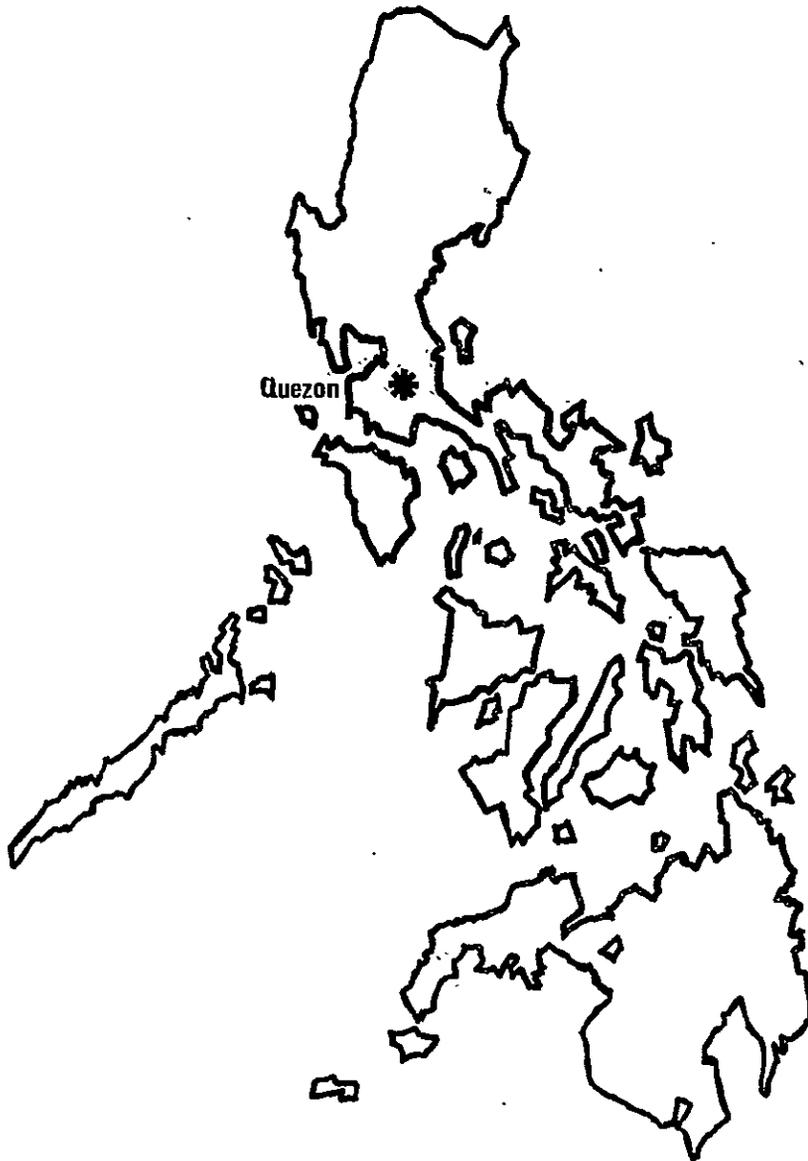


The Philippines

A Country Profile



1982

Office of Foreign Disaster Assistance
Agency for International Development
Washington, D.C. 20523

PHILIPPINES: A COUNTRY PROFILE

prepared for

The Office of U.S. Foreign Disaster Assistance
Agency for International Development
Department of State
Washington, D. C. 20523

by

Evaluation Technologies, Inc.
Arlington, Virginia
under contract AID/SOD/PDC-C-0283

The profile on Philippines is one in a series designed to provide baseline country data in support of the planning and relief operations of the Office of U.S. Foreign Disaster Assistance (OFDA). The content, scope, and sources have evolved over the course of the last three years, and no doubt will continue to do so. The relatively narrow focus is intentional. To avoid redundancy, some topics one might expect to find in a "country profile" are not covered here.

If the information provided can also be useful to others in the disaster assistance and development communities, so much the better. Every effort is made to obtain current, reliable data; unfortunately it is not possible to issue updates as fast as changes would warrant. A cautionary note, therefore, to the reader: statistics are indicators at best, and if names and numbers matter, the bibliography will point to a current source.

We invite your comments and corrections. Address these and other queries to OFDA, A.I.D., as given above.

August 1982

OFDA COUNTRY PROFILES: JUNE 1982

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1. General Information1.1 Geographic Codes

AID Standard	492
FIPS (2)	PH
FIPS (3)	PHI
AID Region	EA/PIT
State Region	EA/PHL

1.2 Country Names

Legal	Republic of the Philippines
Local	Republica de Filipinas Republica ng Pilipinas
Short	Philippines

1.3 Official Holidays

New Year's Day.....	January 1
Bataan Day.....	April 9
Labor Day.....	May 1
Independence Day.....	June 12
Philippine-American Friendship Day.....	July 4
Thanksgiving Day.....	September 21
All Saints Day.....	November 1
Bonafascio Day.....	November 30
National Heroes Day.....	November 30
Christmas.....	December 25
Rizal Day.....	December 30

Moveable religious holidays include Holy Thursday and Good Friday.

1.4 Currency

Monetary unit is the peso (P), divided into 100 centavos.
8.43 pesos = US \$1.00 (May 1982)

1.5 Time Zones

8 PM = noon GMT
EST + 13 hours

1.6 US Mission to Philippines and Staff (January 1982)

Embassy of the United States
1201 Roxas Blvd.
Manila
APO San Francisco 96528

Tel: 598-011 Telex 722-7366

Ambassador.....	Michael Hayden Armacost
Charge d'Affaires.....	James D. Rosenthal
Economic Section.....	Edson W. Kempe
Commercial Section.....	Thomas C. Moore
Political Section.....	Herbert S. Malin
Labor Officer.....	Leonard Sandman
Consular Section.....	Vernon D. McAninch
Administrative Section.....	Paul Sadler
Regional Security Officer.....	Martin C. Doughterty
Agricultural Section.....	John E. Riesz
Agency for International Development.....	Anthony Schwarzwald
Public Affairs Officer.....	Clifford E. Southard

Consulate
3rd Fl., Philippine American Life Insurance Bldg.
Jones Avenue
Cebu
APO San Francisco 96528

Tel: 7-95-10/24

Principal Officer.....	Gilbert H. Sheinbaum
Consular Section.....	Kevin T. McConnell
Branch Public Affairs Officer.....	Lane T. Cubstead

1.7 Sister Cities

Bacarra	Maui County, Hawaii
Bacolod	Gary, Indiana
Begaria	Maui County, Hawaii
Cavite City	San Diego, California
Cebu	Guam
	Salinas, California
Iloilo	Stockton, California
Kalibo	Delano, California
Laoag	Honolulu County, Hawaii
Legaspi	Hawaii County, Hawaii
Manila	Sacramento, California
Marikina	Pendleton, California
Olangapo	Bremerton, Washington
Palo	Palo Alto, California
Quezon City	Ft. Walton Beach, Florida
	Maui County, Hawaii
	Salt Lake City, Utah
San Juan	Santa Barbara, California
San Pablo	San Mateo, California
Sinait	Carson, California
Zambales	Idaho Falls, Idaho
	Maui County, Hawaii

1.8 Host Mission and Staff in US

Embassy of the Republic of the Philippines
 1617 Massachusetts Avenue, N.W.
 Washington, D.C. 20036
 Tel: (202) 483-1414

Ambassador.....Eduardo Z. Romualdez
 Minister Counselor.....Leonides T. Caday
 Minister Counselor.....Jose U. Fernandez
 Third Secretary.....Rolando S. Gregorio
 Press Counselor.....Abelardo L. Valencia
 Science Attache.....Dr. Perfecto K. Guerrero
 Defense, Army & Air
 Force Attache.....Lt. C. Roman P. Maddela
 Naval Attache.....Capt. Alfredo T. Romualdez

1.9 Treaties and Agreements

Agricultural commodities	Investment guarantees
Atomic energy	Maritime matters
Consuls	Meteorological research
Customs	Peace Corps
Mutual defense	Telecommunications
Economic and technical cooperation	Trade and commerce
Informational media guarantees	Visas

1.10 International Organizations Memberships

Bilateral: Aviation arrangements with Australia, Burma, Republic of China, UK, Greece, Indonesia, Japan, Korea, Mexico, Pakistan, Spain, Sweden, Switzerland, and Thailand. Friendship, commerce, and navigation treaty with Japan.

Multilateral: ADB, ASEAN, ASPAC, Colombo Plan, ESCAP, FAO, G-77, IAEA, IBRD, ICAO, IDA, IFC, IHO, ILO, IMCO, IMF, IPU, ISO, ITU, UN, UNESCO, UPU, WHO, WTO.

1.11 Visa and Travel Information

For entry at Manila International Airport: visa not required for transit/tourist stay up to 21 days; must have valid passport, onward/return tickets. Temporary visitor visa, valid for stay up to 59 days, no charge, one photo, onward/return ticket. Additional requirements for dependents of U.S. military personnel not traveling on orders, letter of no objection from Commanding Officer and letter of support from sponsor. For entry at Clark Air Force Base/Subic Naval Base and in applying for other types of visas check with Embassy/Consulate for specific requirements.

Yellow fever certificate required of travelers one year of age and over arriving from infected areas. Children under one year of age arriving from infected areas are subject to isolation or surveillance.

1.12 Ethnic and Sociocultural Groups

With the exception of small minorities of ethnic Chinese, Negritos (islands' earliest people), and Caucasians (mainly of Spanish and American origin), most Filipinos are Malay-Indonesian. Inter-marriage between early

Malay immigrants, the Proto-Malays (Indonesian) and Deutero-Malays (Southern Mongoloid), as well as between Filipinos and later arrivals (Chinese, Arabs, Spanish, Americans) has produced a considerable ethnic mix but general cultural homogeneity.

Language, rather than race or religion, is the major source of cultural differentiation. The eight major linguistic groups who make up Lowland Christians (90% of population) are Tagalogs (Central Luzon Plain); Cebuanos (leading Visayan group); Ilokanos (western coast of Luzon and central Luzon Plain), Ilongos (second to Cebuanos in Visayas); Bikolanos (Bikol Peninsula, Cataduanes, Burias, Ticao, and adjacent part of Masbate); Waray-Waray (third Visayan group, Samar, and eastern Leyte); Pampangans and Pangasinans (interspersed with Tagalogs and Ilokanos).

Relations between Lowland Christians and three minority groups - Moros (Muslim Filipinos), small pagan tribes of the interior, and ethnic Chinese - have been marked by conflict. The Moros, inhabiting southern Mindanao, Palawan, and the Sulu Archipelago, are racially and linguistically like Lowland Christians. However, they converted to Islam before the arrival of the Spanish (1565) and continue to reject outside authority. Their resentment of encroachment by Christian settlers on their land and way of life erupted in open rebellion in a 1975 separatist movement, with the fighting ending in a tenuous cease-fire. As Christian and Moro settlers and loggers have moved in recent years into the relatively inaccessible living areas of the interior pagan groups, hostile encounters have occurred. The Chinese (about 600,000 ethnic and 100,000 alien Chinese in the Philippines in 1970) have occupied an ambiguous position. Those marrying Filipinos and offspring of such marriages have been accepted; unassimilated Chinese have often met with discrimination.

1.13 Languages

A multiplicity of indigenous languages (more than 70 languages and dialects) of the Malayo-Polynesian language family are spoken. Each of the major languages has several dialects, which in some cases are mutually unintelligible. Most Filipinos are multilingual. Government policy has promoted use of two official languages: Pilipino (a form of Tagalog), the national language understood by about 55% of the population; and English, the language of government, commerce, mass communication, and education, understood by about 45% of the population. A third official language, Spanish, spoken by about 3.6% of the population, is popular among a small landed and commercial elite. The Moros generally use native vernaculars rather than English or Pilipino. Chinese is the language of a small minority.

1.14 Religions

The constitution guarantees freedom of religion and recognizes the principle of separation of church and state. Eighty-three to 85% of the population is Roman Catholic. Members of indigenous Christian cults, including the Philippine Independent Church (Aglipayan) and the Iglesia ni Kristo (Tagalog for Church of Christ), constitute another 6%. Muslims make up 5% of the population; numerous Protestants denominations, 3%; animists, 23%; and Buddhists, less than 1%.

1.15 Education and Literacy

The national literacy rate is estimated at 89% in 1980 - one of the highest in the East Asia and Pacific area - and shows little difference between the sexes. Elementary school enrollment is nearly universal with the exception of some remote tribal groups. However, due to the generally lower quality of public education in rural areas and the high cost of private schools, the rural poor are at a disadvantage in gaining access to productive employment in later life.

2. Government

2.1 National Government

A new constitution ratified in 1973 provided for a change from a presidential to a parliamentary form of government with extensive powers vested in a prime minister chosen by a unicameral national assembly. However, in September 1972, while the constitutional convention was still in session, President Marcos proclaimed martial law in response to a prevailing climate of violence and a perceived threat to national security represented by communist insurgents. At the same time he announced his intention to implement a reform program in a "New Society." Transitory provisions of the new constitution, amended in 1976, gave the president full executive authority pending the election of a national assembly (Batasang Pambansa).

Martial law officially ended in January 1981, and constitutional amendments, approved in a 1981 national plebiscite, provided for a change in the system of government to a modified French-style presidential system. As head of the government, the president appoints a prime minister, a cabinet which he may also dismiss, officers of the armed forces, ambassadors, and judges. Under certain conditions, he may call a new Batasang, and, as commander-in-chief, the president may call out the armed forces, suspend habeas corpus and declare martial law. The 1981 constitutional amendments also provide the mechanism for an orderly succession: an appointed executive committee, headed by the prime minister, will exercise presidential duties on the death or disability of the incumbent.

With the beginning of a process of political normalization, elections were held in 1978 for an interim Batasang Pambansa. Elections were held for local officials in 1980 and for president in June 1981. The government party, the New Society Movement, won those elections by wide margins. President Marcos was reelected for a six-year term and is eligible for election to an unlimited number of terms.

The Batasang consists of 165 elected regional representatives, 20 appointed Cabinet members, and 13 elected sectoral representatives (youth, labor, agriculture); all serve six-year terms.

A judicial system influenced by Spanish and U.S. legal principles consists of a supreme court, a court of appeals, courts of first instance, municipal, city, and special courts.

2.2 Political Parties

The Liberals and Nacionalistas are the traditional political parties, inactive under martial law when all parties but the government's New Society Movement (Kilusang Bagong Lipunan) were banned. The United Democratic Opposition (UNIDO), an alliance of moderate opposition groups, boycotted the 1981 election. Two insurgent groups, the Moro National Liberation Front (MNLF) and the Communist New People's Army, pre-date martial law and wage separate rebellions against the government. The government offered the secessionist Moslem movement a form of regional autonomy in early 1977. However, the offer, subject to approval in the 13 affected provinces, was unacceptable to the MNLF.

2.3 Regional Organization

The country is divided for administrative purposes into 13 regions, 77 provinces, over 60 cities, about 1,600 municipalities, and more than 40,000 barangays (barrios until 1974).

Regions, each containing a number of provinces, have had the primary function of coordinating regional development activities. Provinces under the leadership of vice-governors and boards, are the largest administrative units. Major government departments on both provincial and chartered city levels are responsible to their respective national departments. Elections for provincial and city officials were held in 1980 for the first time since 1971. Those elected will serve six-year terms. Municipalities, each headed by a mayor in a central town called a poblacion, are under the jurisdiction of provincial governments. The lowest subdivision, located in municipalities, municipal districts, and cities, is the barangay, which has the main function of maintaining law and order.

Regions

Region I	- Ilocos	Region VIII	- Eastern Visayas
Region II	- Cagayan Valley	Region IX	- Western Mindanao
Region III	- Central Luzon	Region X	- Northern Mindanao
Region IV	- Metro Manila	Region XI	- Southern Mindanao
Region V	- Bicol	Region XII	- Central Mindanao
Region VI	- Western Visayas	Region XIII*	- Southern Tagalog
Region VII	- Central Visayas		

* Philippine Government lists 12 regions, Southern Tagalog is numbered IV-A.

2.4 Key Political Figures (As of March 1982)

President.....	Marcos, Ferdinand E.
Presidential Executive Assistant.....	Tuvera, Juan C.
Presidential Finance Adviser.....	Dumlao, Cesar A.
Presidential Assistant on Nati. Minorities..	Elizalde, Manuel, Jr.
Presidential Assistant.....	Nituda, Victor G.
Special Presidential Assistant.....	Marcos, Ferdinand, Jr.
Min. of Agrarian Reform.....	Estrella, Conrado F.
Min. of Agriculture.....	Tanco, Arturo, Jr.
Min. of the Budget.....	Alba, Manuel
Min. of Education & Culture.....	Corpuz, Onofre D.
Min. of Energy.....	Velasco, Geronimo Z.
Min. of Finance.....	Virata, Cesar
Min. of Foreign Affairs.....	Romulo, Carlos P.
Min. of Health.....	Azurin, Jesus C.
Min. of Human Settlements & Ecology.....	Marcos, Imelda R.
Min. of Justice.....	Puno, Ricardo
Min. of Labor.....	Ople, Blas
Min. of Local Govt. & Community Development.....	Rono, Jose A.
Min. of National Defense.....	Ponce-Enrile, Juan
Min. of Natural Resources.....	Pena, Teodoro
Min. of Public Highways.....	Hipolito, Jesus S.
Min. of Public Information (Acting).....	Cendana, Gregorio
Min. of Social Services & Development (Acting).....	Montes, Sylvia
Min. of Tourism.....	Aspiras, Jose D.
Min. of Transportation & Communications.....	Dans, Jose P.
Dir. Gen. Nati. Economic & Planning Authority.....	Mapa, Placido
Solicitor General.....	Mendoza, Estelito P.

3. Disaster Preparedness3.1 Disaster Types and History

The Philippines is subject to frequent disasters of a variety of types. Typhoons regularly affect the country with an average of 15 influencing Philippine weather and 5 or 6 making landfall each year. Flooding often results from heavy rainfall associated with tropical cyclones. Metro Manila is especially prone to flooding because of its topographic and hydrologic conditions (low level areas and low gradient of the Pasig River), combined with an inadequate drainage system. Due to its location in the Circum Pacific Belt, the Philippines experiences earthquakes and volcanic eruptions in some areas. Tsunamis and storm surges affect coastal areas, although Manila is protected from such hazards by Manila Bay. Drought is most common in western and central sections of the archipelago. Epidemics, fires, and accidents are other disaster types. (See also section 8, Physical Geography.)

