,772	5th class
ARMM Tawi-tawi	Tandubas	246.50	20,646	24,900	5th class
13 Agusan del Norte	Carmen	214.44	15,967	17,307	5th class
13 Agusan del Norte	Tubay	138.09	16,672	17,668	5th class
13 Surigao del Norte	Bacuag	95.85	12,309	12,206	5th class
13 Surigao del Norte	Basilisa	115.00	24,141	26,489	5th class
13 Surigao del Norte	Cagdianao	249.48	11,175	12,886	5th class
13 Surigao del Norte	Dapa	91.90	16,435	19,508	5th class
13 Surigao del Norte	Del Carmen	151.68	12,316	13,558	5th class
13 Surigao del Norte	Gen. Luna	41.30	12,554	12,347	5th class
13 Surigao del Norte	Gigaquit	139.10	15,261	16,155	5th class
13 Surigao del Norte	Libjo	207.50	14,928	16,610	5th class
13 Surigao del Norte	Loreto	255.87	8,048	8,751	5th class
13 Surigao del Norte	Malimono	80.13	14,191	14,597	5th class
13 Surigao del Norte	Pilar	77.11	8,299	8,401	5th class
13 Surigao del Norte	San Francisco	43.80	10,005	11,521	5th class
13 Surigao del Norte	Socorro	132.50	15,208	17,932	5th class

13 Surigao del Norte	Tagana-an	77.29	12,159	12,844	5th class
13 Surigao del Norte	Tubajon	90.00	6,155	6,800	5th class
13 Surigao del Sur	Bayabas	117.84	6,423	7,706	5th class
13 Surigao del Sur	Carmen	160.01	8,248	9,551	5th class
13 Surigao del Sur	Cortes	127.08	13,054	14,825	5th class
13 Surigao del Sur	Madrid	141.20	12,992	14,066	5th class
1 Ilocos Norte	Bacarra	66.07	27,827	29,668	4th class
1 Ilocos Norte	Badoc	66.41	26,737	27,862	4th class
1 Ilocos Norte	Paoay	75.24	21,253	21,745	4th class
1 Ilocos Norte	Pasuquin	189.39	23,027	24,739	4th class
1 Ilocos Sur	Magsingal	84.98	23,565	25,580	4th class
1 Ilocos Sur	San Juan	64.37	21,222	23,146	4th class
1 Ilocos Sur	Santa Lucia	49.72	20,341	22,363	4th class
1 Ilocos Sur	Santa Maria	63.31	24,580	26,396	4th class
1 Ilocos Sur	Santo Domingo	57.80	22,727	24,520	4th class
1 Ilocos Sur	Sinait	65.56	22,608	24,070	4th class
1 Ilocos Sur	Tagudin	141.17	30,697	34,427	4th class
1 La Union	Aringay	109.50	36,743	41,422	4th class
1 La Union	Bangar	47.40	28,374	31,491	4th class
1 La Union	Luna	52.60	29,974	32,259	4th class
1 La Union	San Juan	57.12	27,795	30,393	4th class
1 La Union	Santo Tomas	64.00	28,192	31,204	4th class
1 La Union	Agno	169.75	23,326	25,077	4th class
1 La Union	Anda	74.55	28,739	32,833	4th class
1 La Union	Dasol	230.90	23,551	25,381	4th class
1 La Union	Abulug	162.60	23,548		4th class
1 La Union	Ballesteros	120.00	25,644		4th class
1 La Union	Buguey	164.50	25,058		4th class
1 La Union	Calayan	494.53	12,243		4th class
1 La Union	Claveria	194.80	25,363		4th class
1 La Union	Sanchez-Mira	198.80	18,904		4th class
1 La Union	Santa Ana	441.30	18,640		4th class
2 Isabela	Maconacon	135.40	5,895		4th class
3 Bataan	Abucay	79.72	29,270	31,801	4th class
3 Bataan	Bagac	231.20	20,906	22,353	4th class
3 Bataan	Hermosa	157.00	38,764	46,254	4th class
3 Bataan	Orion	54.16	39,537	44,067	4th class
3 Bataan	Samal	35.27	24,560	27,410	4th class
3 Pampanga	Masantol	48.25	45,326	48,120	4th class
3 Zambales	Cabangan	175.29	17,231	18,848	4th class
