Appendix 14-14

CARGO THROUGHPUT AT TAGBILARAN PORT

(UNIT: TON)

Month	1977			1978			1979		
	Discharged	Loaded	Total	Discharged	Loaded	Total	Discharged	Loaded	Total
Jan.				10,100.32	3,848.80	13,946.12	14,053.76	4,622.15	18,675.91
Feb.				8,483.27	7,607.71	16,090.98	10,167.73	3,927.70	14,095.43
Mar.				9,086.99	4,385.85	13,472.84	13,025.30	4,520.73	17,546.03
Apr.				11,106.86	3,373.88	14,480.74	12,722.58	4,618.43	17,341.01
May				11,264.61	8,334.52	19,599.13	13,968.10	5,870.98	19,839.08
Jun.				16,415.28	6,489.80	22,905.08	10,551.77	5,822.72	16,374.49
July				12,303.46	5,163.55	17,467.01			
Aug.				10,689.83	6,451.08	17,140.91			
Sep.	7,662.49	8,541.80	16,204.20	8,922.31	6,297.33	15,219.64			
Oct.	11,762.96	10,486.92	22,249.88	14,082.35	5,296.73	19,397.11			
Nov.	9,306.38	5,878.24	15,184.62	11,085.28	5,363.85	16,449.13			
Dec.	10,195.94	5,726.40	15,922.34	12,626.84	4,596.84	17,223.68			

Source: Philippine Port Authority, Cebu

Appendix 14-15

NUMBER OF SHIPS CALLING AT TAGBILARAN PORT AND JAGNA PORT

(1) TARGBILARAN PORT

Month / Year	Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1977								62	121	138	138	149
1978	118	119	117	114	133	126	123	113	116	127	120	129
1979	123	113	121	112	129	136	119					

(2) JAGNA PORT

Month / Year	Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1977						72	67	45	51	77	88	
1978							47	41	47	54	44	43
1979	41	43	49	38	62	38						

Source: Philippine Port Authority, Cebu

Appendix 14-18

PASSENGER TRAFFIC AT JAGNA PORT

(UNIT: Persons)

Month	1977			1978			1979		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Jan.							9,232	7,216	16,448
Feb.							7,107	6,871	13,978
Mar.							7,956	7,317	15,273
Apr.							9,571	7,568	17,139
May							13,096	17,429	30,525
June	8,349	12,238	20,578				8,335	9,540	17,875
July	6,676	7,901	14,577	7,635	9,242	16,877			
Aug.	7,812	7,134	14,496	55,570	7,655	13,225			
Sep.	7,428	7,556	14,984	6,667	6,471	13,138			
Oct.	9,578	8,416	18,004	9,124	7,281	16,405			
Nov.	9,626	7,544	17,170	6,915	5,739	12,654			
Dec.				11,498	9,928	21,426			

Source: Philippine Port Authority, Cebu

Appendix 14-17

CARGO THROUGHPUT AT JAGNA PORT

(UNIT: Ton)

Month	1977			1978			1979		
	Discharged	Loaded	Total	Discharged	Loaded	Total	Discharged	Loaded	Total
Jan.							856	638	1,494
Feb.							1,259	616	1,875
Mar.							887	1,530	2,417
Apr.							1,072	1,120	2,192
May							1,365	1,419	2,784
June	1,021	1,557	2,578				1,256	157	1,413
July	2,308	2,710	5,018	970	1,324	2,294			
Aug.	816	650	1,466	730	1,476	2,206			
Sep.	685	5,018	5,703	729	1,375	2,104			
Oct.	1,136	3,712	4,848	723	1,590	2,313			
Nov.	1,331	3,672	5,003	1,220	1,001	2,221			
Dec.				1,037	934	1,971			

Source: Philippine Port Authority, Cebu

Appendix 14-16

PASSENGER TRAFFIC AT TAGBILARAN PORT

(UNIT: Persons)

Month	1977			1978			1979		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Jan.				18,758	17,579	36,345	19,302	19,952	39,254
Feb.				13,562	12,261	25,823	14,037	12,453	26,490
Mar.				16,265	13,019	29,284	18,470	15,612	34,082
Apr.				21,291	18,366	40,257	21,527	8,502	30,082
May				21,281	20,083	41,364	26,647	25,058	51,703
June				16,143	17,979	34,122	17,347	19,045	36,387
July				11,295	15,202	26,497			
Aug.				15,033	16,093	31,126			
Sep.				17,491	15,451	32,942			
Oct.	14,419	6,695	21,114	17,041	15,959	32,991			
Nov.	13,409	10,267	22,676	15,943	15,294	31,237			
Dec.	17,150	15,914	33,064	21,081	18,493	39,574			

Source: Philippine Port Authority, Cebu

Appendix 14-4

EXISTING ROAD CONDITIONS IN BOHOL (1979)

Classification of Bohol Roads	Road Surface Condition			Total Length (km)	Percent paved(%)	Road Density(m/km^2)
	Concrete	Asphalt	Unpaved			
National	24.6	163.9	401.6	590.1	31.94	143
Provincial	5.1	10.2	708.0	723.3	2.12	176
Municipal	16.2	22.9	163.1	202.2	19.34	49
City	-	63.6	25.0	68.6	63.56	17
Barangay	-	1.9	1,831.2	1,833.1	0.10	445
TOTAL BOHOL	45.9	242.5	3,128.9	3,417.3	8.44	830

Source: Ministry of Highways, Cebu

Appendix 14-5

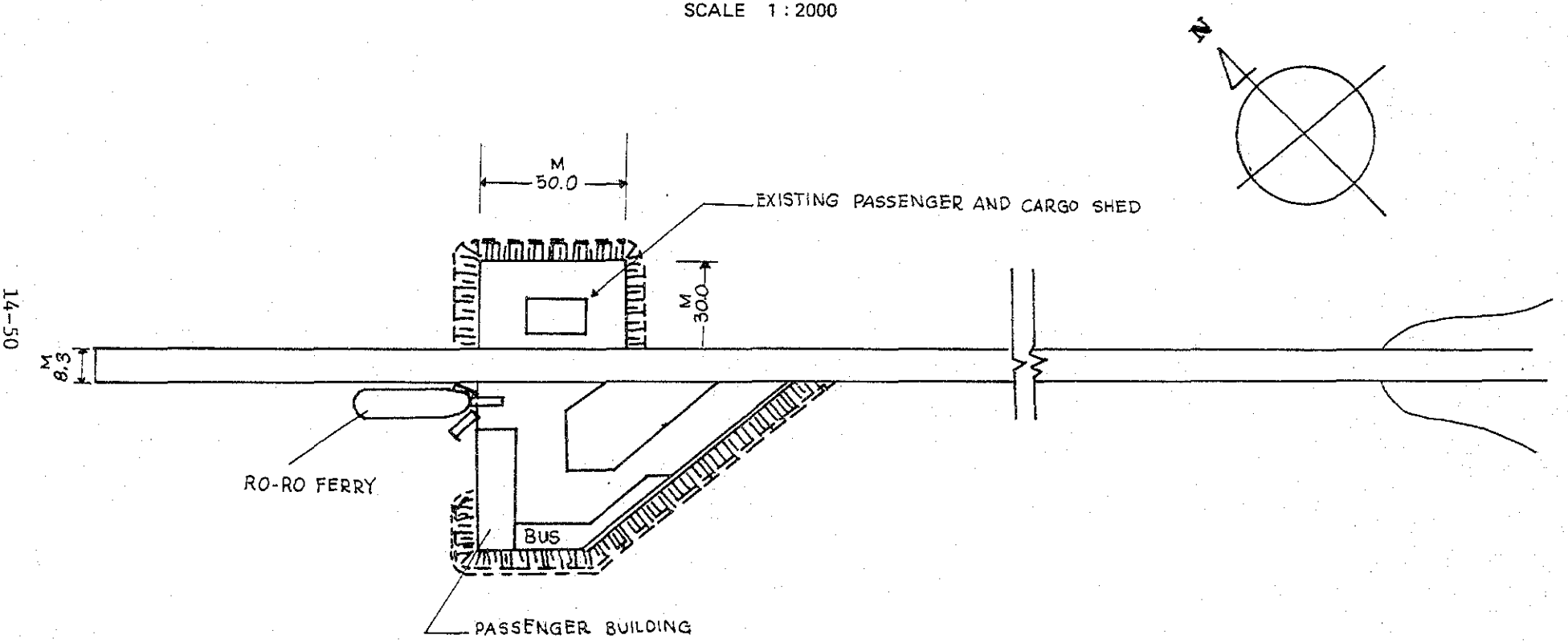
ROAD CONDITIONS IN REGION VII (1979)

Province	Road Surface Condition			Total Length (km)	Percent paved(%)	Road Density(m/km^2)
	Concrete	Asphalt	Unpaved			
Bohol	45.9	242.5	3,128.9	3,417.3	8.44	830
Cebu	177.7	494.3	3,045.2	3,717.2	18.08	730
Negros Oriental	57.1	318.7	1,613.0	1,988.8	18.90	340
Siquijor	-	36.9	295.5	332.4	11.11	900
Region VII	280.7	1,092.4	8,082.6	9,455.7	14.52	630

Source: Ministry of Highways, Cebu

TUBIGON RO–RO (ROLL-ON, ROLL-OFF) TERMINAL

SCALE 1 : 2000



CHAPTER 15
ENERGY DEVELOPMENT PROGRAMS AND PROJECTS

CHAPTER 15 ENERGY DEVELOPMENT PROGRAMS AND PROJECTS

15.1 Background of Energy in Bohol

In order to achieve the objectives of the multiple socio-economic development programs, it is considered imperative for Bohol to increase the supply of energy in substantial quantities. Energy is a vital necessity viewed either from the betterment of quality of life or from meeting the demand of social and economic activities.