Disaster History
(Selected Disasters 1970 to Present)*

<u>Disaster</u>	<u>Location</u>	<u>Date</u>	<u>#Killed</u>	<u>#Affected</u>	<u>Damage (\$000)</u>
Earthquake	Manila	70	15	200	NA
Typhoon	Quezon	9/70	95	66,000	1,363
Typhoon	Bicol	10/70	723	978,000	73,000
Typhoon	E coasts/ Mindanao	10/70	828	236,000	12,500
Typhoon	Manila/ Quezon	11/70	786	430,000	97,656
Flood	C,N Luzon	7/72	653	2,400,000	220,000
Earthquake	Luzon/ Tablas Is.	3/73	14	NA	450
Volcanic Eruption	Taal Volcano	9/76	-	15,000	NA
Earthquake	Gulf of Moro	8/76	8,000	175,000	134,000
Tsunami	Moro Gulf/ Sulu	8/76	175	-	-
Typhoon	Luzon	5/76	215	600,000	150,000
Earthquake	NE Luzon	3/77	1	60,000	100
Epidemic (Cholera)	Berguet	9/77	7	15	-
Fire	3 Cities, Incl. Manila	4/78	1	12,000	7,500

<u>Disaster</u>	<u>Location</u>	<u>Date</u>	<u>#Killed</u>	<u>#Affected</u>	<u>Damage (\$000)</u>
Fire	Manila	4/78	3	35,000	NA
Epidemic (Measles)	E Samar	5/78	17	-	-
Volcanic Eruption	Mt. Mayon	5/78	-	25,000	NA
Volcanic Eruption	Bulosan	8/78	-	1000+	NA
Typhoon	Central Luzon	10/78	340	1,500,000	115,000
Typhoon	8 Northern States	11/80	101	775,000	102,300
Flood	Mindanao	1/81	228	300,000	27,000
Storm	Albay Prov.	7/81	214	NA	2,000
Typhoon	5 Islands	11/81	261+	840,078	35,000
Typhoon	Samar/Mindoro/ Luzon	12/81	250	180,000	26,000
Flood	S. Philippines	2/82	13+	200,000	NA
Typhoon	Mindanao	3/82	117	16,000	NA
Typhoon	Central Provinces	3/82	151	485,000	69,000

* Partial listing to show variety of types as well as severity of major disasters.

3.2 Host Disaster Plan

The National Disaster Coordinating Council (NDCC), under the chairmanship of the Minister of Defense, is responsible at the national level for establishing policy guidelines on disaster preparedness and operations involving rescue, relief, and rehabilitation. Among other functions, the NDCC recommends to the President the declaration of a state of calamity when conditions warrant and sets priorities for resource allocations.

NDCC members: Ministers of National Defense (Chairman), Public Works, Transportation and Communication, Public Highways, Social Services, Agriculture, Education, Finance, Trade, Labor, Local Government and Community Development, Health, Natural Resources, Public Information, Energy, Budget, Justice, Presidential Executive Assistance, Presidential Assistant on General Government, Chief of Staff, Secretary General PNRC, Administrator of Civil Defense.

The Office of Civil Defense (OCD), whose Administrator is the Executive Officer of NDCC, coordinates activities and functions of various agencies of the National government and private institutions. The operating arm of OCD is the Civil Defense Operations Center (CDOC), Camp Aguinaldo in Quezon City, and 12 regional coordinating centers (Metro Manila is a separate region).

Disaster Coordinating Councils on the regional, provincial, municipal, and barangay levels direct and control disaster operations through their respective Disaster Operations Centers and along NDCC guidelines. Center staffs have units for intelligence and disaster analysis, plans and operations, and resource management.

3.3 U.S. Plan

USG agencies have disaster responsibilities as follows:

State: Ambassador makes determination.

USAID: Coordination, liaison, assessment.

CINCPACREPPHIL: Operations control of US Forces; provides assistance as requested.

ICA: Release of US disaster relief information.

13th Air Force, Clark Air Base (CAB): Assistance as requested.

COMUSNAVPHIL: Assistance as requested by CINCPACREPPHIL.

The U.S. Ambassador and Deputy Chief of Mission are kept informed, on a continuing basis, of relief operations. Within USAID, disaster relief assistance is coordinated by the Mission Disaster Relief Officer (MDRO) under the USAID Mission Director.

The U.S. Mission Plan describes the USG role during various stages of an emergency. USAID/Philippines has a Disaster Assistance Center (DAC) in Magsaysay Center, Roxas Blvd., Manila, linked to key disaster personnel by mobil battery operated network. In the case of disasters with prior warning time, conditions are noted during the development and appropriate action taken.

Condition 1: Indication of impending disaster - USAID Disaster Assistance Center on standby.

- Condition 2: 24 hours to potential disaster - mobile radio network readied; vehicles on standby; DAC activated.
- Condition 3: Disaster commenced. Upon determination, requests are screened and those for military assets or assistance passed to CINCPACREPPHIL.

The development of a potential disaster is monitored through CAB Weather Station and PAGASA (Philippine Atmospheric Geophysical and Astronomical Service Administration).

A joint survey of damages and assessments of needs may be conducted by Philippine and U.S. government officials. The survey reports to CDOC, the U.S. Mission, and AID/W and covers two phases: emergency - immediate needs; rehabilitative - longterm needs; and reconstruction.

During and following a disaster, USAID will deploy a Disaster Relief Officer (DRO) and supporting personnel, as required, to established operational bases, i.e., Imelda Relief Operations Center (IROC), Nichols Air Base (NAB), Clark Air Base (CAB) and other designated areas to provide on-site liaison with Philippine and U.S. military authorities and to assist in monitoring and coordinating USAID relief activities.

3.4 Host Contacts

<u>Philippine Government Agencies</u>	<u>Telephone No.</u>
Malacanang	
Hon. Gabriel Y. Itchon	47-10-81 Loc. 211
Presidential Asst. on Monetary & Financial Assistance	47-17-78
Office of the President	
Philippine Air Force (PAF)	
Nichols Air Base (Switchboard)	828-15-71
NAB Operations	828-40-69
Command Operations Center (Col. F. Pasion)	828-57-49
Dir. of Information (Col. Miguel Hinlo)	828-48-85
Imelda Relief Operations Center (IROC)	828-69-55 (MSSD)

Ministry of Social Services
and Development (MSSD)

Telephone No.

Switchboard	741-10-61 to 65
Sylvia Montes, Acting Minister	741-07-89
Milagros Llanes Asst. Director, Bureau of Assistance	741-10-51
Ms. Sally Agustin Bureau of Assistance	741-10-51

Regional MSSD Centers

Ms. Araceli Quirido Director, Region I San Fernando, La Union	2505-2115 2833 3842 (Baguio City)
Atty. Bartolome Baligud Director, Region II Tuguegarao, Cagayan	446-1456
Ms. Leticia Moises Director, Region III San Fernando, Pampanga	2981
Ms. Corazon Alma de Leon Director, Region IV Sampaloc, Manila	27-35-28 27-29-45
Mr. Edwin Joseph Rodil Director, Region V Naga City	MSSD Radio (SSB) 2926
Ms. Gloria Mallari Officer in Charge, Region VI Iloilo City	MSSD (SSB) 77481
Ms. Lily Talagon Director, Region VII Cebu City	MSSD Radio (SSB) 74577
Ms. Rita Florence Roque Director, Region VIII Tacloban City	DSSD Radio (SSB) 2525

<u>Regional MSSD Centers (cont'd)</u>	<u>Telephone No.</u>
Ms. Lily Tanedo Director, Region IX Zamboanga City	MSSD Radio (SSB) 3287
Mr. Segundo Cortez Director, Region X Cagayan de Oro City	MSSD Radio (SSB) 3339
Ms. Agrinelda Miclat Director, Region XI Davao City	MSSD Radio (SSB) 71964
Mr. Usman Cusain Officer in Charge, Region XII Cotabato City	MSSD Radio (SSB) 2388
Office of Civil Defense/ Civil Defense Operation Center Switchboard	79-21-12
Col. Victor R. Pagulayan, Jr. Administrator Civil Defense Operation Center	70-77-69 (Direct Line)
Eng. Fortunato M. Dejas Deputy Administrator	79-21-12 Loc. 212 79-42-66
Mr. Luis N. Grande, Jr. Executive Officer	79-42-66 79-21-12 Loc. 285
Capt. Romeo Valera Chief, Operations Center	79-52-90 79-21-12 Loc. 239
Mr. Benigno Salgado Operations Officer	79-21-12 Loc. 237
Mr. Franklin Castillo Chief, Communications, Warning & Operations Division	79-42-91 79-21-12 Loc. 244, 291
Mrs. Leticia Balbao Administrative Officer II	79-21-12 Loc. 213, 284

<u>Regional MSSD Centers (cont'd)</u>	<u>Telephone No.</u>
Mrs. Angela Magbanua Chief, Plans	79-21-12 Loc. 291
 <u>Regional Nat'l Disaster Coord. Council (NDCC) Centers</u>	
Lt. Cdr. Eduardo Quisido Director, Region I San Fernando, La Union	2384
Col. Ernesto Tan Director Region II Tuguegarao, Cagayan	180-R
Armando Duque Director, Region III San Fernando, Pampanga	3701 (Military)
Herminigildo E. Ebarle Director, Region IV Batangas City	725-3748
Renato S. Arevalo Director, Region V Legaspi City	4566 or 4660
Rodrigo Roldan Director, Region VI Iloilo City	76671
Angel Gaviola Director, Region VII Cebu City	71912
Jose Hernani Director, Region VIII Tacloban City	2877
Cesar Espiritu Director, Region IX Zamboanga City	2361
Maj. Paulino Macabangun Director, Region X Cagayan de Oro City	3860

<u>Regional NDCC Centers (cont'd)</u>	<u>Telephone No.</u>
Ernesto I. Rivera, Jr. Director, Region XI Davao City	77641
Capt. Salvador Estodillo Director, Region XII Cotabato City	2879
<u>Philippine National Red Cross (PNRC)</u>	
Dr. Vicente Galvez Secretary-General	46-11-46
Mr. Vicente P. Majarocan Director Disaster Preparedness & Relief Services	48-33-65 48-33-46
Mr. Eduardo Angco Public Information Officer Director, PRPD	48-33-46
<u>United Nations Development Program (UNDP)</u>	
Mr. Alain Y. Morvan Resident Representative	85-06-11 Switchboard 88-15-36 818-26-06 (Home)
Dep. Ross Milley	86-10-15
<u>Weather Information</u>	
Phil. Atmos. Geophysical and Astronomical Serv. Adm. (PAGASA)	98-06-71 97-43-30, 99-43-17
PAGASA Forecasting Rodolfo Felisarta	98-06-61 Loc. 218
PAGASA Forecasting (Earthquake) Mr. Carlos Preclaro	97-44-77
Clark AB Detachment 5 1st Weather Wing, call U.S. Embassy and ask for:	55609

Weather Information (cont'd)Telephone No.

CAB Forecasting
 Naval Oceanographic Command Det.
 Call U.S. Embassy 59-80-11 & ask for
 Subic

46249
 53254, 53787

Camp John Hay, Baguio
 Call U.S. Embassy & ask for John Hay

66116

Fire Departments

Caloocan City
 Makati
 Manila
 Manila International Airport (MIA)
 Pasay City
 Quezon City

35-86-39
 88-00-58
 58-11-76/48-37-34
 828-15-11 Loc. 337, 338
 831-88-56/831-80-10
 99-83-63/99-82-64

Transportation

Pacific Airways (OICC) (After 4 PM)

88-96-11/83-49-90

PHILAIR - call U.S. Embassy 59-80-11

83-98-91 (Direct Line)

TRANSCON

Claro Sablan
 Operations Head

60-47-01 Loc. 20, 54

Jose Madarang
 Marketing/Relief

60-47-01

Desidero Serrano
 Warehouse Supervisor

60-47-01 Loc. 40

3.5 USG ContactsU.S. EMBASSY

59-80-11

Charge James D. Rosenthal

Loc. 2276, 2372

Col. Richard G. Woodhull, Jr.
 Defense Attache

Loc. 2623, 2624
 88-64-36 (Home)

	<u>Telephone No.</u>
US EMBASSY (cont'd)	
Capt. Richard W. Schaffert CINCPACREPHIL, Liaison Officer Comm. In Chief Pacific Com. Rep. in Phil.	Loc. 2395, 2396
Maj. Robert J. Bowers Asst. Air Attache	Loc. 2623, 2624, 2622 87-12-32 (Home)
JUSMAG	
Lt. Col. Bruce E. Sutcliffe Maint. Officer	99-45-11 Loc. 634
CLARK AIR BASE (CAB)	
Call US Emb 59-80-11 ask for:	From PLDT, Dial 46-08-90
Cdr. Harrison M. Ward, Jr. Base Commander	48126
DISASTER PREPAREDNESS CONTROL CENTER, CAB	
Call US Emb 59-80-11 ask for:	
Capt. James P. McDorman Base Disaster Prep. Officer	33951 42196
Sgt. Larry R. Parker	33951 42333 (Home)
MILITARY CIVIC ACTION DIVISION, CAB	
Maj. James Schenkel	48219
Lt. Denise Hand Executive Officer	43191
SUBIC NAVAL BASE	
Call US Embassy 59-80-11 ask for: From PLDT: Dial 460-88 & Ext.	
Capt. Gordon E. Fisher Asst. Chief of Staff Operations & Plans	49896
Lt. Cdr. Frederic G. Leeder Public Affairs Officer Operations Control Center	884-3451/9410/9740

USAID	<u>Telephone No.</u>
Call US Embassy 59-80-11 ask for:	
Anthony M. Schwarzwald Director	2448, 2451 59-82-56 (Direct Line) 818-36-38 (Home)
William M. Carter Chief, FFPVC/E, MDRO	2444, 2445, 2446 59-88-69 (Direct Line) 50-35-44 (Home)
John Garney Executive Officer	2415 57-21-96 (Home)
Motor Pool	2470, 2476
GSO/Warehouse	2479 83-79-44 (Direct Line) 83-93-14 (Direct Line)
U.S. PEACE CORPS	
John T. Abernathy	2692 59-97-64 (Home)
INTERNATIONAL COMMUNICATIONS AGENCY (ICA)	
Clifford E. Southard Director	Loc. 2230, 2258 88-15-75 (Home)
John P. Porter Press Attache	Loc. 2363 828-83-46 (Home)

3.6 Host Resources

The following GOP agencies are among those assigned disaster relief tasks.

Ministry of Agriculture - assists victims whose crops and livestock have been lost; procures seeds and fertilizers.

Bureau of Air Transport - coordinates search and rescue and use of private aircraft; communications.

Commission on Volcanology - provides advance warning; helps with resettlement.

PAGASA - advises on weather, earthquakes, tsunamis, floods.

Ministry of Education and Culture - provides school buildings as emergency relief centers and relief food from school stockpiles; disseminates information on the nature of different calamities.

Ministry of Health - provides first aid emergency stations and medical supplies; maintains sanitary conditions in affected areas; assists subdivisions in disaster efforts.

Ministry of Local Government and Community Development - organizes and mobilizes community disaster centers at provincial, municipal and barangay levels.

Ministry of National Defense - establishes communications linkages; undertakes massive rescue and evacuation operations; provides transportation and temporary reconstruction of damaged public works; assists in health, medical relief; distributes supplies.

PNRC - provides relief goods, first aid, and temporary shelters; coordinates with other agencies.

Ministry of Public Highways and Public Works - restores and repairs roads, bridges; provides equipment for rescue and recovery; assists with transportation.

Ministry of Transportation and Communications - assists with transportation of relief supplies and victims, provides potable water and communications facilities.

Ministry of Social Services and Development - distributes relief goods and donations.

Ministry of Public Information - coordinates with mass media to educate public in disaster preparedness.

National Housing Authority - assists with housing for displaced persons.

3.7 NDCC Communications Systems

The NDCC communications system operates by means of wire, radio, radio - wire, integrated systems, teletype, telex, and closed circuit TV.

Wire - automatic or direct dial, point-to-point telephone, trunk lines to major government, commercial, and military communications centers.

Telex - through switching center to government offices, cities, provinces, and law enforcement agencies.

Teletype - through Bureau of Telecommunications (BUTEL) Manila central terminal to city, provincial and municipal teletype and telegraph stations (over 1,000).

Through AFP teletype and tape relay station to major AFP installations, commands, and field units.

The NDCC communications system is augmented by the Presidential Committee on Warning System (COWS), the Emergency Broadcasting System, and several single side band (SSB) radiophone units located throughout the islands in disaster prone and troubled areas.

The communications facilities of the Bureau of Air Transport are also available for disaster operations.

3.8 Disaster Rations

Rice and maize are staples; accompaniments - vegetables, leafy vegetables, fish, pork, coconut oil. Acceptable alternatives: wheat flour; accompaniments - mung beans, pulses, split peas, lentils. Pork is not consumed in some areas in the south.

3.9 Other USG Relief Services

CAB - weather station. Among other services, provides equipment and operations for re-establishing utilities and roadways; potable water; develops procedures for providing quarters for displaced persons; provides facilities for producing food supplements (nutribuns) and processes requests for food from commissary stocks.

3.10 U.S. Voluntary Agencies

Much of U.S. disaster assistance is from U.S. voluntary agency sources as they have established distribution systems throughout the country. USAID maintains continuing liaison with these agencies and helps coordinate their regular Food for Peace programs in the Philippines which are the main U.S. source of disaster food assistance.

CARE and CRS maintain food stocks and commodities in support of their nutrition programs. They also authorize and supervise nutrition baking from their foodstocks with USAID concurrence.

CRS, CWS, SAWS, and World Vision stock clothing; some agencies have medical supplies.