3 Zambales	Candelaria	293.56	20,201	23,399	4th class
3 Zambales	Iba	153.40	31,503	34,678	4th class
3 Zambales	Palauig	310.00	26,794	29,983	4th class
3 Zambales	San Antonio	188.12	25,765	28,248	4th class
3 Zambales	San Narciso	71.60	21,651	23,522	4th class
4 Aurora	Baler	92.55	26,919	29,923	4th class
4 Aurora	Dilasag	306.25	12,825	14,676	4th class
4 Aurora	Dingalan	304.55	19,325	20,157	4th class
4 Aurora	Dipaculao	361.64	21,044	23,064	4th class
4 Batangas	Calatagan	112.00	40,707	45,068	4th class
4 Batangas	Lian	76.80	36,000	39,129	4th class
4 Batangas	Lobo	189.29	31,849	33,909	4th class
4 Batangas	Mabini	44.47	33,499	37,474	4th class
4 Batangas	Taal	29.76	38,722	43,455	4th class

4 Cavite	Maragondon	92.11	25,828	31,227	4th class
4 Cavite	Noveleta	16.43	27,306	31,959	4th class
4 Cavite	Ternate	54.68	14,236	17,179	4th class
4 Marinduque	Gasan	78.60	26,944	29,799	4th class
4 Marinduque	Mogpog	98.47	28,201	31,330	4th class
4 Marinduque	Torrijos	189.78	25,807	28,000	4th class
4 Occidental Mindoro	Abra de Ilog	533.70	15,253	22,212	4th class
4 Occidental Mindoro	Calintaan	382.50	21,687	23,503	4th class
4 Occidental Mindoro	Mamburao	339.50	25,627	30,378	4th class
4 Occidental Mindoro	Paluan	564.50	8,860	12,023	4th class
4 Occidental Mindoro	Rizal	242.50	27,112	29,785	4th class
4 Oriental Mindoro	Baco	241.70	25,915	30,167	4th class
4 Oriental Mindoro	Bansud	343.47	31,901	35,032	4th class
4 Oriental Mindoro	Bulalacao	305.10	24,047	27,698	4th class
4 Oriental Mindoro	Gloria	245.52	35,771	38,667	4th class
4 Oriental Mindoro	Pola	159.34	22,156	31,938	4th class
4 Oriental Mindoro	Puerto Galera	247.85	19,485	21,925	4th class
4 Oriental Mindoro	Roxas	87.10	34,045	41,265	4th class
4 Oriental Mindoro	San Teodoro	369.10	12,983	13,806	4th class
4 Palawan	Balabac	581.60	21,677	25,257	4th class
4 Palawan	Busuanga	392.90	15,843	16,287	4th class
4 Palawan	Dumaran	435.00	13,980		4th class
4 Palawan	El Nido	923.26	21,948		4th class
4 Quezon	Guinayangan	104.70	36,775	37,164	4th class
4 Quezon	Infanta	342.76	39,772	50,992	4th class
4 Quezon	Polilio	253.00	24,626	24,105	4th class
4 Quezon	San Narciso	263.58	36,535	38,474	4th class
4 Romblon	Odiongan	185.67	35,527	36,612	4th class
4 Romblon	Romblon	127.10	34,290	36,612	4th class
5 Albay	Bacacay	122.13	56,295		4th class
5 Albay	Malinao	107.50	33,872		4th class
5 Albay	Pio Duran	133.70	41,850		4th class
5 Albay	Rapu-rapu	161.80	28,797		4th class
5 Camarines Norte	Basud	255.09	30,190	33,885	4th class
5 Camarines Norte	Capalonga	291.60	25,336	26,577	4th class
5 Camarines Norte	Mercedes	155.10	38,641	41,713	4th class
5 Camarines Norte	Paracale	194.80	43,824	42,453	4th class
5 Camarines Norte	Santa Elena	137.99	33,955	26,064	4th class
5 Camarines Sur	Bato	107.12	38,771	42,739	4th class
5 Camarines Sur	Caramoan	276.00	39,416	39,642	4th class
5 Camarines Sur	Del Gallego	286.80	18,760	20,456	4th class
5 Camarines Sur	Gachitorena	243.80	19,481	23,021	4th class
5 Camarines Sur	Lupi	263.10	25,390	26,148	4th class