However, the prospects for energy development should not be considered only from the supply of electric power; due attention should also be given to how to utilize primary energy resources abundantly available in Bohol (solar, wind, and various forms of biomass energy) which will be able to serve the energy demand of Bohol if they are properly developed and managed. For the energy development plan, due consideration should be given to the fact that electric energy and non-conventional energy resources are considered to be mutually compensatory, and it should be also noted that the latter source of energy can be effectively utilized as a means of meeting the energy demand of dispersely populated areas of Bohol.

This chapter is intended to explain two separate development problems; one is non-conventional energy development problem and the other is electric power development.

The geological data on Bohol island shows that dim prospects exists in Bohol for primary source of energy: development of oil, natural gas, coal and geothermal energy. An alternative left for Bohol is to develop energy as much as possible from non-conventional (so-called renewable) resources. The direct use of solar energy for drying is already practiced in the province. Commonly practiced examples are copra dried under the sun to remove moisture, coconut husk dried prior to processing, and drying of various kinds of plant fibers before or after processing. However, the use of wind energy for mechanical work or for the generation of electricity is not known in the island. Local use of wind for pumping water should be encouraged in places where constant velocity of wind is always available. A not-yet-tapped energy source vastly available in Bohol is biomass energy. Biomass can be derived as the product of photosynthesis by plants, crops, algae and seaweeds. The energy from biomass can be utilized for direct combustion and conversion to alcohl or to carbonaceous gas.

According to the Ministry of Energy (MOE) projections, non-conventional sources of energy is projected to develop occupying 1.5% share of the total national (primary) energy source by 1980 and 5.2% share by 1987. Since Bohol has no deposit of oil, coal or geothermal energy, non-conventional sources of energy should be developed in the future above the national average.

15.2 Analysis of Current Problems and Trends

15.2.1 Primary Energy Source Profile

Fossil fuel, namely gasoline, diesel oil and kerosene, are imported from other provinces constituting the main source of energy supply in Bohol. As of 1977[1], the oil consumption in Bohol was as follows: premium gas -- 2,306 KL, regular gas -- 22,884 KL, kerosene -- 12,839 KL and diesel oil -- 8,259 KL. This amounts to 38,010 x 10^7 KCAL of thermal energy[2], or 286,000 barrels of oil equivalent (BOE)[3]. The hydro-electric power generated at Loboc adds 7,000 MWH or 10,000 BOE[4] to the source.

Per capita consumption of conventional energy in Bohol is estimated to be as low as .391 BOE or 22% of national average. Of 286,000 BOE fossil fuel consumption, 21,000 BOE is for the public power generation.

15.2.2 Long Term Trends of Demand and Supply

It is recognized that the very low level of per capita oil consumption indicates the fact that the island's economy is less developed.

If it is supposed that the development level of the province is the same as the national average level, the energy consumption of Bohol would have been 819,000 barrels in 1977 with a per capita energy consumption of 1.08 barrel[5] for a population of 758,000.[6]

It can be assumed that part of this hypothetical demand for energy must be met by the intensive use of solar and biomass energy.

The demand for fossil fuel will, it is estimated [7], continue to grow at an annual rate of 3% up to 1980 as was its trend over the past four years (1974 - 78).

With the implementation of the development projects starting from 1980, the growth of the economy will demand much more energy to be consumed as estimated below.

With an estimated per capita income growth of 6.8% for the province and a rate of increase of the crude oil price in real terms of 1%[8], the rate of increase of the total energy consumption is projected to be 9.9%[9] for the present development period. The achievement of this should be considered as the energy requirement for the development of Bohol.

In order to sustain the high growth of the economy projected by the development plan, a total of 830 x 10^3 B.O.E. is required for the year 1990, and 323 x 10^3 BOE and 518 x 10^3 BOE in 1980 and 1985 respectively (refer to the Figure 15.1).

Although intensive efforts should be made to introduce the non-conventional sources of energy, they will account for only 12% of the overall energy requirements in 1990. Fossil fuel will still

remain as the major source of energy, accounting for 65% of the total energy in 1990.

15.3 Development Potentials

In view of the sectoral development approach, the demand for energy of transportation, industry, commercial and residential sectors should by all means be met. The energy consumption of the industry sector has been relatively small owing partly to the fact that a large number of industries in Bohol are non-energy intensive and small scale, and partly to the unavailability of electricity from the grid. Consequently, those type of industries which are not energy-intensive or are energy independent are recommended for Bohol. The alcogas refinery plant will produce an alternative form of energy enabling the establishment of agro-based secondary industry. This plant is expected to serve as a utility center, thus forming a core for the medium-scale industrial complex.

As the promotion of small scale and agro-based industries is expected to be emphasized for the province of Bohol, the growth of the demand for energy of the industry sector will be within a rate of 3-5% per annum[10].

The transportation sector consumes a substantial part of the overall fossil fuel supply of the island. Energy plays a critical role in both land and maritime transportation. Judging from the increasing total car mileage, the demand of the transportation sector is expected to grow at a rate of 5% per annum. Of the total fossil fuel consumed in transportation, 5 to 10% will be substituted by alcohol by the year 1985.

The demand for energy of residential and commercial sectors will grow much faster than those of the other sectors if the electrification program covering each of the municipalities is implemented.

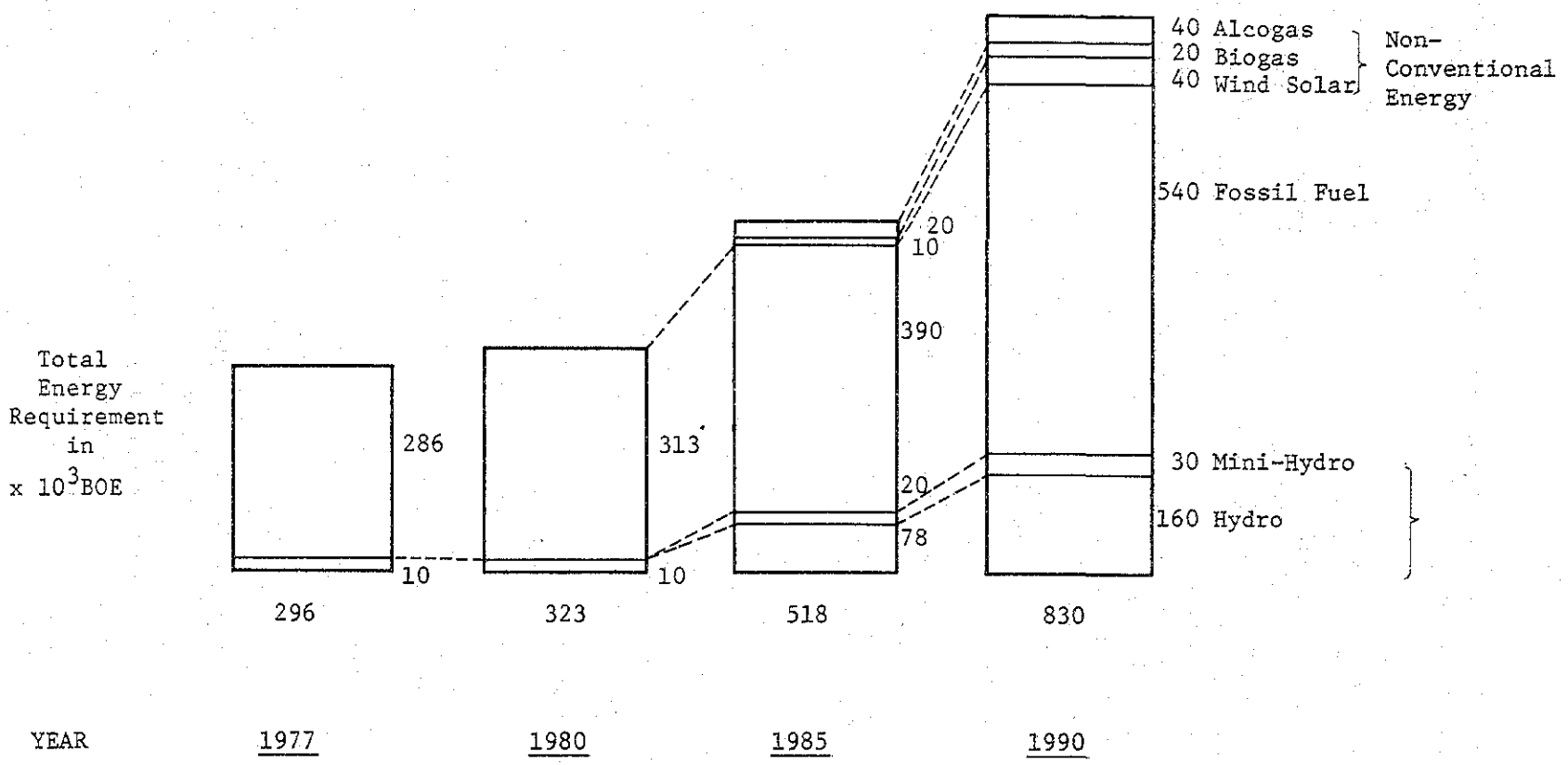
Looking into the spatial distribution of the demand in Bohol, it must be noted that it is very dispersed over the island.