3.11 U.S. Voluntary Agencies Contact List*

CATHOLIC RELIEF SERVICES (CRS)

Francis X. Carlin Director	47-55-91 87-13-52 (Home)
Lawrence A. Beach Asst. Director	47-55-91 741-10-32 (Home)
Ms. Carruchi Caumeran Emergency Relief Administrator	47-55-91
Hermeraldo P. Catubig Chief, Shipping Department	40-15-57

COOPERATIVE FOR AMERICAN
RELIEF EVERYWHERE, INC. (CARE)

Henry R. Richards Director	50-75-83, 57-14-16 85-45-21 (Home)
David Neff Deputy Director	50-75-83, 57-14-16

SALVATION ARMY

Maj. Remigio Officer for Social Affairs	50-00-86, 88
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4. Population

4.1 National Demographic Characteristics

The Philippines is the seventeenth most populated country in the world. The population increased five-fold between the 1903 census (7.6 million) and 1975 (42.3 million). Preliminary 1980 census figures show an enumerated population of 47,914,017. The present annual growth rate, estimated at 2.4-2.5%, is down from 3% during the 1960s. However, because of a high fertility rate, a young population, and declining mortality, momentum for future growth continues. Recognizing that high population growth rates affect the national health status and impede development progress, the Philippine government has adopted a national population policy. Even if the goal of replacement fertility is achieved in the late 1990s, the population would be around 70 million in the year 2000.

4.2 Regional Distribution

According to the 1980 census, the average population density is nearly 160 per sq. km, but distribution is uneven. With 42,460.8 persons per sq. km, the city of Manila has the highest concentration of any area. The most densely populated provinces are the urban provinces of Rizal, Cavite, Laguna, Cebu, and Batangas; the rural provinces of Abra, Kalinga-Apayao, Quirino, Aurora, Occidental Mindoro, Palawan, and Agusan del Sur have the lowest densities. In 1977 the population was distributed among the principal island groups as follows: Luzon 54%, the Visayas 22.4%, Mindanao 23.6%. Approximately 38% of the national population was classified as urban in 1980.

Two trends in internal migration have occurred: rural-urban migration especially to the Manila metropolitan area, and migration from central cities to the suburbs (Rizal province is the major receiving area) and from other populous areas to Mindanao for resettlement. Small-scale internal migrations occur among laborers seeking employment.

4.3 Urban Centers

Land area and population figures by region and province for census years 1970 and 1980, are available in Appendix A.

Land Area and Population Density
of Principal Cities, 1980

<u>City</u>	<u>Land Area (sq. km)</u>	<u>Population 1980</u>	<u>Density/ sq. km</u>
Manila*	38.3	1,626,249	42,460.8
Cebu	280.9	489,208	1,741.6
Quezon City*	166.2	1,165,990	7,015.6
Davao	2,211.3	661,311	276.4
Caloocan City	55.8	471,289	8,446.0
Zamboanga City	1,414.7	344,275	243.4
Pasay City*	13.9	286,497	20,611.3
Bacolod	156.1	266,604	1,707.9
Iloilo	56.0	244,211	4,360.9
Cagayan de Oro	412.8	228,409	553.3
Angeles	60.3	185,995	3,084.5
Butuan	526.3	172,404	327.6
Iligan	730.5	165,742	226.9
Olongapo	103.3	156,312	1,513.2
Batangas	283.0	143,554	507.2
Cabanatuan	192.7	138,297	717.7
San Pablo	214.0	131,686	615.4
Cadiz	516.5	128,839	249.4

* Part of Metropolitan Manila

Source: National Census and Statistics Office as cited in Philippine Yearbook, 1981.

5. Health, Nutrition, and Housing

5.1 Health Status and Common Diseases

Communicable diseases remain a major health problem although they are declining as cause of mortality. A concomitant increase in deaths from degenerative diseases is occurring. In 1976, pneumonia, tuberculosis, gastroenteritis, bronchitis, and measles were among the leading causes of death, as were also heart and vascular disease, nutritional deficiencies, malignancies, and accidents. Morbidity and mortality patterns correlate highly with environmental and nutritional conditions. Though showing a marked decline in recent decades, the infant mortality rate is still high (66 deaths per thousand live births nationally, 90 per thousand in depressed areas) and is indicative of the health care status: communicable diseases as the leading cause of infant death reflect poverty, high fertility, lack of health education, malnutrition, and poor environmental sanitation.

While most diseases occur throughout the country, some regional variations in morbidity are noted. Malaria is most common in the Cagayan Valley, southwestern Mindanao, Palawan and Isabela; only in the provinces of Catanduanes, Cebu, Leyte, Misamis Occidental, and part of Bohol and in the islands of Negros and Panay is there little or no risk. Schistosomiasis is endemic in Mindanao and Eastern Visayas. Filariasis and leprosy are more commonly seen in some areas but are not widespread. Despite its greater access to health facilities, metropolitan Manila has higher national average incidences of tuberculosis, gastroenteritis, pneumonia, influenza, and bronchitis.

Through more vigorous government disease control programs in recent years, gains have been made in the detection and treatment of tuberculosis, malaria, and schistosomiasis. An intractable problem remains in malaria control, however, in the increasing incidence of the chloroquine-resistant strain.

A major outbreak of cholera El Tor (the only quarantinable disease found in the Philippines) occurred in the 1960s but had been brought under control by the mid-1970s.

5.2 Vital Statistics

Crude birth rate, 1975	36/1000 population
Crude death rate, 1975	9/1000 population
Annual rate of growth, 1975-80	2.6% *

Life expectancy at birth, 1975	males 59; females 64
Infant mortality rate, 1976	66/1000 live births

Source: Demographic Estimates for Countries with a population of 10 million or more: 1981. U.S. Department of Commerce, Bureau of the Census.

* The World Bank estimates the current population growth rate at 2.4-2.5%.

5.3 Health Facilities and Services

Public health expenditures have emphasized curative services in the past and favored urban areas; however, the GOP has begun to reorient priorities toward primary, preventive health care for the poor. A network of Rural Health Units (RHUs) and Barangay Health Stations (BHSs) has been established to provide primary health services in rural areas.

In the late 1970s the availability of health services was as much as four times higher in metropolitan Manila than in the Cagayan Valley, Bicol, Eastern Visayas, and Mindanao. An estimated one-third of the population, mainly urban, had access to private health care; about half of the remaining two-thirds were served by RHUs and BHSs. One third of the population received little or no health care. While the government's program of upgrading and expanding rural services since the mid-1970s has probably brought about improvements, regional imbalances existed at that time in the availability of RHUs. The number of BHSs was also seriously deficient, with adequacy levels especially low in Bicol, Northern Mindanao, Southern Mindanao, and Southern Tagalog.

The health delivery system in the Ministry of Health is administered on the central, regional (12 offices, each with training center and laboratory), provincial (76 offices) levels and on the local level by (a) 60 city health offices in chartered cities; (b) 1,700 main health centers (MHC) in municipalities (each serving 20,000 to 50,000 people); (c) 236 community hospitals and health centers with about 10,000 beds in municipalities lacking access to city hospitals; (d) about 100 hospitals with a total of 20,000 beds (70% in Manila). A rural health unit comprises one MHC (staffed with a doctor, a nurse, two or three midwives, and a sanitary inspector), and possibly several barangay health stations and another health center.

In addition to the 395 hospitals administered by the Ministry of Health, there are 51 other hospitals with a total bed capacity of 14,515, which are administered by the various branches of the armed forces (16),

the Office of the President and the Ministry of Justice (10), the Bureau of Health Services (8), and chartered cities (17). A listing of public and private hospitals by region and province, is included in Appendix B.

Number of Government and Private Hospitals and Hospital Beds
by Region, November 1979

<u>Region</u>	<u>Government Total</u>		<u>Private Total</u>	
	<u>Number of Hospitals *</u>	<u>Bed Capacity</u>	<u>Number of Hospitals</u>	<u>Bed Capacity</u>
Philippines	395	31,774	1,088	40,261
Capital Region (Metro Manila)	13	11,025	136	12,851
I Ilocos	32	2,375	88	2,858
II Cagayan Valley	38	1,805	58	925
IV Southern Tagalog	62	2,726	148	4,121
V Bicol Region	31	1,390	109	2,688
VI Western Visayas	39	1,996	35	2,356
VII Central Visayas	28	1,560	45	2,397
VIII Eastern Visayas	36	1,825	28	786
IX Western Mindanao	23	1,116	45	805
X Northern Mindanao	27	1,671	80	2,575
XI Southern Mindanao	17	1,160	114	3,133
XII Central Mindanao	13	825	69	1,690

* Hospitals under other government agencies not included.

Source: Philippine Yearbook 1981.

5.4 Health Personnel

A total of 48,500 health workers in the country in 1977 included 13,100 doctors, 8,200 nurses, 7,000 midwives and 2,700 sanitary inspectors*. About 30% of both doctors and nurses were in public service. The health personnel situation suffers from highly uneven distribution (1 doctor per 600 population in Manila; 1 per 9,000 population in rural areas in mid-1970s) as well as extensive migration of Filipino medical workers abroad.

* These figures are from World Bank Report No. 2453-PH, May 1979. The 1981 Philippine Yearbook gives a total of 241,526 registered professional health workers in 1980: 42,480 physicians, 111,751 nurses, 22,930 pharmacists, and 14,880 dentists.

Traditional beliefs concerning illness and health practices persist, especially in more remote areas, and cultural norms frequently limit utilization of health services. Attention is being given to developing health paraprofessionals, thereby increasing the number of rural health workers, and also providing important personal contact as a possible means of bridging the cultural gap.

Health Personnel By Categories: By Region, 1973; Total 1977

	I	II	III	IV	V	VI	VII
Physicians	(881)	(411)	(1,410)	(5,701)	(627)	(1,045)	(1,092)
Public	335	156	310	1,510	226	272	262
Private	546	255	1,100	4,191	401	773	830
Nurses	857	310	819	2,080	382	1,247	1,142
Midwives	637	291	991	1,780	364	754	541
Dentists	397	104	554	1,485	191	571	262
Sanitary							
Engineers	11	4	5	25	5	6	10
Health							
Educators	12	5	12	17	9	5	6
Sanitary							
Inspectors	238	144	265	519	180	281	274
Social Workers	105	37	77	145	64	77	64
Nutritionists	26	16	40	80	17	43	45
Dieticians	27	11	21	668	12	36	41
Other	<u>908</u>	<u>420</u>	<u>1,330</u>	<u>3,199</u>	<u>654</u>	<u>1,756</u>	<u>1,343</u>
Total	4,099	1,753	5,524	15,099	2,505	5,821	4,820

	VIII	IX	X	XI	XII	TOTAL
Physicians	(414)	(317)	(487)	(405)	(317)	(13,107)
Public	219	95	146	106	44	3,681
Private	195	222	341	299	273	9,426
Nurses	357	331	341	226	191	8,283
Midwives	308	237	419	308	285	6,915
Dentists	172	100	139	78	71	4,124
Sanitary						
Engineers	8	4	6	1	1	86
Health						
Educators	2	13	14	2	0	97
Sanitary						
Inspectors	208	148	166	75	156	2,654
Social Workers	47	45	67	23	28	779
Nutritionists	13	5	28	5	2	320
Dieticians	11	10	23	5	13	278
Other	<u>396</u>	<u>374</u>	<u>720</u>	<u>448</u>	<u>348</u>	<u>11,896</u>
Total	1,936	1,584	2,410	1,576	1,412	48,539

¹ Includes pharmacists (4,555), veterinarians (419), physical therapists (60), occupational therapists (49), x-ray technicians (506), medical technologists (1,155), attendants (4,887), and vaccinators (265).

Source: National Health Plan Short Term 1978-82, Table 9 as cited in World Bank Report No. 2453-PH.

5.5 Nutritional Status

While the food supply in the Philippines is usually adequate to meet the overall nutritional needs of the people, undernutrition is a serious problem in many areas and especially among certain segments of the population: infants, children, pregnant and lactating women. Malnutrition among these groups is reflected in moderately high morbidity/mortality rates for infants and children and in nutrition-related deaths. The main reason for nutritional inadequacy is the unequal distribution of income (nearly 40% of the population cannot afford minimal food requirements); other factors are dietary habits and ignorance of food values, family consumption patterns (adult males consume proportionately more than other family members), and large family size.

Although results of the First National Nutrition Survey (FNNS) in 1978 showed some improvements in the nutritional status since the 1960s when selected areas were surveyed, the national calorie intake still averaged only 89% of the recommended daily allowance, and average improvements do not necessarily reflect trends in low-income groups. Variations were noted, too, among regions and among urban and rural populations.

Nationally, less than 11% of one to six year old children were moderately or severely malnourished in 1978, according to the FNNS, but a 1976 weight survey in selected depressed areas found 30% of children to be moderately or severely malnourished, with the proportion as high as 47% in some urban slum areas.

Nutritional deficiency diseases occurring in the Philippines include beriberi in regions where the diet consists mainly of polished rice, xerophthalmia, an eye disease often leading to blindness, in regions where vitamin A is seriously lacking, and goiter in mountainous areas.

	Calories		Protein		Iron		Vitamin A	
	Intake (K cal)	% suffi- ciency	Intake (Gm)	% suffi- ciency	Intake (Mg)	% suffi- ciency	Intake (I.U.)	% suffi- ciency
Philippines	1,804	88.6	53.0	102.9	11.0	91.7	2,481	68.6
Urban Areas	1,872	91.2	58.2	111.3	11.4	91.9	2,922	79.8
Rural Areas	1,769	87.2	50.3	98.6	10.8	91.5	2,253	62.7
Island Groups								
Luzon	1,861	91.2	54.2	105.0	11.6	95.9	2,597	71.6
Visayas	1,712	84.6	51.4	100.6	10.2	85.7	2,507	69.7
Mindanao	1,733	85.0	50.7	98.4	10.3	86.6	1,905	52.7

Source: FNNS, 1978, Table A.2.1 as cited in Aspects of Poverty in the Philippines: a Review and Assessment, Vol. II. World Bank, December 1980.

5.6 Diet Summary and Regional Foods

Rice, the most important staple, is used in diets of more than 70% of Filipinos. Corn consumption is greater in Visayan Islands and certain other regions where rice cultivation is not possible. Corn and root crops are generally considered inferior foods in rice-producing regions. Diets tend to be high in carbohydrates with fish being the most important source of protein.

Foods

Cereals: Rice, rice noodles, rice cakes, corn grits, white corn, green sweet corn, corn flour, meal, yellow cakes, pan de sal, loaf bread, cookies/pies, rolls, stuffed baked bread, lumpia wrappers.

Meat/Fish: Pork: lean with bone, with fat, shank, organs, head.
Beef and carabeef: lean with bone, tenderloin/sirloin, organs, shank, tail. Canned and processed meat: langoniza,

Vegetables: leaf camote tops, cabbage, kangkong, pechay, malunggay, carrots, mustard, amargosa leaves, lettuce, eggplant, tomatoes, okra, banana blossoms. Legumes: sitao, mungo, baguio beans. Roots and tubers: sweet potatoes, onions, Irish potatoes, garlic, cassava roots. Fruits: bananas, mangoes, papayas, citrus, calamansi, pineapples, lanzones, melons, avocados.

Beverages: Coffee, cocoa, soft drinks, alcoholic beverages made from fermented coconut, rice, or sugarcane.

5.7 Housing Overview

Rapid family formation, increasing land and construction costs, financial inability of many families to own homes are factors in the growing scarcity of housing. The housing shortage is particularly acute in urban areas which are experiencing a growth rate of 6.3% compared to the national population growth rate of 2.4-2.6%. According to projections compiled from data in the National Census and Statistics Office (NCSO), housing requirements (1970-2000) will exceed 550,000 units annually to cover the housing backlog, replacements, and new household formations.

Home construction is largely a private sector activity. Self-help and cooperative development characterize building construction in the large proportion of the housing market outside the formal sector. Most housing financed by public sector financial institutions has benefited middle and upper income families. Government involvement in the low-income category was negligible before 1972 and limited to squatter removal between 1972 and 1976. Since 1976 a reorientation in shelter policy has placed the emphasis on upgrading squatter settlements through sites and services projects.

The Ministry of Human Settlements (MHS) is an umbrella agency created in 1978 to coordinate all aspects of human settlements and environmental management. The National Housing Authority (NHA) is responsible for programming, planning, and executing all national housing programs.

5.8 Housing Types, Materials, and Construction

Urban

The majority of households, both rural and urban, occupy single family dwellings. The 1970 census showed that apartments and duplexes were somewhat more common in urban Rizal province than in urban centers as a whole.

The typical non-luxury unit is simply constructed, with poured concrete pads, walls of hollow cement blocks, and a metal (often galvanized iron) roof.

The lowest income families either rent housing space or occupy land illegally in overcrowded, unsanitary squatter settlements. About one quarter of urban housing is constructed of salvage or lightweight materials (bamboo, thatch) although such construction is prohibited because of fire hazards.

Rural

Regional variations exist but the typical rural dwelling is a nipa hut or a "bahay kubo." In the Batanes Islands, north of Luzon, houses are built of tile or stone to resist severe storms. In fishing villages in southern Philippines, where typhoons are less common, houses are often built on stilts over a body of water. In other areas, dwellings may be houseboats or built on rafts to enable them to float during flood conditions. The bahay kubo is of simple lay-out and construction, the choice of materials and orientation influenced by cultural beliefs. An enclosed elevated space functions as a sleeping and storage area. Domestic animals and farm implements are kept in the space underneath. The roof extension in front of the house is the area used for social activities.

Materials

Labor and materials are in adequate supply in the Philippines. Imported materials in conventional residential construction make up only 6-10% of total building costs and even less in low-cost construction. The principal imported products are iron and steel, industrial machinery and parts, and general hardware items. Domestically available building materials, supplied mainly by numerous small-scale firms, include bamboo goods, various vegetable materials such as nipa and cogon, timber products, and small precast concrete products. The present capacity to produce cement exceeds demand. Current research to improve construction technology includes experiments in combining synthetics with natural materials to make a more durable building product.

5.9 Disaster Housing

The NHA has adopted a three-phase policy for providing housing in disaster stricken areas. The National Disaster Coordinating Center has initial responsibility in implementation. Phase I provides emergency housing assistance by means of cash grants for the purpose of buying

building materials for temporary shelters. This kind of assistance was made available to victims of the 1976 earthquake which struck southern Mindanao. Under Phase II, homeowners receive loans for the rehabilitation of damaged homes. Phase III consists of a housing development program providing permanent settlements for homeless families under the technical direction of the NHA.