5 Camarines Sur	Minalabac	126.10	37,574	41,734	4th class
5 Camarines Sur	Pasacao	149.54	36,070	38,423	4th class
5 Camarines Sur	Tigaon	72.35	39,186	40,210	4th class
5 Catanduanes	Caramoran	263.67	21,963	23,790	4th class
5 Catanduanes	San Andres	167.31	30,242	31,463	4th class
5 Masbate	Balud	231.33	27,933	30,068	4th class
5 Masbate	Cataingan	204.40	42,065	46,593	4th class
5 Masbate	Cawayan	276.30	45,834	52,256	4th class
1 Masbate	Claveria	182.98	35,648	38,398	4th class
1 Masbate	Mandaon	280.90	28,716	31,572	4th class
1 Masbate	Placer	193.03	40,394	44,418	4th class

1 Masbate	San Pascual	246.65	34,705	37,868	4th class
1 Masbate	Uson	163.20	39,251	43,825	4th class
1 Sorsogon	Castilla	186.20	40,506	45,072	4th class
1 Sorsogon	Donsol	156.20	36,013	39,995	4th class
1 Sorsogon	Magallanes	150.09	28,707	31,315	4th class
6 Aklan	Ibajay	158.90	36,184	39,643	4th class
6 Aklan	Malay	57.30	19,406	24,519	4th class
6 Aklan	New Washington	66.69	31,896	33,981	4th class
6 Antique	Bugasong	203.71	26,721	28,294	4th class
6 Antique	Caluya	132.12	17,101	20,049	4th class
6 Antique	Culasi	228.56	30,431	32,993	4th class
6 Antique	Hamtic	139.60	36,167	38,230	4th class
6 Antique	Patnongon	126.10	29,235	31,555	4th class
6 Antique	San Jose	25.82	42,927	48,261	4th class
6 Capiz	Panay	116.37	39,124	40,599	4th class
6 Capiz	Pilar	155.87	36,464	38,903	4th class
6 Capiz	Pontevedra	269.97	38,223	40,103	4th class
6 Capiz	Pres. Roxas	51.48	24,695	27,531	4th class
6 Guimaras	Buenavista	141.20	37,681	41,717	4th class
6 Guimaras	Nueva Valencia	147.80	27,158	30,716	4th class
6 Iloilo	Ajuy	193.40	38,415	45,192	4th class
6 Iloilo	Banate	118.90	24,976	27,263	4th class
6 Iloilo	Barotac Viejo	188.13	33,652	36,314	4th class
6 Iloilo	Carles	150.09	46,218	53,404	4th class
6 Iloilo	Concepcion	97.00	30,111	34,240	4th class
6 Iloilo	Estancia	31.90	30,673	35,842	4th class
6 Iloilo	Leganes	32.20	19,235	23,475	4th class
6 Iloilo	San Dionisio	127.06	25,263	28,702	4th class
6 Iloilo	Tigbauan	60.60	47,158	50,446	4th class
6 Negros Occidental	Manapla	112.86	44,301	49,581	4th class
6 Negros Occidental	Pontevedra	112.50	42,443	42,089	4th class
6 Negros Occidental	Pulupandan	23.00	24,932	25,849	4th class
6 Negros Occidental	Toboso	123.40	38,623	40,712	4th class
6 Negros Occidental	Valladolid	48.03	31,380	32,576	4th class
7 Bohol	Calape	64.64	26,051	27,921	4th class
7 Bohol	Inabanga	168.49	40,015	40,714	4th class
7 Bohol	Jagna	120.17	29,354	30,643	4th class
7 Bohol	Loon	116.20	32,716	45,215	4th class
7 Bohol	Tubigon	76.56	34,578	40,385	4th class
7 Cebu	Asturias	190.45	33,355	38,961	4th class
7 Cebu	Badian	110.10	29,200	30,400	4th class
7 Cebu	Barili	122.21	52,060	57,764	4th class
7 Cebu	Carmen	66.40	32,357	37,351	4th class
7 Cebu	Dalaguete	135.40	48,778	57,331	4th class
7 Cebu	Dumajug	85.32	35,279	39,666	4th class
7 Cebu	Liloan	52.10	50,973	64,970	4th class
7 Cebu	Pinamungajan	na	44,009	51,715	4th class
7 Cebu	San Fernando	69.39	38,700	48,235	4th class
7 Cebu	San Francisco	115.60	39,115	41,327	4th class