It would be uneconomical to have a centralized supply system of electricity to meet the geographically dispersed demand, for there would be significant transmission loss and distribution costs. For this reason, the local generation of energy at the demand site (like the use of wind energy for pumping, use of biogas for household needs, and use of solar energy for drying) is encouraged both in short and long term perspectives. These types of non-conventional energy generation and consumption will amount to 1×10^5 BOE or 12% of the total energy requirement in 1990.

15.4 Objectives and Targets

The objectives of energy development is to achieve a substantial degree of self-sufficiency in energy while retaining the high growth rate (8 - 9% per annum, refer to Chapter 6) of the economy. The

FIG. 15.1 PROSPECTIVE MIX OF PRIMARY ENERGY SOURCES 1977-1990



target figures must be geared toward the achievement of the overall sectoral plan at every stage of development. The targets in Bohol, however, are moderate compared to national targets (e.g. per capita consumption, etc.)

15.4.1 Short Term (1980 - 1985)

In the short term perspective, the target is to supply 30 x 10^3 BOE of energy from non-conventional sources by the year 1985, which amounts to 5.8% of the total requirements. By the year 1985, the total energy consumption per capita will amount to 0.654 BOE, far below the national average of 2.85 BOE. The targeted figure will be attained through the operation of alcogas refinery plant, local use of biogas energy and the use of solar/wind energy. The implementation of these projects will serve as mobilizing factors in the accelerated drive to use non-conventional energy.

15.4.2 Medium Term (1985 - 1990)

The target in the middle term is to tap 1 x 10^5 BOE of non-conventional energy, which accounts for 12% of the total energy requirement by the year 1990. The target is attained through the extensive production of alcogas, local use of biogas and solar/wind energy. The level of consumption will be 0.885 BOE per capita.

15.4.3 Long Term (1990 - 2000)

The total energy requirement is expected to be 2132 x 10^3 BOE by the year 2000 if the high growth rate (9.9% per annum) of the economy is achieved. In this term the per capita consumption of energy will be 1.89 BOE.

15.5 Development Strategies

Except for urbanized areas, the use of locally harnessed energy should be encouraged. This is especially emphasized where electricity is not available in the short term and where its main use is for heating and/or mechanical work. By introducing renewable forms of energy, the high cost of transmission and distribution of electricity can be avoided without decreasing the level of social services received by local residents.

The development and use of biogas, which will substitute for the use of both kerosene for lighting and charcoal/firewood for cooking, should be implemented within the short term, because it requires less capital investment and skills to construct a prototype.

Biogas should be also used for the heating process in small scale industries. The implementation of biogas projects at the barangay level could be undertaken rather independently of other projects. The need for development of this type of energy is urgent since

agro-wastes like rice-straw and husks together with livestock manure are commonly available.

In the medium to long term perspective, wind/solar energy programs should be implemented at the barangay level, simultaneously with agricultural development programs, since they will provide a good energy source for pumping water, generating electricity and drying harvests.

The alcogas programs's main components are alcogas delivery projects and industrial complex projects, and should be implemented immediately. Starting from a small scale production, the projected production is expected to quadruple every five years, thus serving the increasing need for a alternative for power production as well as a substitute for gasoline.

As for the rural electrification program, especially for detached barangays where complicated terrain prohibits the extension of transmission lines, it is highly advisable that mini-hydro projects should be formulated and implemented together with continued efforts of locating feasible sites.

This program should be conducted in the medium to long term perspective. The energy development strategy according to time horizons is shown in Table 15.1.

15.6 Formulation of Energy Development Program

15.6.1 Goals

The goals are to tap 3×10^4 BOE of energy from non-conventional sources by the year 1985 and 1×10^5 BOE of energy by the year 1990. The composition of non-conventional energy sources is projected to be as follows:

Year	NON-CONVENTIONAL SOURCES			HYDRO	
	Alcogas	Biogas	Wind/Solar	Mini-Hydro	Hydro
1980	0	0	0	0	10
1985	20	10	10	20	78
1990	40	20	40	30	160

(Unit: 1×10^3 BOE)

TABLE 15.1 ENERGY DEVELOPMENT STRATEGY (OPTIMUM SOURCE MIX)

ENERGY SOURCE	PATTERN OF ENERGY USE (Local or Distributive)	RELATION TO SECTORAL DEVELOPMENT		
		Short Term	Medium Term	Long Term
Wind/Solar	- Barrio (Local) - Samahang Nayon (Local)		Agriculture - irrigation pump - drying or harvest	
Biogas	- Barrio (Distribute) - Samahang Nayon (Local)	Social Services (residential use) - cooking,heating, lighting Agro-Based Industry - power supply for industries - substitute for gasoline		
Alcogas	- Municipality (Distributive)			
Mini Hydro-Electric Stations	- Barrio (Distributive)		Electrification of Rural Area - self-sustained energy at low cost.	

15.6.2 Solar/Wind Energy Program for Rural Development

1. Program Description

The program serves as a component of rural infrastructure development. The solar/wind energy program includes:

- Solar engines for agro-industriaL purposes.
- Electricity generation by solar battery/wind.
- Pumping for irrigation
- Drying agricultural products and lumber
- Distillation for potable water.

2. Conditions and Requirements

1) Manpower Requirement

For each barangay where such energy systems are installed, technicians trained for electricity and mechanics with adequate support from maintenance workers are needed.

2) Hardware Requirements

The solar/wind energy system is composed of mechanical and electrical parts. Regional suppliers should be established so that replacement and maintenance can be smoothly effected to assure a constant supply of energy. Consolidation or close cooperation with local cottage industries is procuring materials and fabricating parts, framing, etc., is recommended.

3) Energy Output

Standard output ranges:

Wind Pump	0.1 -- 10 KW
Solar Engine	20 -- 100 KW

3. Implementation Plan

1) Demonstration and Data Generation

The program in this phase includes:

- Observation and collection of climatic and meteorological data.
- Location of feasible sites for each type of solar/wind system installations.
- Installation of solar/wind system for pilot demonstration purpose.

2) Extensive Introduction of Solar/Wind System in Accordance with Rural Infrastructure Development Plan

The program in this phase includes:

- Adjustment of scales of original installations with necessary amendments to match local demand.
- Activation of small scale industries for the development and maintenance of these systems.
- Establishment of training workshops for the technicians.
- Full use of materials and skills available in the local environment.

15.6.3 Alcogas Energy Development Program

1. Sub Goals

It is targeted that alcogas production should be able to supply 2×10^4 BOE of energy by the year 1985 and 4×10^4 BOE by the year 1990.

2. Program Description

The alcogas Program has three main components:

- An alcogas production and refining project which should be combined with:
- An industry estate project which is to make up an industrial complex utilizing alcohol produced through (1) either as energy source or raw material.
- A technical center project for alcogas development which is intended to serve as a centralized research unit for the innovation or introduction of various raw materials and for the optimum use of by-products.

15.6.4 Biogas Development Program

The target is specified as 1×10^2 BOE by 1985 and 2×10^4 BOE by 1990. A description of the program is given in the Section 8.6.2(2).

15.7 High Impact Project of Energy

15.7.1 Project Title: Feasibility Study on Alcogas Refinery Plant

1. Introduction

The proposed production of alcohol from crops is one of the

alternative sources of fossil energy. With the use of estimated 6,500 tons of surplus cassava for the year 1989[11], the converted alcohol of 1,170 x kl [12] will be attained, substituting for about 5% of the gasoline consumption in the Bohol province. The production capacity of alcohol which will be 1,170 kl in the initial stage will then be increased to 5,800 kl in the final stages using 30,000 tons of cassava. This is in accordance with the objectives of the National Alcogas Program announced recently by MOE[13]. However, the technical problems is that converting cassava into alcohol involves technical R & D effort in terms of crop variety and alcohol yield to be attained. Consequently, there is an urgent necessity for a pre-feasibility study taking due consideration of the national alcogas program.

2. Summary Description of Alcogas Refinery Plant Project

1) Objectives:

The objectives are to contribute substantially to the achievement of self-sufficiency in energy, and to contribute to the creation of "the value added" of agriculture through processing agro-products.

2) Project Description:

(a) Institutional Arrangements and Infrastructure

From the point of view of institutional setup, it is to be considered mandatory that the Philippine National Oil Company (PNOC) should purchase the total volume of alcogas produced. PNOC is responsible for the storage and distribution of alcogas and for its blending with gasoline in the Philippines.