5.10 Water and Sanitation

According to 1975 World Health Organization (WHO) estimates, 43% of the population had access to public water supplies: 81% of the people in Metro Manila/Southern Tagalog; 55% and 33%, respectively, of other urban and rural populations. The First National Nutrition Survey (FNNS) reported considerable improvement in 1978: waterworks or tubewells (though no indication of how much was piped or "safe") supplied water to 66% of the population (84% and 58%, respectively, of urban and rural areas).

Poor sanitation in most urban areas and a lack of adequate run-off for surface water combine to create severe environmental hazards during heavy rains with the increased risk of contamination of potable water supplies. Again, the FNNS reported significant gains in sanitation since the mid-1970s. While 59% of the population (WHO estimates) had access to some type of sewerage disposal facilities in 1975 (76% in urban and 44% in rural areas), only 32% used an individual water carriage system. By 1978, 56% of the population (72% in urban areas and 48% in rural areas) used water-sealed sewage disposal systems and another 27% used a closed pit system.

The FNNS found that Luzon was better served by both water supply and sanitation systems than either Mindanao or the Visayas. A number of government projects to improve water and sanitation facilities are currently being implemented in Manila and other urban areas.

6. Economy

6.1 Overview of Economy

The Philippine economy is oriented toward private enterprise, with government policies influencing the direction of development. Agriculture has been the traditional base, providing most commodities for foreign exchange earnings which in turn support industrialization.

During the 1960s, real GNP growth averaged 5.5% per year. The economy was characterized by a low level of agricultural productivity, uneven distribution of development benefits, high unemployment (8% in 1970') and, because of low taxation levels, inadequate public expenditure for infrastructure and social services. In addition, poor export performance relative to imports resulted in chronic balance of payments problems.

Economic policies of the 1970s began to address these problems and brought about some improvements. The National Economic and Development Authority (NEDA) was created to determine priorities and incentives for economic growth. Measures were introduced to attract foreign capital and to reform the tax structure. A program of agrarian reform was instituted and progress toward the goal of food self-sufficiency was achieved through expanded rice production. Major capital outlays (6.4 times greater in the 1970s than in the 1960s, but requiring a high level of deficit financing) were made to develop infrastructure. Open unemployment dropped to 4.5% in the middle and late 1970s, though the problems of underemployment, low productivity, and a high annual growth rate (3.1%) for the working population still remain. While not all sectors performed equally well during the 1970s, the economy expanded at a fairly constant rate with the annual growth rate of GNP averaging 6%.

Recent economic developments have been strongly influenced by a sharp deterioration in the external terms of trade (a decline of 29% from 1979 to 1981). Soaring oil prices in 1979 increased the import bill while worldwide recessionary conditions caused falling prices and little quantitative growth in Philippine exports. As a result of the deflation of domestic incomes and lower spending levels, the growth rate of real GNP declined from 6.8% in 1978 to 4.4% in 1980 and 3.8% in 1981. The economic slowdown was also one of the factors creating corporate difficulties and a temporary crisis of confidence in the financial system in 1981. The current account deficit widened from \$1.2 billion (4.9% of GNP) in 1978 to \$2.3 billion (6% of GNP) in 1981 and is expected to be only slightly smaller at \$2.2 billion (5.4% of GNP) in 1982. With deficits being largely financed by heavy foreign borrowing, the debt service ratio rose from 17% of export earnings in 1978 to 19% in 1981 and is projected at 23% in 1982. The inflation rate doubled to

17-18% annually in 1979 and 1980 but had moderated to 12% in 1981. Income distribution remains highly skewed but appears not to have worsened in the last decade. There is evidence, however, that the lower income class has less purchasing power in 1982. (This may have been offset somewhat by higher labor force participation rates.) Marked regional disparities in economic activity continue to exist. GDP per capita income in Metro Manila was 2.8 times the national average in 1979.

The most recent (1983-87) in a series of development plans stresses efficient exploitation of agricultural potential, industrial development along more labor-intensive lines, expansion of necessary infrastructure to support growth, greater self-sufficiency in energy, greater resource mobilization, and more efficient use of resources. The long term goal is a more equitable distribution of development benefits, involving a more balanced pattern of growth among the regions and increased public expenditure in the social sectors.

6.2 GNP

GNP at 1979 market prices: \$30,100 million (\$34,350 million in 1980 - preliminary), \$640 per capita (\$720 in 1980 - preliminary). GNP per capita (real) growth rates for 1970-79: 3.9%.

Source: World Bank Atlas, 1981.

6.3 Industry

The industrial sector, including manufacturing, mining, and construction, contributed 36.9% of GDP in 1980. The manufacturing subsector alone accounted for 24.8% of GDP. Consumer goods are the leading manufactured products, but intermediate goods (chemicals, timber products, structural cement, and other non-metallic industries) have grown in importance since the 1960s. The manufacturing sector is dualistic in structure. The larger, domestic-oriented sector, concentrated in the Manila area, is generally capital intensive and protected by high tariffs. The first phase of an industrial reform policy aimed at making industry more efficient and competitive includes reduction of import controls and tariff reform to take effect over a four year period from 1981 to 1985. Since 1970, government policy has encouraged labor intensive manufacturing for export. This has resulted in dramatic growth of non-traditional manufacturing (garments, handicrafts, electronic parts, food products) and employment gains in the sector.

Although less than 10% of Philippine mineral deposits have been tapped, mining contributes significantly to foreign exchange earnings. The country is among the largest copper producers in Asia and among the top world producers of chromite. Other minerals are iron, nickel, silver, manganese, gypsum, sulfur, mercury, and gold and such non-metallic minerals as clay, limestone, dolomite, feldspar, and phosphate. Increased emphasis is being given to exploitation of oil and coal reserves in line with the search for indigenous energy sources.

6.4 Imports

The dollar value of imports increased by about 66% between 1978 and 1980. More than half of the increase was due to larger payments for petroleum products despite a slight decline in the volume of oil imports. Increases in imports of capital and intermediate goods and raw materials accounted for most of the rest. Capital good imports presently amount to 6% of GNP.

In 1981 imports totaled more than \$7.9 billion and included the following commodity groups (value in millions of \$US - f.o.b.): capital goods (\$1,929), raw materials and intermediate goods (\$2,886), mineral fuels and lubricants (\$2,458), consumer goods (\$679).

Major trade partners and percent of total imports (1981): Japan, 22.7%; United States, 18.6%; European Economic Community, 10.5%; Saudi Arabia, 13.4%; Kuwait, 4.4%; ASEAN countries, 6.8%; Australia, 2.7%; socialist countries, 2.9%; Taiwan, 2.5%; other, 15.5%.

6.5 Exports

Production for export made up 19.8% of GDP in 1980 compared with 17.6% in 1972 and 10.6% in 1960. Gains have been chiefly from non-traditional exports (mostly manufactured) which rose from 6% of total exports in 1960 to 14% in 1972 and 47.5% in 1980. Conversely, traditional exports (coconut products, sugar, forestry products, pineapples, copper, gold) declined from 94% to 53.5% of total exports during the same period.

1981 exports had a total value of about \$5.7 billion and comprised the following categories (value in millions of \$US): coconut products (\$718), sugar and products (\$454), forest products (\$344), mineral products (\$954), fruits and vegetables (\$212), non-traditional manufactures (\$2,609), other (\$431).

Principal export markets and percent of total (1981): United States, 30.2%; Japan, 21.3%; European Economic Community, 15.8%; ASEAN countries, 8%; Socialist countries, 4.7%; Middle East, 2%; Australia, 2.1%; Taiwan, 1.9%; Hongkong, 3.8%; other, 10.2%.

7. Agriculture

7.1 Overview of Agriculture

Agriculture, including forestry and fisheries, is the traditional economic foundation of the Philippines. The sector, characterized by labor-intensive, subsistence operations, continues to employ about one half of the labor force, but its share of GDP dropped from 27% in 1977 to slightly more than 23% in 1980. Because most farm units are small (under five hectares), rural families generally depend on more than one occupation for income. Until recently, a large percentage of farmers were tenants (see section 7.5 Land Reform). Only about one-third of the country's 30 million hectares are cultivated and population pressure on limited arable land is a fundamental problem. In many areas, slash-and-burn agriculture on steep slopes unsuited to cultivation has resulted in serious land erosion. However, the agricultural potential of existing farmland has not yet been realized.

Since the late 1960s, government efforts to improve agricultural productivity and the quality of rural life have included increased use of high yield seeds, expansion of irrigation systems and other rural infrastructure, and agrarian reform.

7.2 Major Crops

Of the major food crops, rice occupies some 40% of cultivated land; corn, over 30%. The principal export crops, coconuts and sugar, are planted on about 3 million hectares and half a million hectares, respectively. Other important crops are fruit (especially bananas and pineapple), nuts, and, to a lesser extent, root crops, abaca, tobacco, coffee, vegetables, rubber, cacao, ramie, magney, kapok, cotton, and other crops.

Climate, terrain, and soils influence distribution. Major rice producing regions are Central Luzon (including provinces of Pangasinan, Tarlac, Nueva Ecija, and Bulacan), Cagayan Valley in northeastern Luzon, Bicol Peninsula, western Visayan Islands and southern and western Mindanao. Rice generally has a year-round growing season. More than half of all corn is grown in the Visayan Islands and southern and western Mindanao. Coconuts are grown mainly in Mindanao (about 50% of nuts harvested) and the eastern Visayan Islands, while sugarcane cultivation is concentrated in the western Visayas. Almost half of banana production comes from the Visayan Islands; tobacco is grown mainly in western Luzon.

7.3 Crop Production

Rice

Favorable weather, expansion of irrigated land, mechanized operations, and high-yielding seed varieties increased palay (unmilled rice) production sufficiently in the late 1970s to allow a modest surplus for export. Despite weather-related losses in 1980, production rose for the eighth consecutive year, reaching 4.84 million tons. Damage from typhoons, lower fertilizer use, and less area sown lowered 1981/82 production to 4.81 million tons. Government rice stocks were 1.6 million tons at the end of February 1982.

Corn

Increased growing area and the "Maisan 77" feed grain production program have boosted corn yields in recent years. The country is self-sufficient in white corn for human consumption, but the 1980 goal of feed grain self-sufficiency suffered a setback because of typhoon damage. The 1981 corn output of 3.2 million tons was marginally higher than the 1980 crop. Stocks at the end of February 1982 totalled 250,000 tons.

Coconuts

The Philippines is the world's leading producer/exporter of coconut products, but yields have been low because of overaged trees and a high level of taxation that reduced grower incentives. If weather is favorable, the recent reduction in the coconut levy and the entry into production of new trees should increase output over the long term. Copra production of over 2 million tons in 1980 was up slightly from the poor 1979 harvest of 1.9 million tons.

Sugar

Because of low export prices, the planted area of sugar decreased by about one-fourth from 1977 to 1980. Improved yields/hectare in 1980 kept production close to the 1979 level of 2.28 million tons.

Livestock and Poultry

Livestock production, traditionally a small-holder or backyard activity, makes up about 18% of total agricultural output. The commercial production of pigs and poultry has been growing in recent years. Dairy cattle are raised in the vicinity of Manila and other cities; beef cattle in Mindanao, Central Luzon, and Masbate. Domestic dairy production lags far behind demand, and a large dairy processing industry depends mainly on imports.

The livestock population in 1980 consisted of 1.88 million cattle, 2.87 million carabao (buffalo), 1.3 million goats, 7.99 million pigs, and 52.76 million poultry.

Forestry

Philippine forest products, used as building materials for many industries, are a major source of foreign exchange. The main exports are pine, several kinds of hardwood, and Philippine mahogany. Logs are gradually being displaced by lumber, plywood, veneer, and wood manufactures as the leading forest export. The 1980 forestry production consisted of 6.35 million cubic meters of logs, 1.53 million board feet of lumber, 523,000 sq. ft. of plywood, and 634,000 sq. ft. of veneer. Nearly half of the land is forested, but reserves are being rapidly depleted as a consequence of shifting cultivation, illegal cutting, and inadequate reforestation. A program aimed at reforesting 745,842 ha of denuded lands by 1982 was running below target in 1978 and 1979.

Fisheries

Despite the potential of Philippine waters, the fishing industry does not meet demand. 80-90% of the catch comes from subsistence and commercial fishing, the rest from fishpond production. In 1980 448,000 MT of fish came from commercial waters, 762,000 MT from municipal (coastal) fishing, and 285,000 MT from fishponds.

7.4 Crop Dates

<u>Crops</u>	<u>Harvest Period</u>	<u>Bulk of Harvest</u>
Maize.....	June - September	August
Rice:		
Lowland.....	October - December	¹ November
Palagad.....	May - July	June
Upland.....	September - November	October
Sugarcane.....	October - April	March
Sugar.....	Campaign from September through August	
Potatoes.....	September - October	October
Sweet potatoes.....	September - October	October
Cassava.....	September - October	October
Onions.....	January - April	April
Tomatoes.....	March - June	June
Watermelons.....	January - March	March
Cabbage.....	November - May	May

Green peas and beans.....	August - September	September
Dry beans.....	August - October	October
Dry peas.....	July - Sept. and Nov. - Jan.	---
Cowpeas.....	Aug. - Sept. and Dec. - Jan.	---
Oranges, mandarins, tangerines, lemons.....	January - November	February
Grapefruit.....	Whole year round	---
Bananas.....	Whole year round	---
Avocados.....	June - August	August
Mangoes.....	May - July	July
Pineapples.....	June - August	August
Groundnuts.....	September - October	October
Soybeans.....	October - January	---
Coconuts.....	Whole year round	---
Coffee.....	January - April	March
Tea.....	January - April	---
Cacao.....	October - December	December
Tobacco.....	January - April	March
Cotton.....	January - March	---
Abaca, ramie and kapok.....	Whole year round	---
Rubber.....	Whole year round	---

¹ Lowland paddy accounts for more than two thirds of the total crop.

7.5 Land Reform

Land reform, primarily aimed at tenanted rice and corn lands, was initiated by presidential decree in 1972. Landholding arrangements in which landlords owned large estates farmed by peasant tenants or sharecroppers in a patron-client relationship put an increasingly heavy burden on tenants (50% to 60% of harvests going to landlords) and have been the historical cause of peasant unrest and involvement in militant political movements.

Previous attempts at reform have been largely unsuccessful since landowners wielded political as well as economic power. The present program gives the tenant-farmer a portion of land (three hectares if irrigated, five hectares if not), and compensates the owner. If the landowner possesses fewer than seven hectares, the tenant becomes a leaseholder. By 1980 these programs had reached 78% of the estimated one million rice and corn tenants and covered 75% of tenanted land occupied by them.

7.6 Agricultural Imports

Agricultural imports in 1981 included wheat valued at \$151 million; dairy products worth \$135 million; fish and fish preparations, \$30 million; other food products, \$249 million; animal and vegetable oils, \$18 million; and cotton, \$34 million.

7.7 Agricultural Exports

Traditional commodities - coconuts, sugar, and forestry products -- continue to make up the bulk of agricultural exports. Though the total volume of coconut exports increased in 1981 over the previous year (1.626 million MT to 1.798 million MT), depressed prices in 1981 lowered total receipts from \$781 million to \$718 million. Coconut products by volume in 1981 included copra (108,000 MT), coconut oil (984,000 MT), desiccated coconut (86,000 MT), and copra meal or cake (620,000 MT). The value of sugar exports dropped to \$454 million in 1981 from the 1980 high of \$600 million as world market prices declined. 953,000 MT of centrifugal sugar were exported in 1981. Forest products accounted for \$344 million of export earnings in 1981 compared with \$420 million in 1980 and included logs (706,000 cu. m.), lumber (546,000 cu. m.), and plywood (370,000 cu. m.). Pineapples, 173,000 MT valued at \$88 million, and bananas, 869,000 MT worth \$124 million, were other important exports.

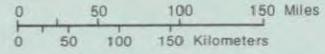
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**Philippines
Administrative Divisions**

- Province boundary
- Province capital
- ⊙ Province capital/
chartered city
- Chartered city

Province locator numbers are placed in north-south, west-east sequence.



8. Physical Geography

8.1 Climate

The Philippine's climate is tropical. Despite the extent of land area (over 1,851 km), the insular and oceanic nature of the country assures considerable uniformity of temperature. The mean annual temperature of 27°C in the lowlands has only about one degree variation between north and south. Annual temperatures are slightly higher in the interiors of the larger land masses than along the coasts. The greater variations occur with altitude: Banguio, 1460 m in the Cordillera Central, 210 km north of Manila, has mean monthly temperatures 8° below Manila's. Absolute lows at sea level are rarely below 16° C; those at Banguio may be 9°.

Seasonal variations between the hottest and coolest months are less than 4°; the greatest differences are in the higher latitudes of Luzon. Most of Luzon has a short "cold wave" during December and January from cold Asian air masses. During the dry season (April) daily temperatures in Manila range from 24° C (just before sunrise) to 33° C (between 1 PM and 3 PM). The wet season (September) has the same regime although minima and maxima are not so extreme (24° and 29°-30° C).

The summer months of April, May, and June are dry and hot; with the beginning of the rainy season at the end of June, temperatures are lower but humidity is more oppressive. The average monthly relative humidity in Manila (typical of much of the Philippines) varies between a low of 70.7% in March and a high of 85.1% in September.

Temperatures

Average Normal Maximum and Minimum Temperature, by Month and by Principal Island: 1951-1975 (°C)

<u>Month</u>	<u>Philippines</u>		<u>Luzon</u>		<u>Visayas</u>		<u>Mindanao</u>	
	<u>Max</u>	<u>Min</u>	<u>Max</u>	<u>Min</u>	<u>Max</u>	<u>Min</u>	<u>Max</u>	<u>Min</u>
Annual average	31.0	22.6	31.0	22.5	31.0	23.5	31.1	22.1
January	29.2	20.0	28.7	20.5	29.4	22.7	30.1	21.5
February	31.0	21.4	31.9	20.7	29.8	22.7	30.2	21.5
March	30.9	22.1	30.8	21.6	30.7	23.1	31.1	21.7
April	31.9	23.1	31.8	23.0	31.9	24.0	31.9	22.2
May	32.5	23.7	32.9	23.7	32.3	24.4	31.9	22.3
June	31.9	23.7	32.2	23.7	31.8	24.0	31.5	22.5

Month	Philippines		Luzon		Visayas		Mindanao	
	Max	Min	Max	Min	Max	Min	Max	Min
July	31.4	23.3	31.5	23.5	31.4	23.8	31.2	22.2
August	31.2	23.3	31.0	23.4	31.4	23.9	31.3	22.3
September	31.2	23.3	31.1	23.3	31.5	23.8	31.4	22.2
October	31.0	23.0	30.8	22.8	31.2	23.7	31.2	22.2
November	30.4	22.6	29.9	22.3	30.7	23.6	31.2	22.0
December	29.7	21.6	29.2	21.4	29.9	21.7	30.5	22.1

Source: Philippines Atmospheric, Geophysical and Astronomical Services Administration as cited in Philippine Yearbook 1981.