7 Cebu	San Remigio	119.80	38,501	44,028	4th class
7 Cebu	Sibonga	133.40	35,897	38,281	4th class
7 Negros Oriental	Ayungon	153.60	36,928	40,744	4th class
7 Negros Oriental	Basay	237.80	18,500	21,366	4th class
7 Negros Oriental	Bindoy	173.70	29,472	34,773	4th class

7 Negros Oriental	La Libertad	139.60	32,456	35,122	4th class
7 Negros Oriental	Manjuyod	264.60	34,545	37,863	4th class
7 Negros Oriental	Tayasan	154.20	31,567	30,477	4th class
7 Negros Oriental	Vallehermoso	152.90	31,110	33,914	4th class
8 Biliran	Naval	105.14	32,954		4th class
8 Eastern Samar	Dolores	308.58	34,272	32,812	4th class
8 Eastern Samar	Guiuan	172.35	35,447	38,694	4th class
8 Eastern Samar	Llorente	496.07	16,071	19,336	4th class
8 Eastern Samar	Maydolong	399.63	12,201		4th class
8 Eastern Samar	Oras	61.42	31,533	31,315	4th class
8 Leyte	Albuera	303.35	33,939	34,335	4th class
8 Leyte	Bato	69.94	29,810	95,630	4th class
8 Leyte	Capoocan	185.40	26,384	27,593	4th class
8 Leyte	Carigara	114.02	42,302	43,455	4th class
8 Leyte	Dulag	110.70	34,742	38,897	4th class
8 Leyte	Leyte	131.28	34,126	35,241	4th class
8 Leyte	Matalom	132.00	28,232	30,216	4th class
8 Leyte	Palompon	126.07	50,319	50,754	4th class
8 Leyte	Tabango	96.62	31,837	15,042	4th class
8 Leyte	Tanauan	78.41	40,716	45,056	4th class
8 Leyte	Villaba	150.31	34,674	36,042	4th class
8 Northern Samar	Laoang	246.82	7,438		4th class
8 Northern Samar	Mondragon	288.90	25,504		4th class
8 Northern Samar	San Isidro	255.90	22,991		4th class
8 Samar	Calbiga	283.70	18,070		4th class
8 Samar	Paranas	556.12	24,235		4th class
8 Southern Leyte	Hinunangan	155.90	22,170		4th class
8 Southern Leyte	Sogod	192.70	31,062		4th class
9 Basilan	Lamitan	254.45	54,433		4th class
9 Basilan	Sumisip	567.60	42,003		4th class
9 Basilan	Tipo-tipo	321.90	46,866		4th class
9 Zamboanga del Norte	Pres. M.A. Roxas	206.25	31,662	33,659	4th class
9 Zamboanga del Norte	Salug	206.60	28,411	28,914	4th class
9 Zamboanga del Norte	Sibuco	782.54	23,243	24,411	4th class
9 Zamboanga del Sur	Alicia	216.20	27,959	29,954	4th class
9 Zamboanga del Sur	Buug	134.06	34,175	33,623	4th class
9 Zamboanga del Sur	Dumalinao	119.90	23,985	26,030	4th class
9 Zamboanga del Sur	Labangan	157.90	32,264	34,530	4th class
9 Zamboanga del Sur	Lapuyan	329.60	23,512	24,366	4th class
9 Zamboanga del Sur	Malangas	235.53	28,916	29,770	4th class
9 Zamboanga del Sur	Margosatubig	93.47	29,597	34,461	4th class
9 Zamboanga del Sur	Naga	246.30	31,421	35,176	4th class
9 Zamboanga del Sur	Roseller T. Lim	300.00	31,291	34,152	4th class
9 Zamboanga del Sur	Siay	190.20	29,303	32,844	4th class
9 Zamboanga del Sur	Tukuran	144.91	30,506	33,747	4th class
10 Camiguin	Mambajao	89.00	27,770	30,806	4th class
10 Misamis Occidental	Jimenez	85.20	21,434	23,212	4th class
10 Misamis Occidental	Plaridel	80.00	29,134	29,279	4th class
10 Misamis Oriental	Balingasag	147.11	46,018	51,782	4th class
10 Misamis Oriental	El Salvador	87.13	31,500	34,650	4th class
10 Misamis Oriental	Manticao	123.01	22,630	24,072	4th class