As for the distribution of alcogas, alcogas infrastructure should be provided so that efficient production, storage and distribution of alcogas can be effected.

The supporting infrastructure for alcogas includes:

- Supplier's storage and blending facilities
- Retailer's stock tanks for alcogas and a specific type of volume measuring meter.
- Delivery trucks

(b) Productions Process

The process flow sheet is shown in Figure 15.2.

Dried chips of cassava should be purchased directly from farmers to be stored prior to processing in order that they will be kept in good condition. The cassava chips are to be divided into two parts. To produce

1,000 kl of alcohol (95%), the major part of production process requires 5,500 kg of cassava, while the minor part of process requires 200 kg. Each group of cassava chips is to be powdered, boiled and condensed to form wet cake condensates which have sugar contents of 6% and 14.5% respectively. The cake condensates are then to be cooled and mixed with Amylase which acts as a catalizer in the conversion of starch into sugar. In the sweetening process, yeast is added to the minor part; then, the two parts are blended and kept for 4 days at a temperature of 30-33°C to facilitate fermentation. After fermentation, a liquid of 8.5% of alcohol content is obtained and is distilled to yield 1,000 kl of 95% alcohol. The by-products are carbon dioxide and organic solid residue. The waste water from the process is treated aerobically by lagoon process and can be fed back to the fields as an aid to fertilizers.

3) Project Input/Output Requirements

(a) Average yield and utility requirements

- To make 1,000 liters of alcohol (alcohol content of 95%)

Raw Cassava:	5,700 kg
Enzyme:	1.2 kg
- Yield by fermentation:	94%
by distillation:	93%
Utility bunker oil	500 kg
electricity	185 KWH

(b) Manpower requirement

	No. of persons
Administrative Staff	10
Supervisor & Technical Staff	5
Labourers	30

(c) Required acreage 50,000 m^2

(d) Main Facilities

- Utility	BTG, desalinator; pumping well
- Processer	Crusher, Digester, Evaporator Condensor, Distillator
- Facilities	Holding Tank, Warehouse
- Waste Treatment	Treatment Facility, Lagoon, Settling Pond

4) Location Recommendation

Location of the refinery plant should be decided by taking into account the following factors:

(a) Procurement of Raw Material and Transportation

Cassava is produced mainly along the corridors stretching from central inland of Carmen to northeast Ubay: namely in the municipalities of Carmen, Dagohoy, San Miguel and Ubay.

For the collection of a large volume of raw tapioca either from the farmers or from the wholesaler's depot, the cost of transportation is critical. To minimize the transportation cost and to secure the quality of tapioca while they are stored, it is mandatory that tapioca should be collected in the form of dried chips.

(b) Disposal of Wastes

To keep up with the water quality requlation, (PD 1067, Water Code, ART. 75), effluents from the plant should be treated by lagoon process and by settling pond. It is recommended that the effluent from the pond should be discharged directly into the sea to make maximum use of the dilluting and purifying capacity of the sea water.

Care should also be taken for the disposal of solid wastes for landfill since direct disposal may cause the deterioration of the soil condition for a long time.

5) Implementation Plan

The implementation plan is shown in Figure 15.3.

3. *Project Description of Feasibility Study on Alcogas Refinery Plant*

1) The scope of the study should include:

- The nature of the plant

Whether the plant should be of pilot scale and of purely R&D nature serving as a national center for alcogas development, or should be oriented toward commercial production.

- Identification of problem areas

To identify forseeable technical and engineering problems which should be encountered with commercial production; the problems will include the development of new process for the specific crop varieties.

- Economic vialibity of the plant

  To check the economic feasibility of the plant, economic scale of production in accordance with the national alcogas development program.

2) The implementation plan

   The project should be implemented as early as possible in CY 1980 or in CY 1981.

3) Estimated cost

   The project cost is estimated to be ₱ 800,000

15.8 Electrification Development Plan

15.8.1 Introduction

The level of electrification in Bohol as of 1974 can be seen from the figures below:

Location	Population	Installed Capacity	Generated Electricity	Per Capita Consumption/Year
Region VII Total	$3,200 \times 10^3$	387 MW	1,405 GWH	44 KWH
Bohol Island Total	730×10^3	4.7 MW	10 GWH	13.7 KWH
Philippines Total	$42,500 \times 10^3$	3,120 MW	11,924 GWH	280 KWH

The unusually low level of consumption of Bohol indicates the lack major consumers like large manufacturers and the low level of residential consumption. Electrification started in 1957 when the Loboc Hydro Electric Plant came into operation with a capacity of 1.2 MW, supplying electricity to the city of Tagbilaran and its neighboring municipalities. The other generating unit which started operation in 1973 is Tubigon Diesel Plant. With the establishment of Bohol Electric Cooperative (BOHECO) in 1978, municipalities and barangays in the western part came to be serviced by 13.2 KV distribution lines stretching from the Tubigon substation. The eastern half of the island remains to be electrified. It must be noted, however, that local supply of electricity by autogenerators is widely practiced throughout the island with capacity ranging from as small as 5-7 HP to 250-500 HP.

Fig. 15.2 SCHEMATIC PROCESS FLOW SHEET FOR ALCOGAS PRODUCTION

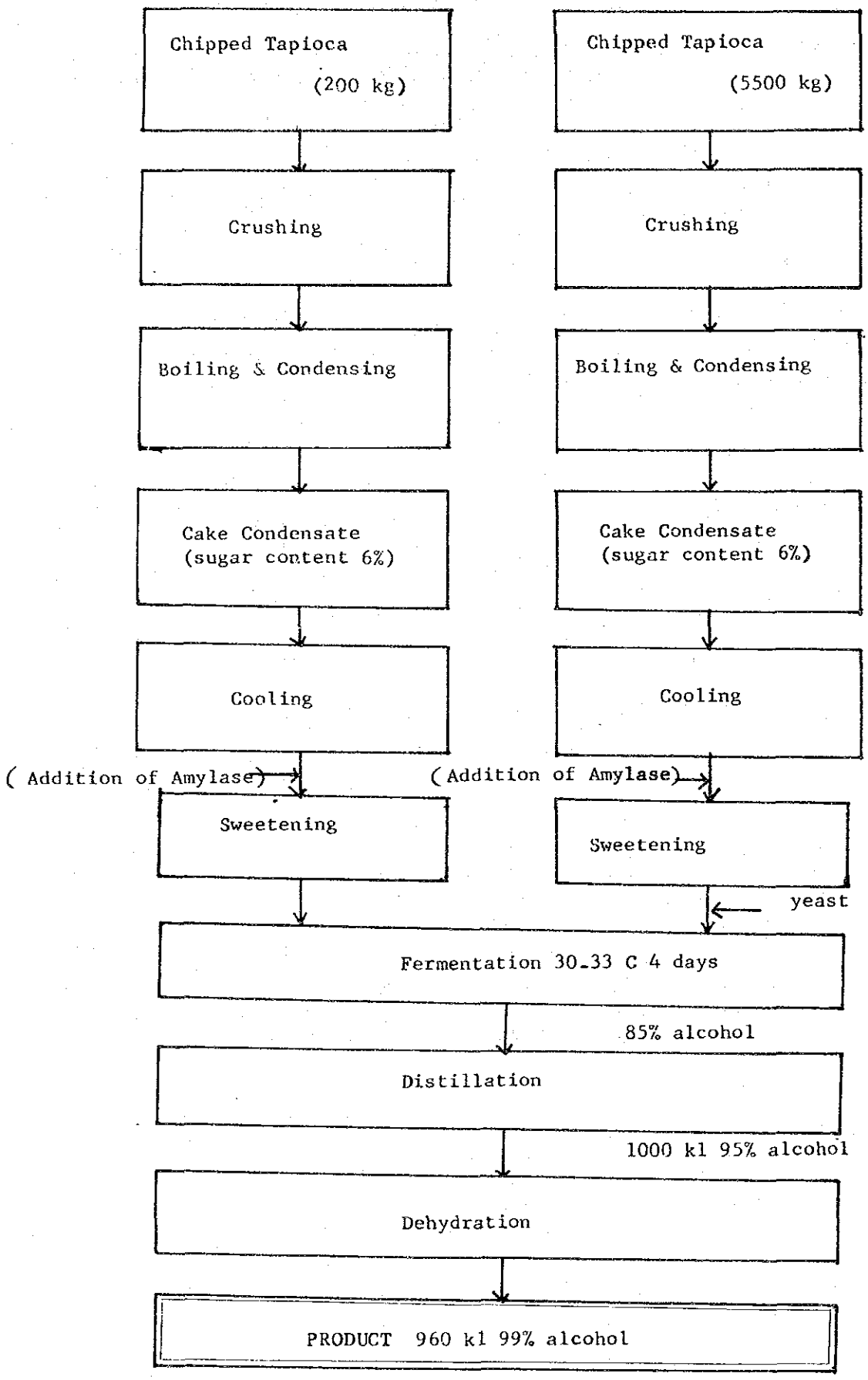
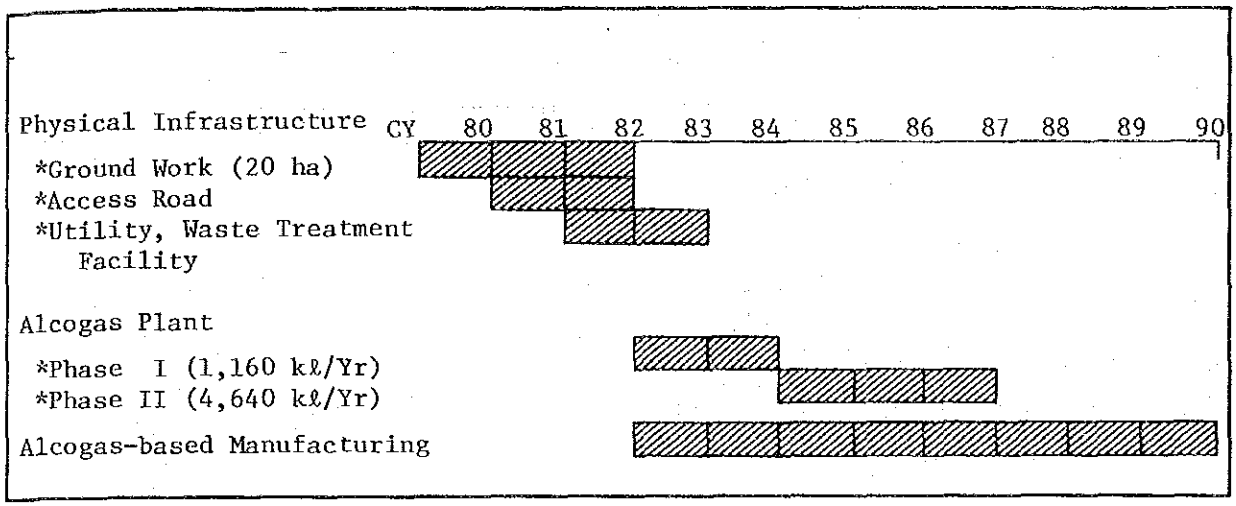