Rainfall

More variable than temperature, rainfall has a significant effect on the distribution of vegetation and crops. Average annual rainfalls vary from 97 cm at Aggunetan station in the Cagayan Valley to 546 cm at Baras on Cataduanes Island. Local precipitation is conditioned by exposure, topography, altitude, prevailing winds and their associated air masses.

Areas of heaviest precipitation (exceeding 305 cm annually) account for 30% of the country and include the mountainous west coasts, where drought occurs part of the year, the mountainous east coasts, and sections of Mindanao.

Areas of relatively light precipitation (less than 178 cm annually) include Cagayan Valley, the Central Plain of Luzon, much of the central Visayan Islands of Cebu, eastern Negros, western Leyte, northern Mindanao and sheltered coastal and intermontane areas of southern and southeastern Mindanao, and Cotabato Valley.

Tropical cyclones or typhoons (locally "baguios") are extremely important in Philippine weather. The majority originate near the Marianas Islands and bring strong winds and heavy rains to the Philippines, most frequently between July and November. The coasts of eastern and northern Luzon and the eastern Visayan Islands of Samar and Leyte are struck with greatest frequency and severity. Southern Mindanao, southern Visayas, and Palawan are rarely affected. About 20 such storms occur yearly in the Pacific; 15 affect Philippine weather; an average of five or six touch the Philippines.

Average Normal Rainfall (mm) and Number of Rainy Days,
by Month and Principal Island: 1947-1976

Month	Philippines		Luzon		Visayas		Mindanao	
	Normal Precip	Rainy Days						
Annual average	205.3	15	216.9	15	186.3	14	204.3	16
January	144.9	13	111.5	12	143.5	13	232.5	15
February	99.5	11	69.1	10	100.2	10	176.0	14
March	96.5	10	69.6	9	96.9	10	153.8	13
April	89.6	10	75.8	10	80.1	9	139.5	13
May	169.1	14	171.2	13	154.9	12	186.0	17
June	241.9	17	274.1	17	209.9	16	209.6	18
July	275.0	18	324.2	18	238.7	17	205.7	18
August	307.3	19	393.8	20	233.8	17	200.8	17
September	264.8	18	316.5	19	220.1	16	201.9	17
October	266.6	18	285.6	17	262.4	18	224.6	18
November	273.3	16	285.6	16	262.2	16	259.3	18
December	234.8	16	225.5	14	232.4	16	262.3	18

Source: Philippine Atmospheric, Geophysical and Astronomical Services Administration as cited in Philippine Yearbook 1981.

8.2 Land Forms

The Philippine archipelago, between latitude 4° 23' N and 21° 25' N and longitude 116° E and 127° E, 1,850 km SSE-NNW and 1,060 km ENE-WSW, consists of over 7,100 islands, totaling 299,404 square km in area. Eleven islands account for 94% of land area. Active volcanism and strong seismic activity characterize these island arc systems. The Philippine Trough (Emden Deep), descending to 10,430 m, is less than 160 km. off eastern Mindanao; the deep oceanic basins of the South China Sea and Sulu Sea are off the western Philippine coasts.

Geographically the islands can be divided into the principal regions of Luzon, the Visayan Islands, and Mindanao, and the Islands of Mindoro, Palawan, and the Sulu Archipelago. In the Luzon region (Luzon Islands, numerous smaller islands, and Batan and Babuyan Islands to the north), the island of Luzon (104,688 sq km and 35% of total land surface) has seven major physiographic regions: the North Luzon Highlands or Cordillera Central, Sierra Madre and Eastern Cordillera, Cagayan Valley, Zambales Mountains, the southwestern volcanic area, and the southeastern peninsulas or Bicol.

The seven large Visayan islands, grouped around the Visayan Sea are Masbate, Samar, Bohol, Cebu, Leyte, Panay, and Negros. Together with numerous smaller islands, they make up 21% of total land area. Most have mountainous interiors, the only sizable lowland areas being Leyte Valley, Iloilo Plain on Panay, and the plains of western and northern Negros.

Mindanao (94,630 sq. km. and 34% of land surface) has six major physiographic regions: Eastern or Pacific Cordillera, Davao-Agusan Trough, Central Mindanao Highlands (Central Cordillera), Bukidnon Lanao Plateau, Cotabato Basin-Tiruray Highlands, and Zamboanga Peninsula. Numerous islands surround.

Mindoro (9,733 sq. km.), largely mountainous and forested, has eastern and northeastern coastal plains.

Palawan (11,655 sq. km.), long and narrow, surrounded by 1,100 smaller islands, has a rugged mountainous interior and narrow coastal strip.

The Sulu Archipelago, southwest of Zamboanga Peninsula (320 km. long; over 800 islands for a total of 4,144 sq. km.) is the island chain protrusion of the submarine ridge joining Mindanao with Sabah in Borneo.

8.3 Land Use

About nine million of the country's 30 million hectares were under cultivation in 1981. According to a tentative assessment (1975) of the Bureau of Soils, potential farmland totals 13,669,000 hectares: 4,662,000 arable land, 6,197,000 permanent land, 2,300,000 grazing land, and 510,000 fishponds. Between 1968 and 1978, the amount of land under forests fell from 55% of the total land area to 43% as a result of logging, shifting cultivation, and grazing. Principal agricultural areas: Luzon - the Central Plain (largest lowland and economically most important), Cagayan Valley, and Bicol Plain; Panay - the central plain; Negros - wide western plain; Leyte - the northern plain; Mindanao - the Agusan River Valley and Cotabato Plain.

8.4 Rivers and Waterways

Most rivers are short, many seasonal in flow and subject to flooding in monsoon and typhoon seasons. Larger rivers are navigable for only short distances. Luzon's largest river is the 320 km. long, northward-flowing Cagayan which drains Cagayan Valley. Two important rivers of Central Luzon

Plain network are the Agno, flowing northward to Lingayan Gulf, and the Pampanga which empties into Manila Bay. The relatively short Pasig River flowing through Manila is commercially important. In Mindanao, the two longest rivers, both over 320 km., are the Agusan, which flows northward through Agusan Valley to the Mindanao Sea, and the Mindanao River, which with its tributaries drains Cotobato lowland and empties into Moro Gulf.

Principal Rivers by Province

- | | | |
|---------------|---|--|
| Agusan | - | Agusan River, ships with 6' draft can ascend 32.9 kms, small craft 257.4 kms. |
| Albay | - | Polangui River, small steamers can ascend 11.3 kms, rafts 22.5 kms. |
| Camarines Sur | - | Bicol River, vessels with 9' draft can ascend 40.2 kms, small craft 48.3 kms. |
| Bohol | - | Loboc River, boats with 8' draft can ascend 4.8 kms, rafts 6.4 kms. Inabanga River, boats 6' draft ascend 5 kms, rafts 40 km. Ipil River, boats with 6' draft ascend 13.7 kms. |
| Bulacan | - | Piaridel River, small boats can ascend 32.2 kms. |
| Cagayan | - | Cagayan River, small seagoing vessels can ascend 20.9 kms, small native boats 241.4 kms, rafts 321.8 kms. |
| Capiz | - | Panay River, small craft can ascend 16.1 kms. Aclan River, small craft can ascend 16.1 kms. |
| Cotabato | - | Mindanao River, small steamers can ascend 64.4 kms, vessels with 3-1/2 draft for 112.6 kms. |
| Davao | - | Tagum River, craft with 5' draft ascend 40 kms. |
| Ilocos Sur | - | Abra River, rafts ascend 48.3 kms. |
| Iloilo | - | Jalaur River, rafts can ascend 96.5 kms; Iloilo River, small ships can ascend 1.6 kms, small crafts 19.3 kms. Jaro River, rafts can ascend 56.3 kms. |
| Isabela | - | Pinacanauauan River, small craft can ascend 12.9 kms, rafts 32.2 kms. Magat River, small craft can ascend 9.6 kms, rafts 32.2 kms. |

-
- Leyte - Binahaan River, Cascos can ascend 24.1 kms. Occidental Negros Danao River, steamers with 10' draft can ascend 12.9 kms. Ilog River, small boats can ascend 12.9 kms. Himugaan River, launches can ascend 6.4 kms.
 - Oriental Mindoro - Naujan River, small craft can ascend 9.6 kms.
 - Pampanga - Pampanga River, launches can ascend 40.2 kms, small native boats for 72.4 kms. This river has a number of branches navigable by small craft Pasag River, launches can ascend 16.1 kms.
 - Pangasinan - Agno River, small craft can ascend 96.5 kms. This river has a number of branches navigable by small craft.
 - Rizal - Pasig River, small ships can ascend 1.6 kms, vessels with 5 to 6' for 29 kms.
 - Samar - Catubig River, small craft can ascend 32.2 kms. Gandara River, small craft can ascend 32.2 kms.
 - Sorsogon - Putiao River, vessels with 5' draft can ascend 16.1 kms. Donsol River, small craft can ascend 16.1 kms, rafts 32.2 kms. Irosin River, or Cadacan River, vessels can ascend 20.9 kms.

There are roughly 59 lakes in the Philippines, of which the following are the largest: Lake Laguna de Bay, Lake Lanao in Lanao del Sur, Lake Toal in Batangas, Lake Mainit in Surigao del Norte, Lake Naujan in Mindoro Oriental, and Lake Buluan in Sultan Kudarat.

8.5 Mountains and Volcanoes

Over 65% of the country is highlands; most islands have a mountainous core. Luzon has three major ranges, running parallel, north-south. The Cordillera Central (320 km. long, 58-87 km. wide) with highest elevations in the southern part, contains Mt. Pulog (2,930 m), the highest point in Luzon and second highest in the Philippines, in one of three subranges. The Caraballo Mountains, at the southern end of the Cagayan Valley, connect the Cordillera Central and the rugged easternmost range, the Sierra Madre which continues along the eastern edge of Luzon, forms the Tayabas Isthmus and Bondoc Peninsula, re-emerges from the Sibuyan Sea as Burias and Ticao islands and the main cordillera of Leyte. The third range, the Zimbales mountains or Western Cordillera, extends from Lingayan Bay through Bataan

Peninsula. Of several volcanic peaks in southwestern Luzon, Mt. Banahao (2,177 m) is the highest. Taal Volcano, in the caldera occupied by Lake Taal, erupted in 1911 and 1965, destroying life and property, and again in 1971, 1976 and 1977 with less disastrous effects. The periodically active volcano, Mt. Mayon (2,462 m), is in the mountainous volcanic area of southeastern Luzon (Bicol Peninsula); Mt. Bulusan dominates volcanic peaks of the Sorsogon Peninsula.

In the Visayan Islands, the highest peaks are on Negros in the volcanic main central range (Mt. Canlaon, 2,465 m) and in the southeast (Cuernos de Negros, 1,904 m), and in the rugged mountain system of Panay (Mt. Madlac, 2,180 m and Mt. Nangtud, 2,050 m).

Mindanao has at least 5 major mountain systems. The Pacific Cordillera on the eastern coast (400 km long), known as the Diurta Mountains in the north, crests at the southern end of the range in Mt. Tagdalit (2,800 m). Valley-like passes west of Lianga and Bislig bays permit access westward between the two heavily wooded masses. Extensive faulting and earthquakes occur throughout the cordillera. The much dissected, heavily forested Central Cordillera (400 km long) has volcanic peaks in the south, including active Mt. Apo (2,953 m), the highest peak in the Philippines, and extinct Mt. Matutin (2,293 m). In the volcanic Bukidnon-Lanao Plateau of the north central area, Mt. Katanglad and Mt. Kalatungan reach 2,895 m and 2,860 m, respectively. There is no active volcanism, but Mts. Makaturing and Ragang have erupted in historical times. An active volcano, Mt. Hibok-Hibok (Catarman) on Camiguin Island, off the north coast, erupted in 1951, killing nearly 2,000 persons. The Tiruray Highlands in southwest Mindanao contain active Parker Volcano (1,735 m). Mt. Malindang (2,420 m) is among the volcanoes in northern Zamboanga Peninsula.

The island of Mindoro has two main highland masses surrounding Mt. Halcon (2,585 m) and Mt. Baco (2,490 m). Mt. Mantatingajan (2,025 m) is the highest peak on generally mountainous Palawan.

Volcanoes

There are about 100 eruptive centers in the Philippines. The following are active volcanoes that have erupted since 1800:

<u>Name</u>	<u>Height (m)</u>	<u>Location</u>	<u>Last Eruption</u>
Babuyan Claro	1160	N of Luzon	1913
Mt. Bulusan	1559	Luzon	1980
Mt. Caguya	1158	NE Luzon	1860 (?)
Calayo	302	Mindanao	1886 (?)
Camiguin de Babuyan	623	Luzon	1857

<u>Name</u>	<u>Height</u> (m)	<u>Location</u>	<u>Last Eruption</u>
Mt. Canlaon	2465	N Negros	1978
Didicas Volcano	228	N of Luzon	1969
Mt. Hibok-Hibok	1330	Mindanao Is.	1948-53
Jolo Volcano		Sulu Is.	1897
Mt. Mayon	2462	SE Luzon	1978
Mt. Ragang	2815	Mindanao Is.	1915
Smith Volcano	670	N of Luzon	1924
Mt. Taal	400	Luzon (Volcano Is.)	1977

8.6 Seismicity

The main axis of the Philippine Fault Zone (Philippine Rift), 1,125 km long, runs from the southwest-facing escarpment of the Caraballo Mountains on Luzon, northwest of Dingalen Bay, through Polillo Strait, Ragay Gulf, northeastern Masbate, the Central Cordillera of Leyte, to the upper Agusan Valley in Mindanao. It is paralleled offshore by the Philippine Trough.

The Philippines experiences on the average one perceptible earthquake every two days besides many other tremors too weak to be felt by persons. However, not all parts of the country are equally vulnerable. There is a concentration of epicenters and recently active volcanoes in that part of the "Circum Pacific Belt" extending through Luzon, the Visayan Sea, and Mindanao.

Damaging earthquakes affect Manila on an average of once every 15 years. Though destructive earthquakes have not been as frequent in the past 60 years as they were previously, the reduced incidence of strong seismic activity in the capital area cannot be taken as a firm trend. Because of the nature of the soil, the most vulnerable areas in Metro Manila are Manila proper and Marikina Bay. Especially at risk is the reclaimed area on Manila Bay.

9. Transportation and Logistics

9.1 Road Network

The road transport system has been substantially developed since 1970. Of a total 152,800 km of highway in 1979, 22,900 km were classified as national, 29,000 km as provincial, 3,400 km as city, 10,000 km as municipal, and 87,500 km as barangay roads. Only 13.2% of the total network had either concrete or asphalt surface. Most roads were gravel surfaced (52.8%) or of earth construction (34%). The network is concentrated on Luzon and Mindanao and the Visayan Islands of Cebu, Negros, and Panay. In the mid-1970s, most of the national primary and secondary roads had deteriorated because of inadequate maintenance. It was expected that the GOP's Five-Year Road maintenance Program (1976-80) and World Bank assisted highway maintenance projects would bring about gradual improvements. The Pan-Philippine Highway is the main artery, extending 2,012 km. from Aparri in northern Luzon, through Samar and Leyte to Davao in Mindanao.

Highway construction projects completed or underway in the 1970s included the following: the 51 km Manila North Expressway Extension from Bulacan province to Manila North Road; the 58 km Bataan Expressway serving Mariveles export processing zone; the Lumban-Cavite-Calaraya loop (Laguna); the Manila North-Santo Tomas (Batangas) road; the Digos-Cotabato City road; the Tarlac City (Tarlac)-Lingayen (Pangasinan) road; and the Cagayan Valley road.

Projects in Luzon included the 49 km Marcos Highway, connecting Agoo (La Union) to Baguio city (Mt. Province); the 56 km Lamut-Banaue road passing through Ifugao and Nueva Viscaya; the 104 km East-West road between Marikina (Metro Manila) and Infanta (Quezon) on the Pacific side of the country; the 120 km Manila East road crossing Rizal and Laguna; and the 104 km Olongapo (Bataan)-San Fernando (Papanga)-Gapan (Nueva Ecija) road. Mindanao road construction projects included the 26 km Polloc Port access road; the 209 km Cotabato City-General Santos city road; the 800 km Iligan-Cagayan de Oro-Butuan road; the 227 km Surigao-Agusan-Davao road; the 122 km Bukidnon-Davao road; and the 487 km Zamboanga de Sur road.

Among recently completed bridges are the Liloan bridge linking southern Leyte and Panaon island; the 2,162 meter Marcos Bridge in San Juanico, connecting Samar and Leyte; the 886.8 meter Don Mariano Bridge in Abulog (Cagayan); the 860.1 meter Mandaue-Opon Bridge over Mactan Channel (Cebu); the 743.7 meter Gliber Bridge in Laoag City (Ilocos); the 662.8 meter Gamu Bridge in Gamu (Isabel); and the 495.1 meter Curson Bridge in Madrid (Surigao del Sur).

In line with regional development plans, the government has initiated rural roads improvement projects in order to bring less developed areas into the mainstream of socioeconomic activities. The construction of feeder roads is frequently part of multi-sectoral development projects.

9.2 Vehicles

In 1979 there were 915,000 vehicles in use, of which 55% were cars and jeeps and the remainder commercial vehicles. Road transport accounted for 44% of freight-ton-km and 78% of passenger-km in 1979. (See also section 9.6 Shipping.)

9.3 Railroads

Railroads, relatively unimportant as a means of transportation in the Philippines, are confined to the islands of Luzon and Panay. There are two government-owned railroads: the Philippine National Railway (PNR) with 738 km of main line and 321 km of branch lines (of which only 75 km were operational in 1975) is located on Luzon and runs from San Fernando in La Union Province on the northwestern coast to Legazpi in the southeast. Because of the PNR's potential to compete for long-distance traffic, a rehabilitation program has been undertaken for the line south from Manila. The Philippine Railroad Company (PRC), consisting of 116 km of single track, connects Iloilo with Roxas in Panay. PRC provides limited passenger service, but sugar cane and sugar byproducts make up the bulk of freight carried.