10 Misamis Oriental	Medina	148.29	23,319	25,810	4th class
10 Misamis Oriental	Opol	80.55	23,958	36,389	4th class
10 Misamis Oriental	Tagoloan	117.73	40,929	46,649	4th class

10 Misamis Oriental	Villanueva	48.80	21,310	24,867	4th class
11 Compostela Valley	Mabini	273.80	29,548	32,058	4th class
11 Davao del Sur	Padada	72.70	22,384	24,112	4th class
11 Davao del Sur	Santa Maria	175.00	41,919	45,571	4th class
11 Davao Oriental	Boston	256.31	10,424	10,266	4th class
11 Davao Oriental	Cateel	467.12	27,211	28,655	4th class
11 Davao Oriental	San Isidro	265.20	30,279	31,705	4th class
11 Davao Oriental	Tarragona	300.76	19,779	22,846	4th class
12 Lanao del Norte	Kolambugan	134.55	24,645	24,180	4th class
12 Lanao del Norte	Tubod	240.00	41,295	43,067	4th class
ARMM Maguindanao	Dinaig	461.80	59,341	71,569	4th class
ARMM Maguindanao	Upi	472.20	46,440	28,186	4th class
ARMM Tawi-tawi	Bongao	139.90	46,672	58,174	4th class
13 Agusan del Norte	Jabonga	293.00	20,196	20,501	4th class
13 Agusan del Norte	Magallanes	44.31	17,523	19,895	4th class
13 Surigao del Norte	Claver	322.60	14,300	16,403	4th class
13 Surigao del Norte	Placer	62.67	20,712	21,542	4th class
13 Surigao del Sur	Barobo	242.50	32,226	34,558	4th class
13 Surigao del Sur	Cantilan	240.10	24,061	26,553	4th class
13 Surigao del Sur	Carrascal	265.80	12,018	13,157	4th class
13 Surigao del Sur	Lianga	161.12	25,005	25,014	4th class
13 Surigao del Sur	San Agustin	269.76	13,768	14,845	4th class
13 Surigao del Sur	Tago	269.88	27,100	29,721	4th class
1 Ilocos Sur	Narvacan	117.22	35,489	38,435	3rd class
1 Ilocos Sur	Santa Cruz	88.78	30,145	34,433	3rd class
1 La Union	Bacnotan	76.60	32,634	35,419	3rd class
1 La Union	Balaoan	68.70	31,420	33,786	3rd class
1 La Union	Rosario	73.98	38,376	43,497	3rd class
1 La Union	Bani	179.65	37,463	42,824	3rd class
1 La Union	Binmaley	118.50	62,375	72,625	3rd class
1 La Union	Bolinao	197.22	53,127	61,068	3rd class
1 La Union	San Fabian	92.40	59,904	66,274	3rd class
1 La Union	Gonzaga	486.20	27,997		3rd class
1 La Union	Lal-lo	702.80	32,156		3rd class
2 Isabela	Palanan	880.24	13,220		3rd class
3 Bataan	Orani	58.99	48,695	52,501	3rd class
3 Bulacan	Bulacan	72.90	54,236		3rd class
3 Bulacan	Obando	52.10	51,488		3rd class
3 Zambales	Botolan	735.28	41,084	46,602	3rd class
3 Zambales	Masinloc	256.00	34,942	39,724	3rd class
3 Zambales	Santa Cruz	438.46	43,623	49,269	3rd class
3 Zambales	Subic	287.16	57,099	63,019	3rd class
4 Aurora	San Luis	623.86	20,947	21,256	3rd class
4 Marinduque	Boac	385.60	44,609	48,504	3rd class
4 Occidental Mindoro	Santa Cruz	681.40	21,911	26,887	3rd class
4 Oriental Mindoro	Mansalay	513.10	29,765	39,041	3rd class
4 Palawan	Aborlan	908.80	21,650	25,540	3rd class
4 Palawan	Rizal	1256.47	21,876		3rd class
4 Palawan	San Vicente	1462.94	19,449		3rd class
4 Quezon	Atimonan	239.66	54,283	56,716	3rd class
4 Quezon	Catanauan	253.07	52,420	57,736	3rd class
4 Quezon	Mulanay	420.00	43,617	45,903	3rd class
4 Quezon	Pagbilao	170.96	49,605	53,442	3rd class
4 Quezon	Real	563.89	27,641	30,984	3rd class