FIG. 15.3 IMPLEMENTATION PLAN OF ALCOGAS REFINERY



15.8.2 Analysis of Current Problems and Trends

1. Overview

The growth rate of electricity consumption in the recorded electricity generation:

Year	Loboc H-E Sta. Generation	Per Annum Growth Rate	Tubigon Diesel P.S. Generation
1960	1734 MWH		-
1965	3543	15%	-
1970	4929	7%	-
1975	6024	4%	1293MWH(As of '76)
1978	6863	3.3%	1180

In the meantime, a new diesel power plant with 2 x 5.5 MW was constructed at Tagbilaran in 1978 taking over the outmoded diesel plant of Tubigon and started to transmit electricity through 69 KV transmission lines. The monthly generation report of the Tagbilaran station is shown below:

Year	Month	Consumption of electricity
1978	Sept.	550MWH
	Oct.	620
	Nov.	760
	Dec.	850
1979	Jan.	960
	Feb.	880
	March	820
	April	980
	May	970
	June	1070
	July	960

The overall consumption of electricity from the public grid is estimated to be 15 GWH as of 1978.

2. Public Supply Grid

The main supply grid consists of 69 KV transmission lines and 13.8 KV transmission lines. As of 1979, transmission lines operated by National Power Corporation (NPC) are as follows:

69 KV transmission lines: Tagbilaran-G. Hernandez, length 50 km
Tagbilaran-Tubigon, length 40 km

13.8 KV transmission lines: Loboc-Tagbilaran-Cortez, length 40.9 km

The location and rating of main substations are as follows:

Tubigon SS 5MVA	69 KV/13.2 KV
G. Hernandez SS 5MVA	69 KV/13.8 KV
Tagbilaran SS 10MVA	13.8KV/69 KV

The present status of the main supply grid undertaken by NPC is shown in Fig. 15.4.

Electricity is distributed by local electric cooperatives. The western part of the island is covered by BOHECO-I (cooperative office at Tubigon) and the eastern part is covered by BOHECO II (cooperative office at Jagna). As of 1979 only BOHECO-I is active in supplying electricity to municipalities. The backbone system currently serviced by BOHECO-I is shown in Fig. 15.5.

BOHECO-I has 4,893 consumers, of which residential consumers account for 58% and commercial consumers 22% of the total KWH consumption. BOHECO-II is scheduled to start operation by 1980 with the completion of 69 KV transmission lines to be extended from G. Hernandez to Alicia and from Tubigon to Talibon via Jetafe.