9.4 Ports

The port system consists of 97 national ports (39 classified as ports of entry), 502 municipal ports, and a large number of private berthing facilities. The port of Manila handles 90% of all imports and 20% of all exports. Sedimentation is a problem in many older ports. Most ports are poorly maintained and lack modern cargo handling capacity. Cargo handling is generally provided by private companies. The Philippine Authority is responsible for administration, planning, and maintenance of ports. Major ports are listed below.

Aparri, Luzon

Lat. 18° 22' N; long. 121° 38' E. On the Cagayan River. Aparri is a Customs port of entry and is considered unsafe at most times of the year.

Accommodation: The river is inaccessible to ocean-going vessels, so logs and lumber are usually loaded at the anchorage. Logs are floated out and lumber received from lighters.

Provisions and Water: No fresh water available, but small quantities of fresh stores and ice available.

Pilotage: Compulsory for vessels over 40 tons.

Batangas, Luzon

Lat. 13° 45' N; long. 121° 03' E. Port of entry.

Approach: Semi-circular body of water between Cazador Point and Matoco Point, 14.4 km wide exposed to S winds. Anchorage for large vessels SE of Santa Clara pier in 27.5 to 33 m, good holding ground.

Accommodation: Santa Clara pier has depth at NE seaward corner of 5.18 m, decreasing shorewards to 0.61 m on N side at distance of 80 m, and at S seaward corner 5.49 m, decreasing along S side to 1.52 m, at distance of 100 m. Caltex Cargo Wharf, 1.6 km NW is 164.6 m long at seaward face, with depths of 7.62 to 8.53 m alongside.

Water: Fresh water obtainable at Caltex Wharf.

Tanker Terminals: Caltex Oil Wharf 0.6 km W of cargo wharf, extends 305 m S into bay and ends in a "T" with its S face 83.51 m long; main southern berth has 12.19 m alongside and a mooring buoy 79.24 m from each end. Night berthing possible.

Pilotage: No local pilots. Foreign vessels calling at Santa Rita may obtain a pilot from Manila.

Bislig Bay, Mindanao

Lat. 8° 14' N; long. 126° 22' E. Under customs jurisdiction of Bislig.

Approach: Bay should only be entered during daylight hours. Marker buoys.

Weather: During January, February and March, with NE monsoon, it is difficult to approach pier and secure ship; berthing stern to shore with bow anchor out is recommended (about 23 m clear from inner corner to beach).

Accommodation: Pier owned by Bislig Bay Lumber Co. is in good condition with dolphins on both sides.

Cagayan De Oro, Mindanao

Lat. 8° 30' N; long. 124° 40' E. Port of entry.

Approach: Wharf located on W shore at head of Macajalar Bay, just S of the Cagayan Light. Entrance clear and free from hazard.

Accommodation: Concrete wharf 151.8 m long with 9.14 m depth at N end and 7.92 m at S end. Fairly well protected but open to NE.

Storage: Seven warehouses for copra totalling 3,000 tons capacity.

Provisions: Limited stores.

Water: No fresh water.

Development: Construction of 160 m quay extension with a depth alongside of not less than 8.5 m. Reclamation of 130,000 cu m in progress.

Pilotage: Compulsory. Vessels shifting or changing berth in the stream pay half rates. Pilotage for foreign vessels leaving anchorage in the stream is optional.

Cebu, Cebu

Lat. 10° 18' N; long. 123° 53' E. Port of entry and quarantine pratique.

Approach: Temporary light, mounted on a steel pole at southern entrance. Care must be taken not to mistake Mactan Airport Beacon Light or Cebu Customs Beacon Light for temporary Luis Ledge Light, as a number of vessels have committed that error and run aground. Harbor lies in middle of E side of Cebu Island in strait between Cebu and Mactan islands. Entrance from NE end of strait or from S end.

Vessels up to 7.9 m may use entrance and should await pilot off buoy C-1, but S entrance is generally preferred.

Accommodation: In harbor there are nine berths at Marginal Wharf and six berths at finger piers. Berths 1-9 at Marginal Wharf, 3.66, 4.88, 7.01, 7.62, 7.62, 7.62, 7.92, 6.70, 3.66 m depths alongside respectively.

Marginal Wharf's berth No. 7 and Piers I and II are used for ocean-going vessels.

Storage: Import cargo is stored in small customs warehouse (capacity 200 tons) or in open under tarpaulins (unless immediate delivery is taken). A large number of private companies have their own export shed, capacities up to 6,000 tons.

Crane: Floating crane of 25 tons capacity available.

Provisions: Fresh stores.

Water: Fresh water at ocean-going berths at 20 tons/hr.

Tanker: Six berths. Lengths 170.7 m to no limit. Drafts 7.31 to 9.45 m. Night berthing possible. Water and bunkers available.

Bunkers: Fuel, diesel fuel and gas oil from the Shell Co. of the Philippines Ltd. at Shell Islands Wharf. (Cables: "Shell Cebu"). Light diesel and fuel and gas oil from Standard-Vacuum Oil Co. (Cables: Stanvac, Cebu). Pilotage to these berths is compulsory.

Shiprepairs: Minor repairs by Cebu Shipyards at Opon.

Pilotage: The use of a pilot through the straits and for mooring and unmooring at any berth in the harbor, is compulsory. Pilots should be advised in advance which harbor entrance to be used. Vessels taking a pilot through the channel are exempt from mooring and unmooring pilotage. The use of a pilot from a pier on wharf in the Cebu channel, and for shifting from berth to berth to anchorage or vice versa, is compulsory.

Airport: N.I.A.: Mactan Airport, Cebu City (several flights daily to Manila).

Dadiangas, Mindanao

Lat. 6° 6' 30" N; long. 125° 9' 30" E. Town on the NE shore of Sarangani Bay near E side of Siloway River. Most important shipping center of the surrounding area, and port of entry.

Approach: Weather: During SE monsoon weather usually rough and choppy, with moderate winds in afternoons - mornings usually calm and smooth.

Accommodation: Vessels calling at Dadiangas usually anchor 640 m from shore in 18.3 to 36.6 m, southward of a green warehouse, near beach, eastward of town. Two privately maintained mooring buoys about 300 yards from shore are used by inter-island vessels. Lighters are used to ferry passengers and cargo from shore to vessels at the anchorage.

Provisions: Supplies and general provisions are obtainable in limited quantities.

Development: Construction of a 300 m quay extension with a depth alongside of not less than 8.5 m. Reclamation of 240,000 cu m.

Airport: Airfield is 10 km NE of the town and three flights a week between Manila and other ports maintained by P.A.L.

Davao, Mindanao

Lat. 07° 05' N; long. 125° 38' E. Port of entry and quarantine pratique.

Approach: Gulf and course to Davao are clear and free from hazards. There are anchorages at either side of the fairway: Anchorage 1 is in an area approx 1.6 km off the W coast of Samal Island. Anchorage No 2 is in an area to the S of Sta Ana Pier. Anchorages are well protected outside the typhoon belt. Currents through the Pakiputan Strait run about 2.5 knots

Accommodation: Four government wharves with from 2.66 to 9.6 md alongside and lengths up to 515 m. 11 private berths with from 5.18 to 10.67 md alongside and lengths up to 400 m

Storage: Available

Cranes: Available, caps of 20-60

Provisions: Fresh stores, dunnage mats and lumber available.

Water: Fresh water available.

Container and
Ro/Ro Facilities: Two wharves available

Bulk Cargo Facilities: Five wharves handle bananas and three wharves handle copra, its by-products and other agricultural products

Tanker Terminals: Operated by Shell, Mobil and Caltex for tankers up to 100,000 dwt

Liquefied Gas
Germinals: Available

Bunkers: Available

Development: Construction of about 405.15 m steel sheet pile wall, extending the Sasa Government Wharf northward

Shiprepairs: At Davao Shipyard Corp. Three small drydocks, largest 1600 grt

Towage: Compulsory for berthing/unberthing

Pilotage: Compulsory. Pilots board at lat 7° 2' N; long 125° 39' E.

Medical Facilities: Five hospitals available

Airport: Sasa, 3 km from Sasa Govt. Wharf

Dumaguete, Negros

Lat. 9° 18' N; long. 123° 18' E. Port of entry and quarantine station.

Approach: Approach easy without hazard. Anchorage not recommended owing to depth of water. Port exposed to NE monsoon when it may be impossible to go alongside.

Accommodation: Reconstructed pier is 126.5 m long; large vessels normally berth on S side, using about 60.95/91.43 m of wharf.

Storage: Four copra shippers have warehouse capacity totalling 4,700 tons.

Provisions: Limited fresh stores.

Water: From pier.

Shiprepairs: No facilities.

Pilotage: Compulsory for docking or undocking and from quarantine to any anchorage in stream or shifting.

Iloilo, Panay

Lat. 10° 41' N; long. 122° 35' E. Port of entry and Quarantine Station.

Approach: Large vessels anchor off the river mouth. Entrance to the river is impossible until further dredging is completed; present controlling depth approx. 4.57 m.

Accommodation: The Iloilo Straits wharf, just south of the river mouth, is a covered wharf of 160 m long with 9.14 m depth alongside. Ample lighters and tugs for loading and discharging in the roadstead. Good, safe and easy harbor.

Storage: No shed accommodation.

Water: Fresh water from water barge; insufficient pressure at wharf hydrant.

Bunkers: Fuel oil, diesel fuel and gas oil from Shell.

Pilotage: Pilotage through the Iloilo Straits to and from the harbor, to the Iloilo Straits wharf and to the Iloilo River, in and out, is compulsory.

Vessels taking pilot through Iloilo Straits are exempt from mooring or unmooring pilotage fees, except when the vessel first anchors in the stream longer than 12 hours, in which case they shall pay the docking fees.

Airport: Local airport with services to N.I.A. at Cebu.

Isabela, Mindanao

Lat. 6° 44' N; long. 121° 59' E. The port is at Basilan City in Mindanao.

Approach: The West entrance is generally used by ocean-going vessels calling at Isabela. Because of the geographical situation and natural hazards, night entry is not recommended.

Accommodation: Anchorage off the wharves is from 11 m to 14.6 m with a sand and coral bottom. The existing government facilities include a timber landing 77 m long, and a reinforced concrete wharf 106 m long. Depth alongside is from 8 to 9 m. A regular launch service between Zamboanga City and Basilan is maintained.

Private Wharf: Weyerhauser Phil. Inc.

Development: The concrete wharf is being extended, and reclamation work is in progress. One transit shed is being constructed.

Shiprepairs: Minor repairs and welding jobs can be performed.

Pilotage: Available. Pilot station is in Isabela.

Medical
Facilities: Available at Isabela or at Zamboanga City.

Airport: Zamboanga City Airport, 26 km.

Jolo, Jolo Island

Lat. 6° 31' N; Long. 121° E. Port of entry for customs and quarantine pratique. On NW coast of island about 0.8 km from Belan Point.

Approach: Approach to anchorage and pier clear and free from hazard, except shoal at NE end of pier. Anchorage to NW of pier in 22 to 25.6 m exposed to NE monsoons.

Accommodation: Govt. "U"-shaped pier is 88.39 m long at face, with controlling depths of 7.62 m at NE end, 7.92 m at middle and 9.14 m at SE end. Warehouses for 5,500 tons of copra and 3,000 bales of hemp.

Provisions: Fresh stores in limited quantities.

Water: Fresh water from pipe on pier (limited in dry season).

Pilotage: Docking and leaving government or private wharf, compulsory.

Manila, Luzon

Lat. 14° 35' N; long. 120° 58' E. Principal port of entry, at head of Manila Bay.

Approach: Entrance to Manila Bay by channel north of Corregidor or through the south channel. Latter is not recommended during hours of darkness or in poor visibility. No obstructions between bay entrance and quarantine anchorage (see pilot-age instructions for remainder of entry).

Largest Vessel: Empress of Britain, 42,000 tons.

Accommodation: Vessels with 100 tons or more of cargo for discharge must berth at piers (unless granted shipside delivery permits). At present there are five piers with a total of 26 berths for ocean-going vessels. Controlling depths alongside are: Pier 15: between 10.97 and 11.89 m, Pier 9: between 7.31 and 11.58 m, Pier 13: between 9.45 and 11.28 m, Pier 5: between 8.23 and 10.36 m, Pier 3: between 8.23 and 10.97 m.

Storage: One general bonded warehouse for import cargoes; five public bonded warehouses for storage goods imported under bond; seven private bonded warehouses; four manufacturing bonded warehouses.

Cranes: Floating cranes of 25, 40, 60 and 75 tons available.

Water: Fresh water at the piers and from barges.

Tanker

Terminals: One berth, 213.4 m long, draft 9.14 m. Night berthing possible. Water and bunkers available.

Bunkers: Fuel oil from Caltex. Delivery by barge is made at anchorages or at piers. Fuel, diesel and gas oil from Standard-Vacuum Oil Co; also Shell. Fresh water from barges.

Development: Between the N and S harbors, Manilas main container and breakbulk complex, known as the International Port, is nearly completion. The new port comprises a 920 m long wharf equipped with four container cranes and a ro/ro ramp; three berths will be for container ships of up to 13 md. This project is aimed at centralizing the handling of container traffic to a specific facility. This will leave the S harbor to its original role of handling general cargoes.

New shipyard is under construction at Olongapo, 80 km NW of Manila near the U.S. Navy Subic Bay base. Facilities will include a drylock for ships of up to 300,000 dwt, three mooring quaup for repairs and a main repair shops.

Shiprepairs: All types.

Pilotage: Compulsory. All vessels should await the representative of the Immigration Authority in quarantine anchorage.

anchorage. Pilot boards at completion of inspection if vessels are proceeding to one of the 26 anchorages inside the breakwater or to one of the piers.

Airport: Manila International Airport.

Puerto Princesa, Palawan

Lat. 9° 43' 52" N; long. 118° 43' 55" E.

Approach: Table head, 167 m high, close to shore, approx. 5.6 km SW of Panagtaram Point, is a good landmark when entering port. Tidepole Point, reddish cliff, approx. 6.1 m high, 3.5 km westward of Banca-Bancaon Point, identified by light tower on it. Puerto Princesa Light is displayed on Tidepole Point. Light fixed red, visible 11.2 km. Outside harbor entrance visible only over an arc of 41° from 285° to 326°. In Inner Harbor light obscured eastward of the bearing 150°. A large irregular inlet, 3.2 km wide at entrance, extending about 9.6 km in a NW direction. Coral reefs about 0.8 km wide, narrow navigable width of the channel to about 1.6 km. Depth of channel - 62 m shoaling to 16.4 m.

Accommodation: Town has a "T" shaped concrete pier with berthing face of 38.4 m. Gedeon Shoal, with a depth of 1.8 m approx. 594 m westward of pier, marked by a black buoy. Vessels not going alongside pier may anchor SW of Princesa Point in 21.9 to 29.2 m, mud bottom. A more protected anchorage may be had in 16.5 to 18.3 m, approx. 365 m northward of the end of the pier. Ship's tackle used in loading and unloading, control depth of water 36.6 m. Transit shed available.

Provisions: Available.

Water: Drinking water piped to pier.

Bunkers: Diesel oil, gasoline and kerosene may be purchased in drums and tins.

Airport: Approx. 3 km away from pier. Weekly service to Manila.

San Fernando, Luzon

Lat. 16° 36' 59" N; long. 120° 18' 45" E. Port of entry and terminus of railway from Manila. Shipping facilities are at Poro on S shore of San Fernando Harbor where there is also a Philippine Naval patrol base.

Approach: At approach, San Fernando Light is displayed at an elevation of 32.6 m above H.W. from a white cylindrical iron tower. Occulates white light every 10 seconds, visible for 25.6 km on horizon. Many unmarked submerged wrecks. All shipping facilities concentrated at Poro Highway and railway line connection with San Fernando. Entrance to harbor between reefs approx. 730 m. Fagg reef extends nearly 0.8 km, least depth 8.2 m on which sea breaks in heavy weather, lies approx. 3.2 km NW from San Fernando Point.

Weather: Harbor and piers somewhat protected from NE Monsoons, but open to the weather from N and NW. In heavy northerly weather, vessels anchor off Poro in the southwestern part of the harbor, recommended anchorage approx. 1.3 km north by east from the long wooden pier at Poro in 21.9 m mud bottom and good holding ground.

Accommodation: There are three operating piers at present, one leased to oil companies for their exclusive use, and a private wharf. Government pier, 85 m long, 19 m wide and 3 m high from M.L.L.W. Depth, 6.10 m shore end, 16.15 m far end. Two LST ramps available to expedite loading outgoing cargo without using valuable berthing facilities. Ship's tackle used for cargo handling. No tugs, lighters or launches.

Private Wharf: Shipperside Inc.'s pier is used for ocean going vessels. It is 351.72 m long, 24.38 m wide, with berthing space of 260.29 m on each side. Draft of 18.29 m offshore end, 9.75 m inshore end.

Storage: Transit sheds are now in use. Warehouse available, and handling by Shipperside, Inc., which is a subsidiary of Lepanto Mining Co. Ten warehouses available, and 20 ha open storage.

Water: Limited fresh water.

Bunkers: Available from Shell, at berth, while working cargo.

Development: Shipline plans to extend present pier with a cement pier 121.91 m to outer end. This will give two additional big ship berths. Shipline is planning to erect a 50,000-gallon tank.

Pilotage: Compulsory for all vessels entering or leaving.

Airport: Approx. 1 km SE of pier.

Tacloban, Leyte

Lat. 11° 15.2' N; long. 124° 59.8' E.

Approach: Tacloban is a customs port of entry and is situated on the west shore at the head of San Pedro Bay. The whole bay is encumbered with islets, reefs, shoals and fish traps. Exceptional caution, therefore, should be executed in entering and proceeding to the pilot station. If bound for Tacloban pier vessels should anchor off Egbert shoal and await pilot. If not bound for the pier, good anchorage will be found in the vicinity of Dio Islet in 9.1 to 11 m, mud bottom. Maximum draft in San Pedro channel is 5.79 m, liable to silting.

Accommodation: The pier is a Government-owned concrete structure, 365.74 m long and 15.24 m wide, liable to silting alongside (7.62 m at sea end shallowing to 4.88 m at middle).