4 Quezon	San Francisco	163.05	43,457	48,310	3rd class
5 Albay	Libon	222.76	63,190		3rd class
5 Albay	Oas	253.61	56,536		3rd class
5 Camarines Norte	Jose Panganiban	214.40	45,396	46,064	3rd class
5 Camarines Sur	Bula	151.30	54,650	57,474	3rd class
5 Camarines Sur	Calabanga	163.80	59,164	67,408	3rd class
5 Camarines Sur	Lagonoy	378.00	40,126	42,636	3rd class
5 Camarines Sur	Ragay	400.22	44,154	47,743	3rd class
5 Camarines Sur	Sipocot	243.43	83,392	56,576	3rd class
5 Camarines Sur	Tinambac	351.62	49,185	55,608	3rd class
5 Masbate	Aroroy	440.40	55,110	58,751	3rd class
5 Masbate	Milagros	565.40	38,925	44,575	3rd class
5 Sorsogon	Gubat	134.51	49,716	52,707	3rd class
5 Sorsogon	Pilar	248.10	51,318	57,898	3rd class
6 Guimaras	Jordan	315.60	25,321	28,745	3rd class
6 Iloilo	Barotac Nuevo	94.49	40,968	45,804	3rd class
6 Iloilo	Dumangas	116.76	51,092	56,291	3rd class
6 Iloilo	Miag-ao	156.80	52,276	57,092	3rd class
6 Iloilo	Oton	84.60	56,821	65,374	3rd class
6 Negros Occidental	Binalbagan	185.40	54,664	58,280	3rd class
6 Negros Occidental	E.B. Magalona	113.25	54,421	54,490	3rd class
6 Negros Occidental	Hinoba-an	414.10	40,819	50,809	3rd class
6 Negros Occidental	Ilog	281.70	43,905	46,525	3rd class
7 Bohol	Talibon	375.72	44,854	54,147	3rd class
7 Bohol	Ubay	335.06	50,745	59,827	3rd class
7 Cebu	Argao	207.50	54,447	61,010	3rd class
7 Cebu	Balamban	337.00	49,983	59,922	3rd class
7 Cebu	Bantayan	81.68	62,260	68,125	3rd class
7 Cebu	Carcar	96.10	78,726	89,199	3rd class
7 Cebu	Consolacion	147.20	49,205	62,298	3rd class
7 Cebu	Daanbantayan	92.27	64,845	69,336	3rd class
7 Cebu	Madellin	73.01	41,796	43,113	3rd class
7 Cebu	Minglanilla	65.60	65,523	77,268	3rd class
7 Cebu	Tuburan	224.50	47,818	51,845	3rd class
7 Negros Oriental	Siaton	335.90	57,313	64,258	3rd class
8 Leyte	Hilongos	192.92	50,744	51,462	3rd class
8 Leyte	Palo	221.27	43,095	47,982	3rd class
8 Northern Samar	Catarman	317.05	61,705		3rd class
8 Samar	Basey	572.70	40,114		3rd class
9 Zamboanga del Norte	Siocon	503.00	28,196	32,699	3rd class
9 Zamboanga del Sur	Ipil	241.60	43,991	52,481	3rd class
9 Zamboanga del Sur	Kabasalan	329.20	34,483	37,619	3rd class
10 Misamis Oriental	Jasaan	77.02	33,598	39,969	3rd class
11 Davao del Sur	Don Marcelino	511.50	29,968	33,403	3rd class
11 Davao del Sur	Hagonoy	79.80	41,752	43,871	3rd class
11 Davao del Sur	Malalag	492.59	30,733	33,334	3rd class
11 Davao Oriental	Banaybanay	364.90	33,082	33,714	3rd class
11 Davao Oriental	Caraga	642.70	31,617	33,481	3rd class
11 Davao Oriental	Gov. Generoso	304.53	41,433	42,705	3rd class
11 Davao Oriental	Manay	418.36	35,428	36,697	3rd class
11 Sarangani	Alabel	377.50	46,527	60,799	3rd class
11 Sarangani	Kiamba	328.68	39,717	44,724	3rd class
11 Sarangani	Maasim	619.40	31,641	39,424	3rd class
11 Sarangani	Maitum	340.60	35,009	35,536	3rd class

11	Sarangani	Malapatan	670.00	47,911	53,876	3rd class
12	Sultan Kudarat	Kalamansig	699.20	35,900	44,645	3rd class
ARMM	Sulu	Jolo	22.24	76,948	87,998	3rd class