Fig. 15.4 BOHOL ELECTRIC POWER GRID

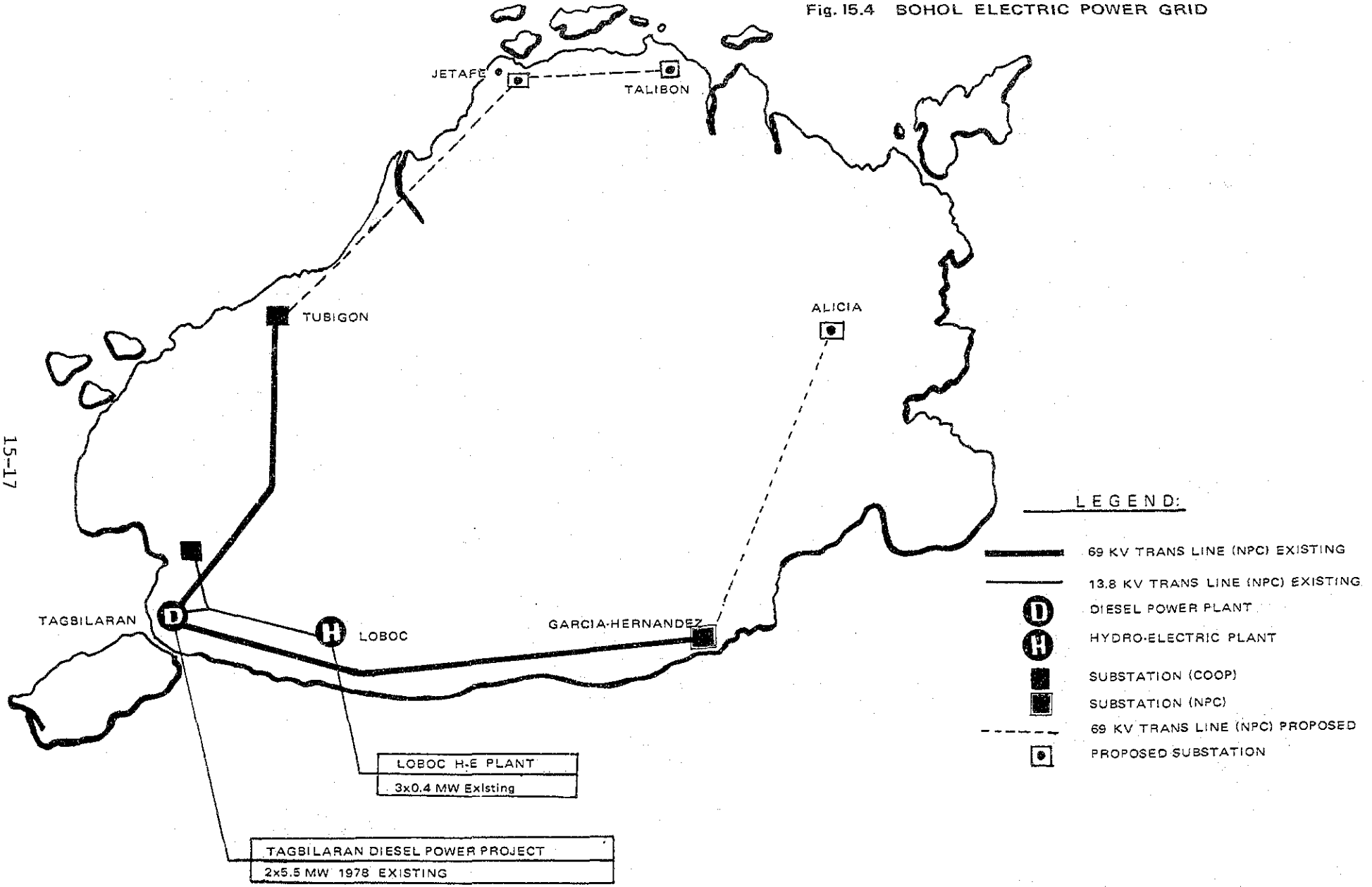


Fig. 15.5 BOHECO–I AND BOHECO–II DISTRIBUTION GRID

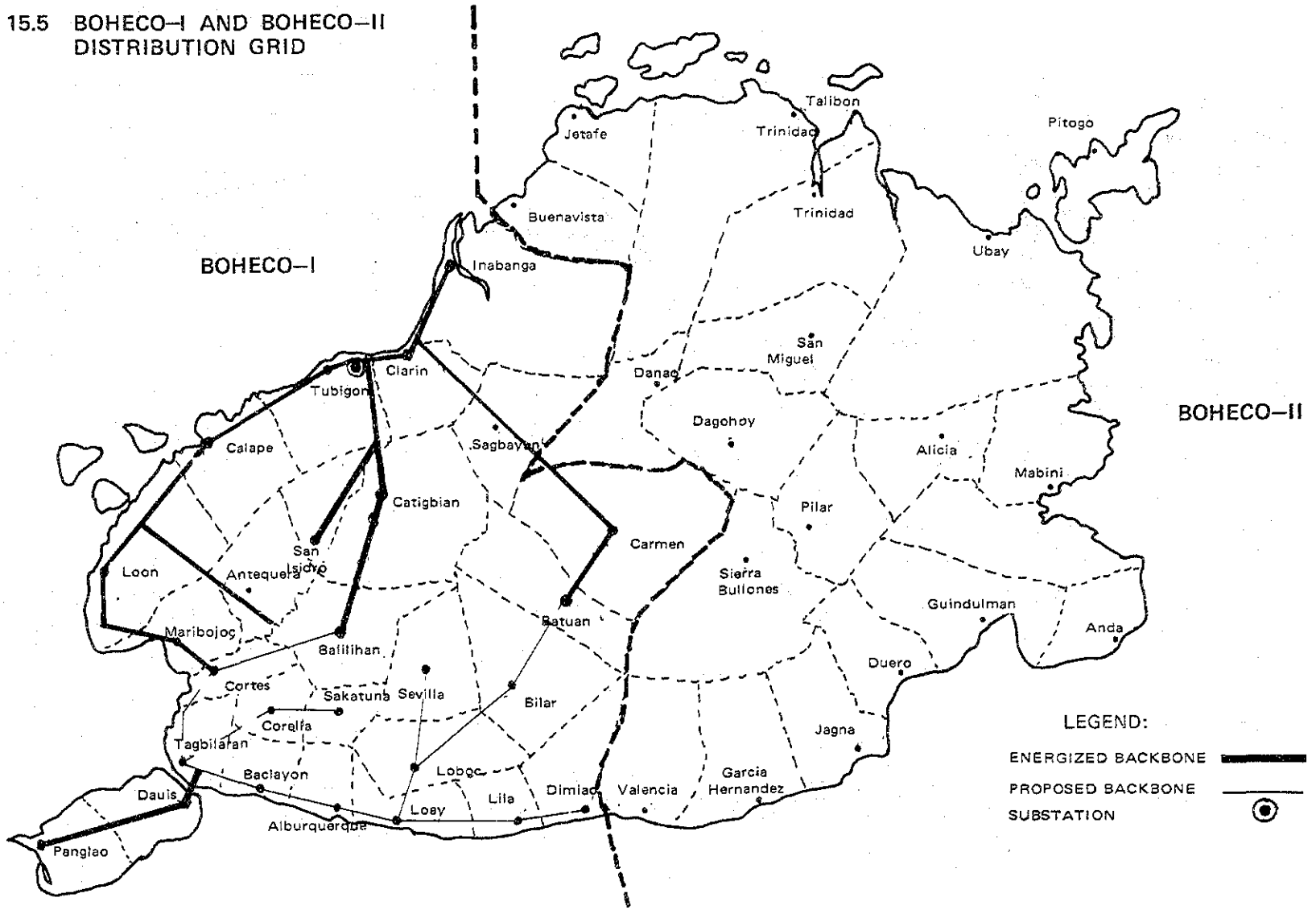


TABLE 15.2 DEMAND AND SUPPLY OF ELECTRICITY-BOHOL GRID

Calender Year	Capacity (MW)		Energy Supply (GWH)		Requirement (GWH)	Remarks
	Installed	Peak Demand	Capability	Generation		
1978	1.2/12.2	3.8	7/44	18	17.5	Tagbilaran Diesel 5.5 MW (#1 Unit) operation
1979	12.2	4.7	70	21	20.4	Tagbilaran Diesel 5.5 MW (#2 Unit) operation
1980	12.2	5.8	70	27	25.3	
1981	12.2	6.3	70	29	27.5	
1982	12.2	6.9	70	32	30.2	
1983	12.2	7.5	70	34	32.7	
1984	12.2	8.2	70	37	35.4	
1985	12.2	8.7	70	40	38.4	
1986	12.2	9.6	70	44	41.5	
1987	13.7	10.1	75	47	45.0	Pamacsalan multiple purpose dam 1.7 MW operation
1988	21.7	11.0[1)]	130[2)]	51[3)]	48.7[4)]	Upper Loboc H-E plant 8 MW operation
1989	21.7	12.0[1)]	130[2)]	55[3)]	52.7[4)]	
1990	21.7	13.1[1)]	130[2)]	60[3)]	57.1[4)]	

1) 9% per annum increase/assumed
2) Capability of Upper Loboc 8 MW assumed to be 55 GWH (capacity factor, 79)
3) 8.3% per annum increase assumed
4) 8.2% per annum increase assumed

3. Projected Demand and Supply

The demand for electricity is projected to be 25.3 GWH for the CY 1980. The per annum growth rate of electricity is expected to be 8.7% for 1980 - 1985 period and 8.2% for 1985 - 1990 period. This means a demand of 38.4 GWH by the CY 1985 and 57.1 GWH by the CY 1990. As explained in the Energy section (section 5.22) the projected demand of energy needs by all means to be met for the development of the Bohol economy.

To cope with the increasing electricity requirement, the needed electricity should be secured within the development time horizon. With the introduction of the Tagbilaran diesel unit of 5.5 MW x 2 in 1979, the overall installed capacity of the island grid reached the level of 12.2 MW. The system demand factor (ratio of installed capacity to peak demand) is expected to be around 60% in the CY 1983, and continue to grow the level of 79% by the year 1987. With the operation of Pamacsalan dam of 1.7 MW capacity by 1987 and of Upper Loboc H-E plant of 8 MW by 1988, the overall installed capacity will amount to 21.7 MW, reducing the demand factor to a low level of 51%. This is shown in the summarized table 15.2.

15.8.3 Development Potential

The high annual precipitation and the topography of the terrain running from south to southeast provide high potential sites for hydro-power development. The growing demand for electricity is expected to be largely met by hydropower while the peak portion of demand will be met by thermal power. In this respect a total of 9.8 x 10^4 BOE (67.7 GWH) is expected to come from hydro-electric power generation by CY 1985 and 7.9 x 10^5 BOE by CY 1990 (131 GWH). The situation is described in Figure 15.6.

Because of the high cost of bunker oil for diesel power generation, the expansion of thermal plant capacity should be kept minimum. The total diesel power capacity should be kept at 11 MW until 1990.

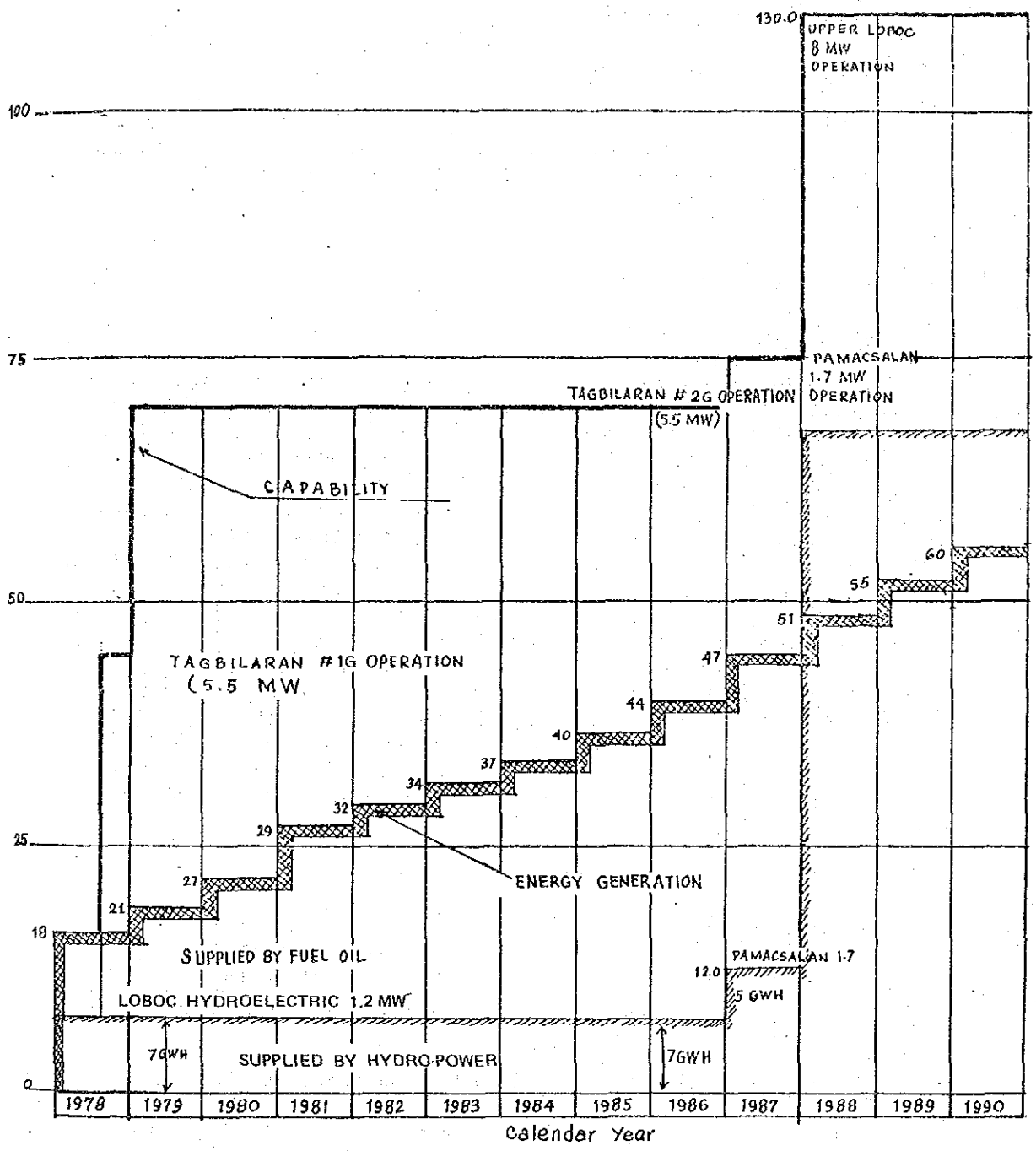
15.8.4 Objectives and Targets

The objectives are to provide an adequate supply of electricity whereever needed for the development plan and to provide electricity to virtually all households in Bohol by CY 1990. The dual objectives are expected to be achieved in parallel with appropriate spacial and intertemporal allocation of electrical resources.