Provisions: Limited supplies of stores; dunnage mats available.

Water: Fresh water at low pressure.

Pilotage: Compulsory for vessels over 100 g.r.t. entering or leaving port through San Pedro Bay, also for anchoring in the quarantine area in the harbor stream, for shifting or changing berth within the harbor limit.

Zamboanga, Mindanao

Lat. 6° 54.2' N; long. 122° 4.6' E.

Approach: Approach is well marked by white, steel-framed light on Little Santa Cruz island on the south and the iron frame light tower on the Zamboanga dock on the north. Town easily distinguished by T-shaped pier and numerous waterfront buildings.

Owing to depth, strong currents and hard, uneven bottom, no good anchorages available; many vessels have dragged and lost their anchors. Vessels proceeding to the pier should anchor one half mile due south of light tower and await pilot. Harbor exposed to southwest monsoon, and sudden gales may then be expected, causing heavy seas.

Accommodation: T-shaped concrete govt. pier provides berthing space for two vessels at face. Face is 243.83 m long with 8.23 m alongside at eastern end, gradually diminishing to 5.18 m at western end. Great care should be taken in approaching pier in order to avoid shoal area 3.7 to 5.5 m which lays westward of the end of the pier. Approach must be made against the current, being careful not to bring current too wide of the bow.

Provisions: Adequate fresh stores.

Water: Small quantities of ice and fresh water.

Shiprepairs: Minor repairs only.

Pilotage: Pilotage anchoring in the Stream. Docking and leaving Government Wharf or privately owned piers is compulsory.

Airport: National Airport at Zamboanga, with daily (excl. Sunday) service to Manila.

9.5 Shipping

Philippine flag vessels carry about 10% of foreign trade. Interisland shipping accounts for a significant part of domestic transport: 54% of freight and 7% of passenger traffic in 1979. The volume of domestic shipping (8,740 million ton-km in 1980) is projected to grow 6.3% annually between 1980 and 1985 and passenger traffic (4 million in 1977) at around

7% annually. There were 3,377 (total GRT of 591,444 tons) in the inter-island fleet in 1973, but most are now more than 20 years old and may need replacing.

National Lines

Botelho Bulk Transport Corp.: 8th floor, Antonion Building, 540 T.M. Kalaw St., Ermita, Manila; 9 vessels, services to Japan and Korea.

Eastern Shipping Lines, Inc.: ESL Building, Anda Circle, Port Area, Manila; owners/managers of 18 vessels; services to Japan, Hong Kong and Singapore Straits; brs. in Tokyo, Yokohama, Kobe and Osaka.

Lustevenco (Luzon Stevedoring Co.): Tacoma and Second Sts., Port Area, P.O.B. 582, Manila; F. 1909; 4 brs.; towage, salvage, chartering and oil drilling support services; fleet of 75 tugs and 210 barges.

Maritime Company of the Philippines: 105 Dasmarias St., Binondo, Metro Manila; 21 cargo vessels.

Philippine Ace Lines Inc.: P.O.B. 3567, Ground Floor, Mary Bachrach Bldg., Port Area, Metro Manila; 5 vessels; cargo and liner services to Japan, Europe, South America and U.S.A.

Philippine Internal Shipping Corp. (PISC): ASEAN co-operative venture by 18 companies; 7 cargo vessels.

Philippine President Lines Inc.: Pacific Mills Bldg., 1000-1046 United Nations Ave., Ermita, Manila; 4 cargo vessels; services: chartering, U.S.A., Japan, Europe.

Transocean Transport Corp.: 8th Floor, Magsayay Bldg., 520 T.M. Kalaw St., Ermita, Manila; 9 vessels.

United Philippine Lines, Inc.: UPL Building, Santa Clara St., Aduana, Metro Manila; services to Japan, Hong Kong, and U.S.A.

William Lines, Inc.: Pier 14 North Harbor, Manila; 11 brs.; passenger and cargo inter-island service; 20 pass./cargo vessels.

9.6 Airports

Only Manila international airport has scheduled international service; a second airport also classified as a regular international

airport is located in Mactan, Cebu. Of the country's 78 government - operated national airports, only 32 are operable under all-weather conditions. There are also numerous private airstrips.

NB: For up-to-date information consult latest issue of weekly International Notams, International Flight Information Manual, and/or ICAO's Air Navigation Plan for appropriate region.

BUAYAN/General Santos

<u>Location</u> <u>Coordinates</u>	<u>Eleva-</u> <u>tion M/</u> <u>Temp C</u>	<u>NR/Type</u>	<u>Slope</u> <u>%</u>	<u>Aircraft/</u> <u>Length M</u>	<u>CL</u>	<u>Aircraft/</u> <u>Strength</u> <u>(1,000 kg)</u>	<u>Fuel/</u> <u>Octane</u>
6°6'36" N 125°14'4" E	3 33.6	01/19	0.31	1020	C	AUW 13/1 17/2	

Remarks: Alternate Aerodromes: DAVAO/Francisco Bangoy Intl, MENADO/Sam Ratulangi.

Aids: MD; Stopway 01-60; 19-100. Clearway 01-280.

COTABATO/Cotabato

<u>Location</u> <u>Coordinates</u>	<u>Eleva-</u> <u>tion M/</u> <u>Temp C</u>	<u>NR/Type</u>	<u>Slope</u> <u>%</u>	<u>Aircraft/</u> <u>Length M</u>	<u>CL</u>	<u>Aircraft/</u> <u>Strength</u> <u>(1,000 kg)</u>	<u>Fuel/</u> <u>Octane</u>
7°9'43" N 124°12'40 E	52 29.5	10/28	0.42	1600	C	AUW 33/1 46/2	

Remarks: Alternate Aerodromes: DAVAO/Francisco Bangoy Intl.

Aids: MD, MC, MT, MTX. Clearway 10 and 28-200

DAVAO/Francisco Bangoy Intl.

<u>Location</u> <u>Coordinates</u>	<u>Eleva- tion M/ Temp C</u>	<u>Slope NR/Type</u>	<u>Slope %</u>	<u>Aircraft/ Length'M</u>	<u>CL</u>	<u>Aircraft/ Strength (1,000 kg)</u>	<u>Fuel/ Octane</u>
7°17'59" N 125°39'11" E	27 32.9	05/23	0.32	2154	B	AUW 34/1 50/2 75/4	100JA1

Remarks: Alternate Aerodromes: BUAYAN/General Santos, COTABATO/Cotabato

Aids: L, MD, MC, MT, MTX, L4, 5, 9. Stopway 05-100. Clearway 05-120; 23-150. No telex. Prior notice to aerodrome required. Fuel available on prior notice.

LAOAG/Intl.
REG-GA

<u>Location</u> <u>Coordinates</u>	<u>Eleva- tion M/ Temp C</u>	<u>Slope NR/Type</u>	<u>Slope %</u>	<u>Aircraft/ Length'M</u>	<u>CL</u>	<u>Aircraft/ Strength (1,000 kg)</u>	<u>Fuel/ Octane</u>
18°11'01" N 120°31'48" E	6 33.4	01/19	0.13	1500	C	AUW 45/1 91/2 136/4	100JA1

Aids: MD, MC, MT, MTX, MO, L4, 9. Stopway 01-61, 19-100; Clearway 01-100, 19-200. No telex. Prior notice to aerodrome required. Fuel available on prior notice.

LAPU~LAPU/Mactan Intl.

<u>Location</u> <u>Coordinates</u>	<u>Eleva- tion M/ Temp C</u>	<u>Slope NR/Type</u>	<u>Slope %</u>	<u>Aircraft/ Length'M</u>	<u>CL</u>	<u>Aircraft/ Strength (1,000 kg)</u>	<u>Fuel/ Octane</u>
10°18'12" N 123°58'E	10 34.4	04/22	0.10	2591	A	AUW 45/1 84/2 159/4	100JA1

Remarks: Alternate Aerodromes: HONG KONG/Intl., MANILA/Intl.

Aids: ILS(04-1), SA (04), AV (04) (22), LR, LTX, LB, LO, MD, MC, MT, MTD, MFD, MTX, MO, L4, 5, 9, Stopway 04 & 22-305. Clearway 04-485; 22-610, No telex. Fuel available on prior notice.

MANILA/Intl.

<u>Location</u> <u>Coordinates</u>	<u>Eleva- tion M/ Temp C</u>	<u>NR/Type</u>	<u>Slope %</u>	<u>Aircraft/ Length'M</u>	<u>Aircraft/ Strength CL</u>	<u>Fuel/ (1,000 kg) Octane</u>
14°30'41" N 121°0'57" E	23 34.6	06/24	0.58	3354	A AUW 40/1 91/2	100JA1

Remarks: Alternate Aerodromes: HO-CHI-MINH/Tan-Son-Nhut, HONG KONG/Intl., KAOHSIUNG/Kaohsiung, LAPU-LAPU/Mactan Intl., NAHA/Naha, TAIPEI/Intl.

Aids: ILS (24-1), VOR, L, PA (24-1), VA (06+), LR, LTX, LB, LO, MD, MC MT, MTD, MS, MFD, MTX, MO, L6, 7, 9. No telex. Fuel available on prior notice.

ZAMBOANGO/Zamboanga

<u>Location</u> <u>Coordinates</u>	<u>Eleva- tion M/ Temp C</u>	<u>NR/Type</u>	<u>Slope %</u>	<u>Aircraft/ Length'M</u>	<u>Aircraft/ Strength CL</u>	<u>Fuel/ (1,000 kg) Octane</u>
6°55'26" N 122°3'45" E	9 32.1	09/27	0.15	2610	A AUW 45/1 68/2 125/4	100JA2

Aids: L, LR, LB, LO, MD, MC, MT, MTX, MO, L4, 9. Stopway 09-75; 27-73 No telex. Prior notice to aerodrome required.

Key

INSTR - Instrument Approach Runway
N-INSTR - Non-Instrument Runway

Radio Aids

ILS - Instrument Landing System
DME - Distance Measuring Equipment
VOR - VHF Omni-Directional Range

Lighting Aids

PA - Precision Approach Lighting System
SA - Simple Approach Lighting System
VA - Visual Approach Slope Indicator System
AV - Abbreviated Approach Slope Indicator System
R - Runway Edge, Threshold & Runway End Lighting
C - Runway Center Line Lighting
TD - Runway Touchdown Zone Lighting
TX - Taxiway Lighting
B - Aerodrome or Identification Beacon
O - Obstruction Lighting

Marking Aids

D - Runway Designation Markings
C - Runway Center Line Markings
T - Runway Threshold Markings
TD - Runway Touchdown Markings
S - Runway Sidestripe Markings
FD - Fixed Distance Markings
TX - Taxiway Center Line & Holding Position Markings
O - Obstruction Markings

Additional Lighting

1. Portable Runway Lights (electrical)
2. Boundary Lights
3. Runway Flood Lights
4. Low Intensity Runway Lights
5. Low Intensity Approach Lights
6. High Intensity Runway Lights
7. High Intensity Approach Lights
8. Sequenced Flashing Lights
9. Visual Approach Slope Indicator (VASI)
(an asterisk (*) preceding the element (L*4) indicates

lighting available on prior request by phone, telegram, etc.)

9.7 Aircraft Entry Requirements

All private and non-scheduled commercial aircraft overflying or landing for technical or non-commercial purposes, or for commercial purposes for the first time, must obtain prior diplomatic clearance from the Philippine Department of Foreign Affairs. Permission may be requested through local firms acting as representatives or supplying aircraft services, through Philippine diplomatic or consular offices abroad or, if necessary, through the American Embassy in Manila for relay to approving officials. Applications for clearances must be received by the Department of Foreign Affairs at least seven working days in advance of the proposed flight. Once a clearance is issued, strict adherence to the itinerary is requested, and any changes in flight schedule of more than 24 hours or in data provided must be reported at least 24 hours in advance to the Philippine Air Force, Division Commander, First Air Division, Nichols Air Force Base.

All requests must include (a) aircraft registration marks and radio calls, if different, (b) owner of aircraft, (c) type of aircraft, (d) departure point and date and time of departure, (e) planned route, (f) time of penetration of Philippine ADIZ and time over checkpoints, (g) name and citizenship of pilot and crew, (h) purpose of flight, number of passengers and/or description and pounds of cargo, (i) name of local agent, if any, (j) name, address, and business of charterer, if any, (k) requirements for fuel and lubricants while in the Philippines, specifying type and quantity desired, (l) certification from operator that the aircraft will follow the approved route, that the aircraft will be used only for the purpose stated, that while over Philippine territory, the aircraft will maintain radio contact with CAA facilities and will follow instructions and that is intercepted by air defense units, the aircraft will follow their instructions.

Non-scheduled commercial flights discharging or picking up revenue passengers, cargo, or mail in the Philippines, other than those flights landing for commercial purposes for the first time, must obtain a permit from the Philippine Civil Aeronautics Board. Requests must be submitted at least 7 working days in advance to the Executive Director, Philippine Civil Aeronautics Board, 4th floor, LTS Building, Ermita, Manila 2801 (telegraphic address: AVIOBOARD MANILA/ Telex: None) and must include the same information as listed above, submitted in triplicate with the first copy addressed to the attention of the Division Commander, Headquarters, First Air Command and the second copy to the attention of the Flight Safety Division.

Special Notices

1. An aircraft making a commercial flight for the first time must submit its application through the U.S. Embassy, 1201 Roxas Blvd., Manila (telegraphic address: AMEMBASSY MANILA/TELEX: 7227366).
2. All IFR rated passenger carrying aircraft below 5,682 kg (12,500 lb) gross weight on a flight in excess of one hour duration, regardless of type of flight plan filed, shall be provided with a rated co-pilot on board.

9.8 Airlines

Philippine Air Lines Inc. (PAL): PAL Bldg., Legaspi St., Legaspi Village, Makati, P.O.B. 954, Metro Manila; domestic and international services to Australia, Bahrain, the People's Republic of China, Hawaii, Hong Kong, Indonesia, Japan, Malaysia, Papua New Guinea, Singapore, Taiwan, Thailand, U.K., U.S.A., the Federal Republic of Germany, Greece, Italy, the Netherlands and Pakistan; fleet of 3 DC-10-30, 7 HS-748, 12 BAC 1-11-500, 9 Nihon YS-11, 2 B-747, 2 B-727; publ. Mabuhay.

Foreign Airlines:

The following foreign airlines serve the Philippines; Air France, Air India, Air Nauru, Air Niugini (Papua New Guinea), Alia (Jordan), Alitalia, (Italy), British Airways, Canadian Pacific Airlines, Cathay Pacific Airlines (Hong Kong), China Air Lines (Taiwan), Civil Aviation Administration of China (People's Republic of China), Egypt Air, Garuda (Indonesia), Gulf Air (Bahrain), JAL (Japan), Japan Asia Airways (Japan), KLM (Netherlands), Korean Air Lines (Republic of Korea), Kuwait Airways, Lufthansa (Federal Republic of Germany), Malaysian Airlines, Northwest Orient Airline (U.S.A.), Pan American Airways (U.S.A.), PIA (Pakistan), Qantas, (Australia), Royal Brunei (Borneo), Sabena World Airways (Belgium), SAS (Sweden), Saudia (Saudi Arabia), SIA (Singapore), Airlines, Swissair, Thai International, Trans Mediterranean Airways (Lebanon), and VARIG (Brazil).

9.9 Air Distances (statute miles)

From Manila Intl. to:

Melbourne.....	3,920
New York (JFK) Intl.....	8,505
Paris.....	6,681
Rangoon.....	1,661
Rome.....	6,456

From Manila Intl. to:

Sandakan.....	628
San Francisco.....	6,972
Singapore.....	1,485
Sydney.....	3,888
Tacloban Intl.....	353
Tokyo.....	1,860
Zamboanga.....	528

From Guam to:

Manila.....	1,594
Clark.....	1,625

10. Power and Communications

10.1 Electric Power

The increased cost of imported oil on which the country depends heavily for commercial energy (90% in 1980) has prompted the GOP to take steps to restrain energy demand (through the price system and educational campaigns) and to intensify efforts to develop indigenous energy resources. While domestic oil and gas resources are believed to be modest (oil production in 1980 from the first commercial oil field, Nido, accounted for about 5% of total oil consumption), the Philippines has considerable coal reserves, excellent potential for geothermal and hydropower development, and a large amount of biomass material which can possibly be used in the production of alcohol (ethanol and methanol), charcoal, and firewood. In addition, the country's first nuclear power plant is under construction. While the present oil import dependency ratio (85%) is expected to fall to 55-60% by 1990, the total cost of oil imports may well continue to increase.

About 68% of electricity is presently generated by oil, but the potential for substituting other energy sources is greater in the power sector than in manufacturing and mining. Both electricity consumption and generation have grown at about 9% a year since 1975 - well above rates for commercial energy growth. The World Bank projects that commercial energy and electric power consumption will grow at average annual rates of 6.5% and 7%, respectively, during the 1980s, with highest growth rates in the presently underdeveloped Visayas and Mindanao.

The government-owned National Power Corporation (NPC) is responsible for all large-scale generation of power and for most electrical transmission. There were about 5,200 km of transmission lines in 1979—three quarters of which were in Luzon. A further 3,700 km (between 69 kV and 230 kV) are under construction. The National Electrification Administration (NEA) is in charge of implementing the government's rural electrification programs and of power distribution in rural areas. Private utilities, the largest of which is Manila Electric Co. (MECO), distribute power in urban zones. While the government's goal is to have nearly 100% of households connected to the electricity network by 1989, only 43% presently have access and there are wide regional differences: Luzon has 55% of connections, Visayas 19%, and Mindanao 22%.

There are eight isolated electricity subsystems: one in Luzon where about 85% of the network is interconnected; six in Visayas (Samar, Leyte, Bohol, Cebu, Negros, and Panay) in an early stage of development; one in Mindanao where less than 30% of the region is interconnected. NPC supplies

nearly all electric power in Luzon and about 45% in Mindanao; private companies and cooperatives supply the remainder.

Total installed capacity in 1979 was about 4,000 MW and electricity generation, 15,300 MW. Gross additions of 6,868 MW (3,004 now under construction and 3,864 MW from new projects) are planned in the electricity expansion program.