13	Agusan del Norte	Buenavista	475.61	45,011	50,612	3rd class
13	Agusan del Norte	Nasipit	144.40	34,255	35,817	3rd class
13	Surigao del Sur	Cagwait	214.10	17,001	18,577	3rd class
13	Surigao del Sur	Hinatuan	299.10	34,602	36,170	3rd class
13	Surigao del Sur	Lanuza	290.60	8,843	10,057	3rd class
13	Surigao del Sur	Lingig	256.90	23,477	26,487	3rd class
13	Surigao del Sur	Marihatag	312.50	13,254	16,394	3rd class
13	Surigao del Sur	Tandag	291.73	39,222	44,327	3rd class
1	Ilocos Sur	Cabugao	110.88	28,567	31,459	2nd class
1	La Union	Agoo	52.82	47,721	51,923	2nd class
1	La Union	Bauang	73.15	56,189	63,373	2nd class
1	La Union	Lingayen	67.70	80,758	88,891	2nd class
1	La Union	Magaldan	56.87	73,351	82,142	2nd class
1	La Union	Aparri	286.64	53,639		2nd class
1	La Union	Gattaran	707.50	44,034		2nd class
3	Bataan	Mariveles	47.24	76,626	85,779	2nd class
3	Bulacan	Paombong	46.34	33,149		2nd class
4	Batangas	Calaca	114.58	51,459	58,489	2nd class
4	Batangas	Lemery	109.80	58,073	66,528	2nd class
4	Batangas	San Juan	53.29	71,913	78,169	2nd class
4	Cavite	Kawit	18.93	56,993	62,751	2nd class
4	Cavite	Naic	76.24	58,046	72,683	2nd class
4	Cavite	Rosario	38.16	54,086	73,665	2nd class
4	Cavite	Tanza	95.59	77,839	110,517	2nd class
4	Oriental Mindoro	Bongabong	498.20	57,403	59,477	2nd class
4	Oriental Mindoro	Pinamalayan	277.30	35,203	72,951	2nd class
4	Palawan	Bataraza	726.20	33,303	41,458	2nd class
4	Palawan	Narra	822.65	48,339		2nd class
4	Palawan	Quezon	943.19	36,856		2nd class
4	Quezon	Calauag	196.15	60,941	65,907	2nd class
4	Quezon	Gen. Nakar	1343.75	21,121	23,678	2nd class
4	Quezon	Gumaca	189.65	53,568	60,191	2nd class
4	Quezon	Mauban	415.98	47,442	50,134	2nd class
4	Quezon	Tagkawayan	654.04	40,866	44,290	2nd class
5	Camarines Sur	Libmanan	336.20	85,337	88,476	2nd class
5	Catanduanes	Virac	157.40	49,912	57,067	2nd class
5	Sorsogon	Bulan	196.96	74,219	82,688	2nd class
6	Negros Occidental	Calatrava	504.50	69,902	74,623	2nd class
6	Negros Occidental	Hinigaran	160.80	71,159	74,997	2nd class
7	Cebu	Bogo	93.20	57,509	63,869	2nd class
7	Cebu	Naga	102.34	60,010	80,189	2nd class
7	Negros Oriental	Guihulngan	337.70	80,660	83,448	2nd class
7	Negros Oriental	Santa Catalina	523.10	62,526	67,197	2nd class
8	Eastern Samar	Borongan	146.11	48,638	55,141	2nd class
8	Leyte	Abuyog	688.25	48,905	53,837	2nd class
8	Samar	Catbalogan	274.22	76,324		2nd class
9	Zamboanga del Norte	Sindangan	451.00	72,098	80,133	2nd class
11	Compostela Valley	Maco	303.80	58,609	65,181	2nd class
11	Compostela Valley	Pantukan	739.42	56,780	61,801	2nd class
11	Davao del Norte	Carmen	282.50	56,260	55,144	2nd class
11	Davao del Sur	Jose Abad Santos	756.50	47,833	57,147	2nd class

11 Davao del Sur	Santa Cruz	319.91	59,139	63,317	2nd class
11 Davao Oriental	Lupon	886.39	50,668	57,092	2nd class
12 Sarangani	Glan	610.30	73,768	83,051	2nd class
12 Sultan Kudarat	Lebak	482.70	61,884	70,899	2nd class
12 Sultan Kudarat	Palimbang	748.10	40,646	43,742	2nd class
ARMM Maguindanao	Parang	731.20	49,562	60,935	2nd class