1. Short Term (1980 - 1985)

Main transmission lines of 201 km connecting major demand centers will be completed by CY 1985. With completion of the backbone system, all minicipalities will be able to receive electricity from the grid. BOHECO-II should play an important role to electrify unelectrified area. The urban areas (26,000 households) will be completely electrified by 1985.

Fig. 15.6 PROJECTED SUPPLY AND CONSUMPTION



2. Medium Term (1985 - 1990)

A new hydro-power station with a capacity of more than 5 MW will be operated. Mini-hydro stations are expected to be installed at detatched barangays where suitable falls are found. Complete electrification of rural areas (141,000 households) is expected by the CY 1990.

3. Long Term (1990 - 2000)

A multitude of new hydro-power stations of more than 5 MW will be constructed and start operation. Mini-hydro and micro-hydro stations of 50 - 1000 kw will be developed so that 20.7 GWH will be generated.

15.8.5 Development Strategies

The installed capacity will not surpass the system peak demand assuming there is no power generation source added to the system by the CY 1986. To cope with the critical energy supply, new hydro-electric power plants need to be constructed. Then, an additional power source which has a loop transmission line is expected to be introduced into the system. In the medium term (1985 - 1990) the island grid system is scheduled to be composed of the existing installed capacity (12.2 MW), the newly introduced hydro-electric power (more than 5 MW) and 69 KV of transmission lines. This defines the power development and supply program of the medium term. The other important program is the rural electrification program. With the completion of the backbone system, the extension of distribution lines to the barangays is to be effected by CY 1990. In the medium to long term perspectives, the program includes wind/solar energy utilization at the barangay level together with the development of mini-hydro projects. These package will bring about the compete electrification of 141 thousands of households in rural areas by the CY 1900.

The estimated installed capacity and system peak demand is shown in Figure 15.7.

Transmission lines: undertaken by NPC

Tubigon - Jetafe	33 km 69 KV one circuit 1980
Jetafe - Talibon	15 km 69 KV one circuit 1980
G. Hernandez-Alicia	33 km 69 KV one circuit 1980.

Transmission lines: undertaken by NEA

Talibon - Alicia	31 km 69 KV one circuit 1985

Substations: rating 5 MVA 69/13.2 KV to be installed at Jetafe, Talibon, and Alicia

15.8.6 Implementation Plan

The implementation plan with time horizone is shown in Figure 15.8.

Fig. 15.7 INSTALLED CAPACITY AND SYSTEM PEAK DEMAND

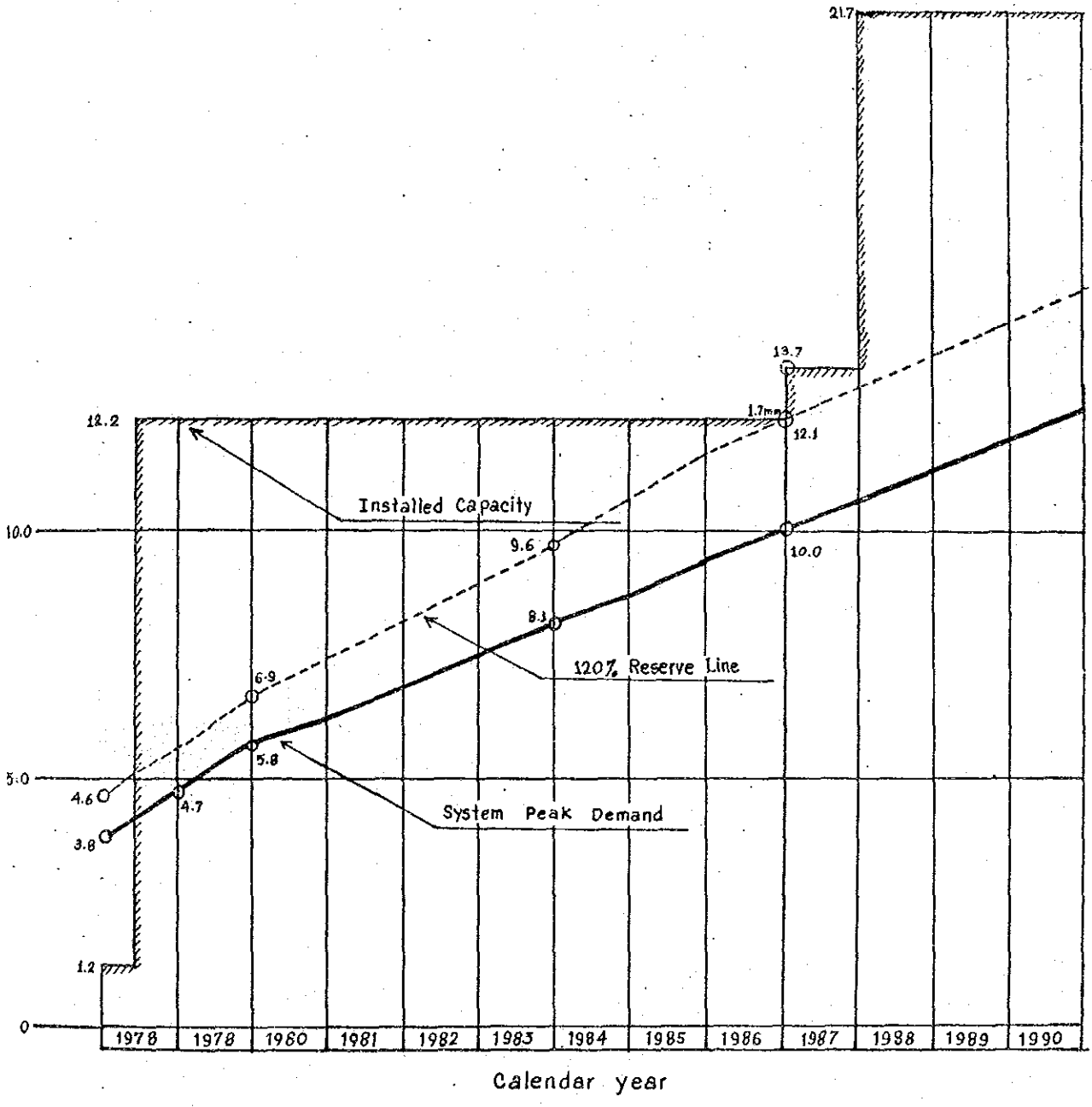
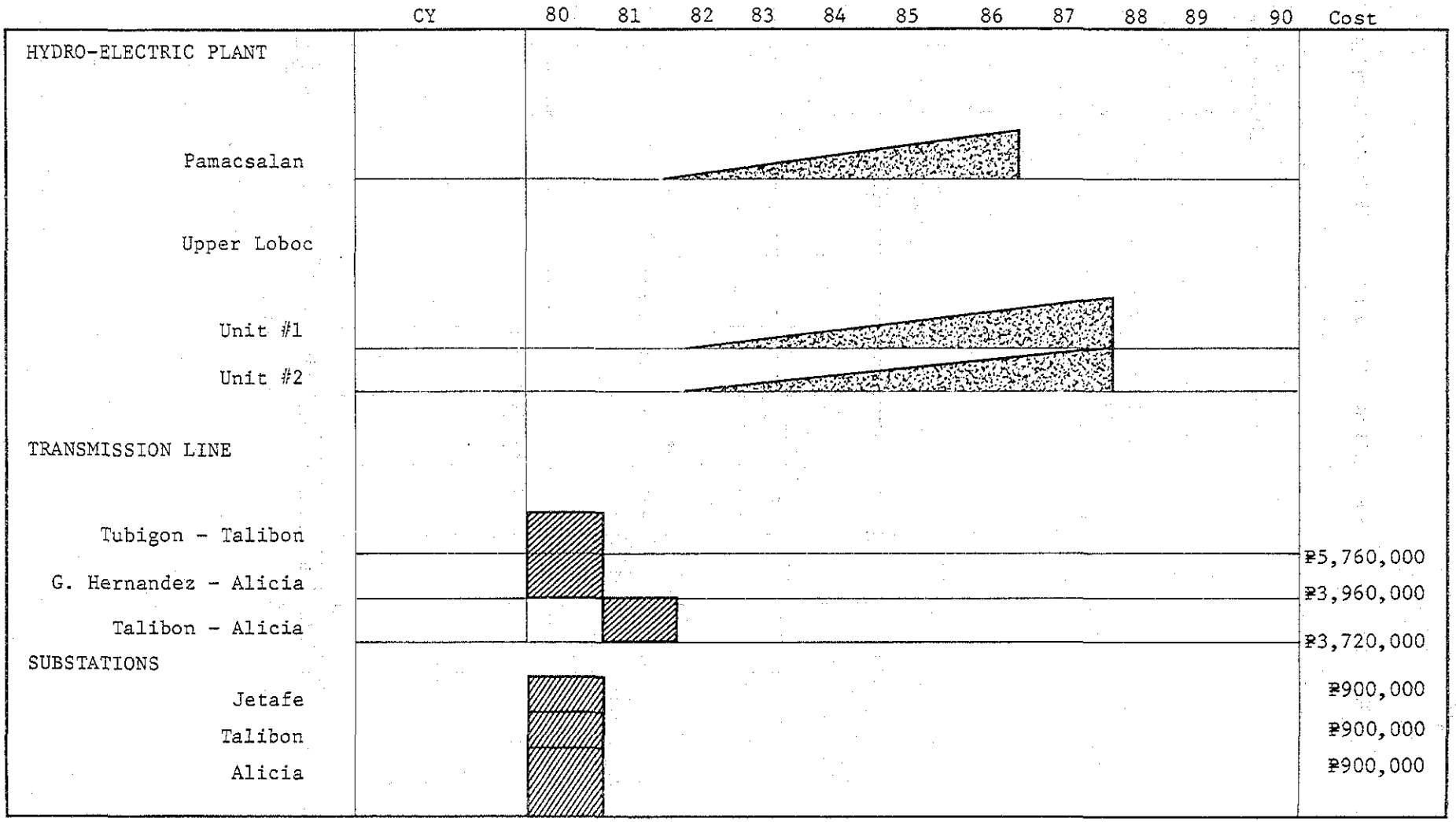