NPC Existing Generating Facilities as of December 31, 1979

<u>Type</u>	<u>Station name/island</u>	<u>Unit size (MW)</u>	<u>No. of units</u>	<u>Installed capacity (MW)</u>
<u>Luzon Grid</u>				
<u>Hydro</u>	Ambuklao	25	3	75.0
	Binga	25	4	100.0
	Angat	50	4	218.0
		6	3	
	Pantabangan	50	2	100.0
	Caliraya	32	1	32.0
	Botocan	8	2	16.0
	Buhi-Barit	1.8	1	1.8
	Cawayan	0.4	1	0.4
	Subtotal			<u>543.2</u>
<u>Thermal</u>	Bataan 1	75	1	75.0
	Bataan 2	150	1	150.0
	Malaya 1	300	1	300.0
	Malaya 2	350	1	350.0
	Snyder 1	200	1	200.0
	Snyder 2	300	1	300.0
	Gardner 1	150	1	150.0
	Gardner 2	200	1	200.0
	Tegen 1	100	1	100.0
	Tegen 2	100	1	100.0
	Rockwell 1-5	25	5	125.0
	Rockwell 6-8	60	3	180.0
	Subtotal			<u>2,230.0</u>
<u>Geothermal</u>	Tiwi 1 & 2	55	2	110.0
	Mak-Ban 1 & 2	55	2	110.0
	Subtotal			<u>220.0</u>
<u>Total Luzon (MW)</u>				<u>2,993.0</u>

<u>Type</u>	<u>Station name/island</u>	<u>Unit size (MW)</u>	<u>No. of units</u>	<u>Installed capacity (MW)</u>
<u>Visayas</u>				
<u>Hydro</u>	Loboc (Bohol)	0.4	3	1.2
	Amlan (Negros)	0.4	2	0.8
	Subtotal			<u>2.0</u>
				51.1
<u>Diesel</u>	Naga (Cebu)	7.3	7	
	Amlan (Negros)	5.5	2	11.0
	Tagbilaran (Bohol)	5.5	2	11.0
	Dingle (Panay)	7.3	2	14.6
	Subtotal			<u>87.7</u>
<u>Geothermal</u>	Tongonaw (Leyte)	3.0	1	3.0
<u>Total Visayas (MW)</u>				<u>92.7</u>
<u>Mindanao</u>				
<u>Hydro</u>	Agus IV	-	-	200.0
	Agus II	60.0	1	60.0
	Agusan	-	-	1.6
	Subtotal			<u>261</u>
<u>Diesel</u>	Aplaya 1	5.5	2	11.0
	Gen. Santos	7.3	3	21.9
	Subtotal			<u>32.9</u>
<u>Total Mindanao (MW)</u>				<u>294.5</u>

Source: World Bank. Philippines Energy Sector Survey, Vol. II. February 1982.

10.2 Telecommunications

Telecommunications systems were generally inadequate in the mid-1970s with service concentrated in urban and commercial centers. Telephone density in 1979 was 1.36 phones per 100 population but distribution was still uneven: 8.02 telephones per 100 inhabitants in Metro Manila and 0.38 for the rest of the country.

The private sector accounts for about 94% of services. The Philippine Long Distance Telephone Co. is the largest of the private companies with a network of 36 central offices. It is the principal supplier of long-distance telephone service with a nationwide microwave network interconnecting 99 exchanges operated by other private companies and eight exchanges maintained by government agencies. As of December 1979, the company had 519,642 telephones in service - about 85% of all telephones in the country. The Government Telephone System (GTS) of the Bureau of telecommunications (BUTEL) operated a total of 84 interprovincial telephone stations and 32 provincial (local) telephone exchanges. International Telecommunications are provided by communications satellite, submarine cables, or a tropo-scatter system.

10.3 Radio

Radio is the major medium of communications with two million receivers in use in 1979. Radio sets are found in some of the country's most remote areas. As of June 1980, there were 291 radio stations operating in the Philippines, 43 of which were in Metro Manila. Of the total stations, 84% were AM, 16% FM. Ten percent belonged to the government, managed by the Ministry of Public Information and by the National Media Production Center. Broadcasts are in English and Pilipino.

10.4 Television

There were 31 television stations in operation in December 1979, of which 16% were Metro Manila based. One million sets were in use. Five major networks operate 19 carrying and 7 relay stations.

Note: A complete listing of radio broadcasting stations and commercial television stations is found in the Philippine Yearbook 1981 issued by the National Economic and Development Authority of the Republic of the Philippines.

Public and Private Hospitals - Number and Bed
Capacity, Region and Province: FY 1973-74

<u>Region and Province</u>	<u>Total</u>		<u>Public</u>		<u>Private</u>	
	<u>Number</u>	<u>Bed Capacity</u>	<u>Number</u>	<u>Bed Capacity</u>	<u>Number</u>	<u>Bed Capacity</u>
Philippines	894	65,185	325	39,626	569	25,559
Hospitals under/ licensed by Dept. of Health	846	51,109	277	25,550	569	25,559
Hospitals under other government agencies including leprosaria	48	14,076	48	14,076	-	-
I. Ilocos	72	3,408	25	1,900	47	1,508
Abra	5	164	2	100	3	64
Benguet	14	869	3	450	11	419
Ilocos Norte	11	420	4	250	7	170
Ilocos Sur	9	280	4	200	5	80
La Union	10	500	5	275	5	225
Mt. Province	5	225	2	150	3	75
Pangasinan	18	950	5	-	13	-
II. Cagayan Valley	49	1,678	30	1,325	19	353
Bataanes	2	100	2	100	-	-
Cagayan	11	434	7	375	4	59
Ifugao	7	186	3	125	4	61
Isabela	14	413	7	275	7	138
Kalinga-Apayao	9	245	6	200	3	45
Nueva-Vizcaya	3	200	2	150	1	50
Quirino	3	100	3	100	-	-
III. Central Luzon	109	3,213	25	1,375	84	1,838
Bataan	4	163	2	125	2	38
Bulacan	32	906	6	300	26	606
Nueva Ecija	14	527	5	325	9	202
Pampanga	32	877	7	375	25	502
Tarlac	13	319	2	125	11	194
Zambales	14	421	3	125	11	296
IV. Southern Tagalog	251	24,964	51	12,475	200	12,489

<u>Region/province</u>	<u>Land Area</u> <u>sq. km.</u>	<u>Population</u>		<u>Density/sq. km</u>	
		<u>1970</u>	<u>1980</u>	<u>1970</u>	<u>1980</u>
Northern Mindanao	28,327.8	1,952,735	2,746,480	68.9	97.0
Agusan del Norte	2,590.3	278,053	366,721	107.3	141.6
Agusan del Sur	8,965.5	174,682	260,576	19.5	29.1
Bukidnon	8,293.8	414,762	630,128	50.0	76.0
Camiguin	229.8	53,913	57,128	234.6	248.6
Misamis Occidental	1,939.3	319,855	391,013	164.9	201.6
Misamis Oriental	3,570.1	472,756	694,423	132.4	194.5
Surigao del Norte	2,739.0	238,714	346,491	87.2	126.5
Southern Mindanao	31,692.9	2,200,726	3,310,702	69.4	104.5
Surigao del Sur	4,552.2	258,680	373,705	56.8	82.1
Davao del Norte	8,129.8	442,543	692,654	54.4	85.2
Davao Oriental	5,164.5	247,995	341,586	48.0	66.1
Davao del Sur	6,377.6	785,398	1,134,436	123.1	177.9
South Cotabato	7,468.8	466,110	768,321	62.4	102.9
Central Mindanao	23,293.1	1,941,457	2,211,971	83.3	95.0
Lanao del Norte	3,092.0	349,942	429,260	113.2	138.8
Lanao del Sur	3,872.9	455,508	405,627	117.6	104.7
Maguindanao	5,474.1	476,338	542,104	87.0	99.0
North Cotabato	6,565.9	468,354	549,521	71.3	83.7
Sultan Kudarat	4,288.2	191,315	285,450	44.6	66.6

1/ Details may not add up to total due to rounding.

2/ Excludes Valenzuela.

3/ Included in Quezon.

Source: National Census and Statistics Office as cited in Philippine Yearbook, 1981.

See p. 81

<u>Region and Province</u>	<u>Total</u>		<u>Public</u>		<u>Private</u>	
	<u>Number</u>	<u>Bed Capacity</u>	<u>Number</u>	<u>Bed Capacity</u>	<u>Number</u>	<u>Bed Capacity</u>
<u>Region and Province</u>	<u>Number</u>	<u>Bed Capacity</u>	<u>Number</u>	<u>Bed Capacity</u>	<u>Number</u>	<u>Bed Capacity</u>
Sub-region IV-A	135	21,285	11	10,450	124	10,835
Rizal	135 ^a	21,285	11	10,450	124	10,835
Sub-region IV-B	116	3,679	40	2,025	76	1,654
Aurora (Sub-Province)	b	b	b	b	b	b
Batangas	33	1,000	5	350	28	650
Cavite	14	394	2	175	12	219
Laguna	22	722	6	375	16	347
Marinduque	3	130	2	100	1	30
Occidental Mindoro	4	131	3	125	1	6
Oriental Mindoro	7	177	2	125	5	52
Palawan	8	241	6	225	2	16
Quezon	21	734	10	400	11	334
Romblon	4	150	4	150	-	-
V. Bicol	57	2,260	22	1,100	35	1,160
Albay	21	783	7	275	14	508
Camarines Norte	7	276	1	100	6	176
Camarines Sur	10	579	2	225	8	354
Catanduanes	5	200	5	200	-	-
Masbate	7	180	3	125	4	55
Sorsogon	7	242	4	175	3	67
VI. Western Visayas	60	3,868	30	1,600	30	2,268
Aklan	5	260	3	150	2	110
Antique	6	240	5	200	1	40
Capiz	8	431	4	175	4	256
Guimaras (Sub-Province)	c	c	c	c	c	c
Iloilo	17	1,305	11	600	6	705
Negros Occidental	24	1,632	7	475	17	1,157

<u>Region and Province</u>	<u>Total</u>		<u>Public</u>		<u>Private</u>	
	<u>Number</u>	<u>Bed Capacity</u>	<u>Number</u>	<u>Bed Capacity</u>	<u>Number</u>	<u>Bed Capacity</u>
VII. Central Visayas	49	3,025	20	1,225	29	1,800
Bohol	10	472	5	350	5	122
Cebu	29	1,953	10	575	19	1,378
Negros Oriental	9	550	4	250	5	300
Siquijor (Sub-Province)	1	50	1	50	-	-
VIII. Eastern Visayas	43	1,922	28	1,425	15	497
Biliran (Sub-Province)	d	d	d	d	d	d
Leyte	16	974	10	625	6	349
Southern Leyte	10	225	4	150	6	75
Eastern Samar	5	200	5	200	-	-
Northern Samar	5	225	5	225	-	-
Western Samar	7	298	4	225	3	73
IX. Western						
Mindanao	30	1,025	8	625	22	400
Sub-region IX-A	6	182	2	125	4	57
Basilan	e	e	e	e	e	e
Sulu	6	182	2	125	4	57
Tawi-tawi	f	f	f	f	f	f
Sub-region IX-B	24	843	6	500	18	343
Zamboanga del Norte	5	150	3	125	2	25
Zamboanga del Sur	19	693	3	375	16	318
X. Northern						
Mindanao	56	2,251	19	1,100	37	1,151
Agusan del Norte	13	497	3	150	10	347
Agusan del Sur	3	85	2	75	1	10
Bukidnon	5	218	1	75	4	143
Camiguin	1	75	1	75	-	-
Misamis						
Occidental	15	499	4	200	11	299
Misamis						
Oriental	11	507	2	225	9	282
Surigao del Norte	8	370	6	300	2	70

<u>Region and Province</u>	<u>Total</u>		<u>Public</u>		<u>Private</u>	
	<u>Number</u>	<u>Bed Capacity</u>	<u>Number</u>	<u>Bed Capacity</u>	<u>Number</u>	<u>Bed Capacity</u>
XI. Southern						
Mindanao	42	2,433	9	975	33	1,458
Surigao del Sur	5	240	1	75	4	165
Davao del Norte	5	257	1	75	4	182
Davao Oriental	2	115	1	75	1	40
Davao del Sur	17	1,258	3	450	14	808
South Cotabato	13	563	3	300	10	263
XII. Central						
Mindanao	28	1,062	10	425	18	637
Lanao del Norte	11	433	3	125	8	308
Lanao del Sur	3	108	2	100	1	8
Maguindanao	2	75	2	75	-	-
North Cotabato	11	396	2	75	9	321
Sultan Kudarat	1	50	1	50	-	-

^a Includes data for Metro Manila

^b Included in Quezon

^c Included in Iloilo

^d Included in Leyte

^e Included in Zamboanga del Sur

^f Included in Sulu

Source: Department of Health as cited in Philippine Yearbook 1977.

Land Area and Population Density by Region and Province:
Censal Years 1970 and 1980

<u>Region/province</u>	<u>Land Area</u> <u>sq. km</u>	<u>Population</u>		<u>Density/sq. km</u>	
		<u>1970</u>	<u>1980</u>	<u>1970</u>	<u>1980</u>
Philippines	300,000.0 ^{1/}	36,684,486	47,914,017	122.3	159.7
<u>Region/province</u>	<u>Land Area</u> <u>sq. km</u>	<u>1970</u>	<u>1980</u>	<u>1970</u>	<u>1980</u>
National Capital Region (Metro Manila)	636.0	3,966,695	5,924,563	6,236.9	9,315.4
Ilocos Region	21,568.5	2,990,561	3,543,632	138.7	164.3
Abra	3,975.6	145,508	160,196	36.6	40.3
Benguet	2,655.4	263,550	353,577	99.3	133.2
Ilocos Norte	3,399.3	343,427	393,485	101.0	115.8
Ilocos Sur	2,579.6	385,139	443,591	149.3	172.0
La Union	1,493.1	373,682	453,211	250.3	303.5
Mt. Province	2,097.3	93,112	103,052	44.4	49.1
Pangasinan	5,368.2	1,386,143	1,636,520	258.2	304.9
Cagayan Valley	36,403.1	1,691,459	2,220,244	46.5	61.0
Bataanes	209.3	11,398	12,111	54.5	57.9
Cagayan	9,002.7	581,237	712,029	64.6	79.1
Ifugao	2,517.8	92,487	111,403	36.7	44.2
Isabela	10,664.6	648,123	870,389	60.8	81.6
Kalinga-Apayao	7,047.6	136,249	190,118	19.3	27.0
Nueva Vizcaya	3,903.9	172,198	240,962	44.1	61.7
Quirino	3,057.2	49,767	83,232	16.3	27.2
Central Luzon	18,230.8	3,615,496	4,794,382	198.3	263.0
Bataan ^{2/}	1,373.0	216,210	321,680	157.5	234.4
Bulacan ^{2/}	2,625.0	737,975	1,095,963	281.1	417.5
Nueva Ecija	5,284.3	851,294	1,069,406	161.1	202.4
Pampanga	2,108.7	907,275	1,175,314	416.0	539.0
Tarlac	3,053.4	559,708	687,980	183.3	225.3
Zambales	3,714.4	343,034	443,859	92.4	119.5
Southern Tagalog	46,924.1	4,457,008	6,114,447	95.0	130.3
Aurora	3,239.5	^{3/}	107,916	^{3/}	33.3
Batangas	3,165.8	926,308	1,173,767	292.6	370.8
Cavite	1,287.6	520,180	771,796	404.0	599.4
Laguna	1,759.7	699,736	972,730	397.6	552.8
Marinduque	959.2	144,109	173,725	150.2	181.1

<u>Règion/province</u>	<u>Land Area</u> <u>sq. km</u>	<u>Population</u>		<u>Density/sq. km</u>	
		<u>1970</u>	<u>1980</u>	<u>1970</u>	<u>1980</u>
Occidental Mindoro	5,879.8	144,032	222,025	24.5	37.8
Oriental Mindoro	4,364.7	328,364	446,857	75.2	102.4
Palawan	14,896.3	236,635	370,991	15.9	24.9
Quezon	8,706.7	983,324	1,129,138	112.9	129.7
Romblon	1,355.9	167,082	193,190	123.2	142.5
Rizal	1,308.9	307,238	552,312	234.7	422.0
Bicol	17,632.5	2,966,881	3,467,028	168.3	196.6
Albay	2,552.6	673,981	803,274	264.0	314.7
Camarines Norte	2,112.5	262,207	307,995	124.1	145.8
Camarines Sur	5,266.8	948,436	1,100,044	180.1	208.9
Catanduanes	1,511.5	162,302	175,657	107.4	116.2
Masbate	4,047.7	492,908	580,444	121.8	143.4
Sorsogon	2,141.4	427,047	499,614	199.4	233.3
Western Visayas	20,223.2	3,618,326	4,531,932	178.9	224.0
Aklan	1,817.9	263,358	325,491	144.9	179.0
Antique	2,522.0	289,172	344,905	114.7	136.8
Capiz	2,633.2	394,041	492,766	149.6	187.1
Iloilo	5,324.0	1,167,973	1,432,000	219.4	269.0
Negros Occidental	7,926.1	1,503,782	1,936,770	189.7	244.4
Central Visayas	14,951.5	3,032,719	3,789,325	202.8	253.4
Bohol	4,117.3	683,297	805,924	166.0	195.7
Cebu	5,088.4	1,634,182	2,090,317	321.2	410.8
Negros Oriental	5,402.3	652,264	822,923	120.7	152.3
Siquijor	343.5	62,976	70,161	183.3	204.3
Eastern Visayas	21,431.7	2,381,409	2,812,753	111.1	131.2
Leyte	6,268.3	1,110,626	1,302,377	177.2	207.8
Southern Leyte	1,734.8	251,425	296,581	44.9	171.0
Eastern Samar	4,339.6	271,000	321,477	62.4	74.1
Northern Samar	3,498.0	306,114	383,245	87.5	109.6
Western Samar	5,591.0	442,244	509,073	79.1	91.1
Western Mindanao	18,685.0	1,869,014	2,446,558	100.0	130.9
Basilan	1,327.2	143,829	199,029	108.4	150.0
Sulu	1,600.4	315,421	317,876	197.1	198.6
Tawi-Tawi	1,087.4	110,196	167,403	101.3	153.9
Zamboanga del Norte	6,618.1	409,379	583,550	61.9	88.2
Zamboanga del Sur	8,051.9	890,189	1,178,700	110.6	146.4

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