ARMM Maguindanao	Sultan Kudarat	611.51	76,125	94,861	2nd class
13 Agusan del Norte	Cabadbaran	327.46	51,905	55,006	2nd class
1 La Union	Baggao	920.60	60,060		1st class
1 La Union	Penablanca	1193.20	33,190		1st class
2 Isabela	San Mariano	1469.50	37,861		1st class
3 Bataan	Limay	5.12	40,092	46,620	1st class
3 Bulacan	Hagonoy	103.10	41,372		1st class
3 Bulacan	Malolos	67.25	147,414		1st class
4 Batangas	Balayan	108.73	62,244	67,170	1st class
4 Batangas	Bauan	66.60	64,190	72,604	1st class
4 Batangas	Nasugbu	278.51	83,874	96,113	1st class
4 Batangas	San Pascual	50.70	40,849	49,041	1st class
4 Cavite	Bacoor	42.04	250,821	305,699	1st class
4 Marinduque	Santa Cruz	287.80	56,991	60,055	1st class
4 Occidental Mindoro	Sablayan	2188.80	55,573	63,685	1st class
4 Occidental Mindoro	San Jose	446.80	101,411	111,009	1st class
4 Oriental Mindoro	Naujan	527.90	75,726	83,892	1st class
4 Palawan	Brooke's Point	829.49	41,924	48,928	1st class
4 Palawan	Coron	647.74	27,040		1st class
4 Palawan	Roxas	1165.90	44,370		1st class
4 Palawan	Taytay	1257.68	47,095		1st class
4 Quezon	Lopez	355.38	75,344	78,694	1st class
4 Quezon	Sariaya	212.16	100,709	114,568	1st class
5 Albay	Tiwi	123.40	39,733		1st class
5 Camarines Norte	Daet	278.90	74,341	80,632	1st class
6 Aklan	Kalibo	33.45	58,065	62,438	1st class
6 Negros Occidental	Cauayan	520.00	84,159	88,610	1st class
8 Leyte	Baybay	459.34	86,179	95,630	1st class
8 Leyte	Isabel	63.84	36,134	38,486	1st class
11 Davao del Sur	Malita	1143.49	83,457	100,000	1st class
11 Davao Oriental	Baganga	1003.44	39,750	43,122	1st class
11 Davao Oriental	Mati	790.90	93,801	105,908	1st class
NCR Metro Manila	Navotas	8.94	229,039	230,403	1st class
4 Palawan	Culion	429.59	13,024		-
4 Palawan	Sofronio Española	473.91	22,985		-
6 Guimaras	San Lorenzo	70.35	1,773	20,168	-
6 Guimaras	Sibunag	147.40	18,537	20,104	-
6 Negros Oriental	Tanjay	539.30	65,634	70,169	-
9 Basilan	Isabela	213.06	68,557		-
9 Zamboanga del Sur	Ulutanga	113.30	17,069	-	-
12 Lanao del Norte	Bacolod	104.10	16,454	17,020	-
12 Lanao del Norte	Kapatagan	210.22	37,006	42,783	-
12 Lanao del Norte	Lala	127.90	55,888	56,447	-
12 Lanao del Norte	Linamon	76.38	14,529	14,959	-
12 Lanao del Norte	Maigo	101.02	16,822	17,826	-
12 Lanao del Norte	Sultan Naga Dimapuro	71.12	36,131	41,865	-
12 Lanao del Sur	Balabagan	230.00	21,557	24,558	-
12 Lanao del Sur	Kapatagan	299.00	6,702		-

12	Lanao del Sur	Malabang	198.10	28,840	33,177	-
12	Lanao del Sur	Sultan Gumander	277.56	10,503	12,230	-
ARMM	Tawi-tawi	Mapun	101.02	20,716	22,011	-
9	Zamboanga del Norte	Baliguian	439.26	12,671	15,631	
9	Zamboanga del Norte	Gutalac	492.86	25,022	28,215	
9	Zamboanga del Norte	Katipunan	94.65	37,918	37,448	
9	Zamboanga del Norte	Labason	352.66	28,515	33,528	
9	Zamboanga del Norte	Leon B. Postigo (Bacungan)	255.50	20,728	19,550	
9	Zamboanga del Norte	Liloy	128.43	32,417	33,702	
9	Zamboanga del Norte	Manukan	246.35	29,681	31,855	
9	Zamboanga del Norte	Ponot (Jose Dalman)	135.00	21,745	23,322	
		Total	156472.16	23,216,062		