FIG. 15.8 IMPLEMENTATION PLAN OF POWER DEVELOPMENT



15.9 Formulation of Development Programs of Electrification

15.9.1 Goals and Sub-Goals

The goals of Electrification programs include:

- Supply of adequate energy for development, i.e. 38.5 GWH by CY 1985 and 57.1 GWH by CY 1990.

- Electrification of rural and urban households (171,000) by CY 1990.

15.9.2 Program Description

To attain the first goal hydro-electric power development projects and transmission line projects must be implemented. The second goal aims at rural electrification including mini-hydro projects and solar/wind energy systems.

1. Hydro-electric Power Generation and Transmission Line Projects

   1) Program Description

      To meet the rapidly increasing demand for electricity and to secure base load, a hydro-electric station of more than 5 MW capacity need to be in operation by 1988 and another station of 5 MW capacity need to be in operation by 1995.

      The generated electricity will be transmitted through loop lines which are to be completed by 1985.

   2) Specifications and Locations

      Hydro-electric generation station: sites to be determined along the Loboc or Wahig River (two units of 4 - 8 MW).

2. Rural Electrification Program

   1) Program Description

      To supply electricity for households in the rural areas by 1990, the construction of extension lines from the municipalities to the barangays is required. In order to complement the central supply grid, local generators using solar/wind energy should be constructed. Mini-hydro generation should be emphasized for isolated barangays where suitable falls are located.

   2) Program Components

      The program includes:

      - The establishment of a backbone power system together with a transmission system covering each barangay.

- Mini-hydro projects for barangays

- The optimum setting and utilization of solar/wind energy system at the barangay level.

3) Specifications and Locations

The power generation range will be as follows:

Mini-hydro: 20 kw - 1,000 kw
Wind/solar: 0.1 kw - 10 kw

Setting for wind/solar projects are stated in energy development program section. Feasible sites for mini-hydro-electric stations are shown in Table 15.3.

TABLE 15.3 MINI-HYDRO FEASIBLE SITES

LOCATION	STREAM	ESTIMATED CAPACITY (KW)	HYDROLOGICAL DATA			
			MAX.	MIN.	MEAN	HEAD(MTRS)
Bilar	Bilar	30	72.00	0.001	0.52	12
Inabangga	Cantakoy Falls	1,000	44.80	8.00	19.20	8
Antiquera	Tubig Daku	75	24.40	4.00	9.60	22
Clarin	Binaliw Falls	30	15.80	0.26	6.20	12
	Mag-aso Falls	30	23.30	0.04	0.92	4
	Sogotan	5	6.35	0.01	0.29	4
	Valencia	30	19.00	0.03	0.75	3
	Duero	30	20.80	0.03	0.83	2
	Totolan	60	24.40	0.04	0.94	5
	Singaynan	120	43.90	0.07	1.71	6
	La Pax	30	17.20	0.03	0.63	3
	Antiquera	30	15.00	0.02	0.59	5
Sandig	Sandig	30	11.90	0.02	0.47	3
	Mapo	60	22.60	0.04	0.81	4
	Lila	20	8.13	0.01	0.32	3

Source: NPC Cebu, Engr. Velasco

Footnotes

1) Source: Bohol Provincial Development Staff
2) The following conversion factors are employed

   0.780×10^7 KCAL for 1 KL of Premium and Regular Gas
   0.837×10^7 KCAL for 1 KL of Kerosene
   0.920×10^7 KCAL for 1 KL of Diesel Oil

3) One unit ton of oil equivalent (T.O.E.) generates 1×10^7 KCAL of thermal energy, which is equivalent to 7.53 barrels of oil equivalent (B.O.E.)
4) 7.53×10^6 barrels of oil is used to generate 5.2×10^3 GWH of electricity.
5) Based on Ministry of Energy data, the figure is derived from per capita energy consumption (national average) of 1.8 barrel (1977) less. 75 barrel consumption by industry sector.
6) Population projection by province 1970 - 2000 (medium assumption): STATISTICAL INDICATORS, Region 7 First Quarter 1979 Vol. NCSO, NEDA, interpolated for the year 1977 with an annual growth rate of 1.2% using the data 740,000 (1975) and 792,0-0 (1980).
7) Estimate by Provincial Development Staff, Bohol.
8) The increase in oil price was derived to be 1% per annum in real terms over the ten year planning period 1977 - 1978 using an implicit deflator of 7% per annum (source: EPRS, NEDA) with the assumption of 8% per annum increase in the crude oil price.
9) Based on the equation (Ministry of Energy)

   $\log c = -1.74358 + 1.50605 \log Y - 0.3309 \log P$
   Where: c: Energy consumption (in thousand barrels-of-oil equivalent)
   Y: GNP in million pesos at 1972 prices
   P: Real Price of oil (deflated by CPI at 1972 - 100)

10) Estimated by BOHECO-I interval report
11) 13,000 tons of cassava production in Bohol, Census of Agriculture, 1971
12) Effective tapioca starch content assumed: 25 wt%. Yield of alcohol depends on the starch content of the raw materials; for the case of cassava, 1 ton of cassava produces 180 liters of alcohol.
13) Energy Minister Velasco's Directive:
    THE TIMES JOURNAL - August 25, 1979
    "Within the ten-year energy development plan 1978 - 1987, 270,000 hectares of cassava, sugar cane plantation will be developed to supply 10 alcohol refinery plants being established."

CHAPTER 16
COMMUNICATION DEVELOPMENT PROGRAMS AND PROJECTS

CHAPTER 16 COMMUNICATION DEVELOPMENT PROGRAMS AND PROJECTS

16.1 Background of Communication in Bohol

In the province of Bohol, the main communication systems are post, telegraph and telephone; broadcast media are excluded from this analysis. Postal service is exclusively provided by a government enterprise, known as the Bureau of Posts, but telegraph and telephone services are provided by both private and government enterprises in this country. The policy in the telecommunication system is that private operators are allowed to operate in any profitable area. In Bohol, there is no private telephone company mainly due to unprofitability caused by a small telephone call demand.

Communication plays a vital role in the economic social and cultural transformation, but most of the demand for communication is a "derived demand" generated by the development of industrial activities and growth of national income. Therefore, the development planners will also have to consider this basic nature of communication demand.

16.2 Analysis of Current Communication Problems and Trends

The communication network should be considered as one of the very important infrastructures in Bohol which must be improved for the following reasons:

1) Bohol's population is dispersed,
2) main growth poles and centers in Bohol need to be effectively linked with each other by means of a communication network in order to facilitate economic development, and
3) Bohol must be integrated into Metro Cebu as a part of its growth corridor. Therefore, a serious consideration should be given to how the communication network can be developed in Bohol in the future since the basic communication system presently existing in Bohol is in sufficient to meet the communication service demand of industry as well as of the population.

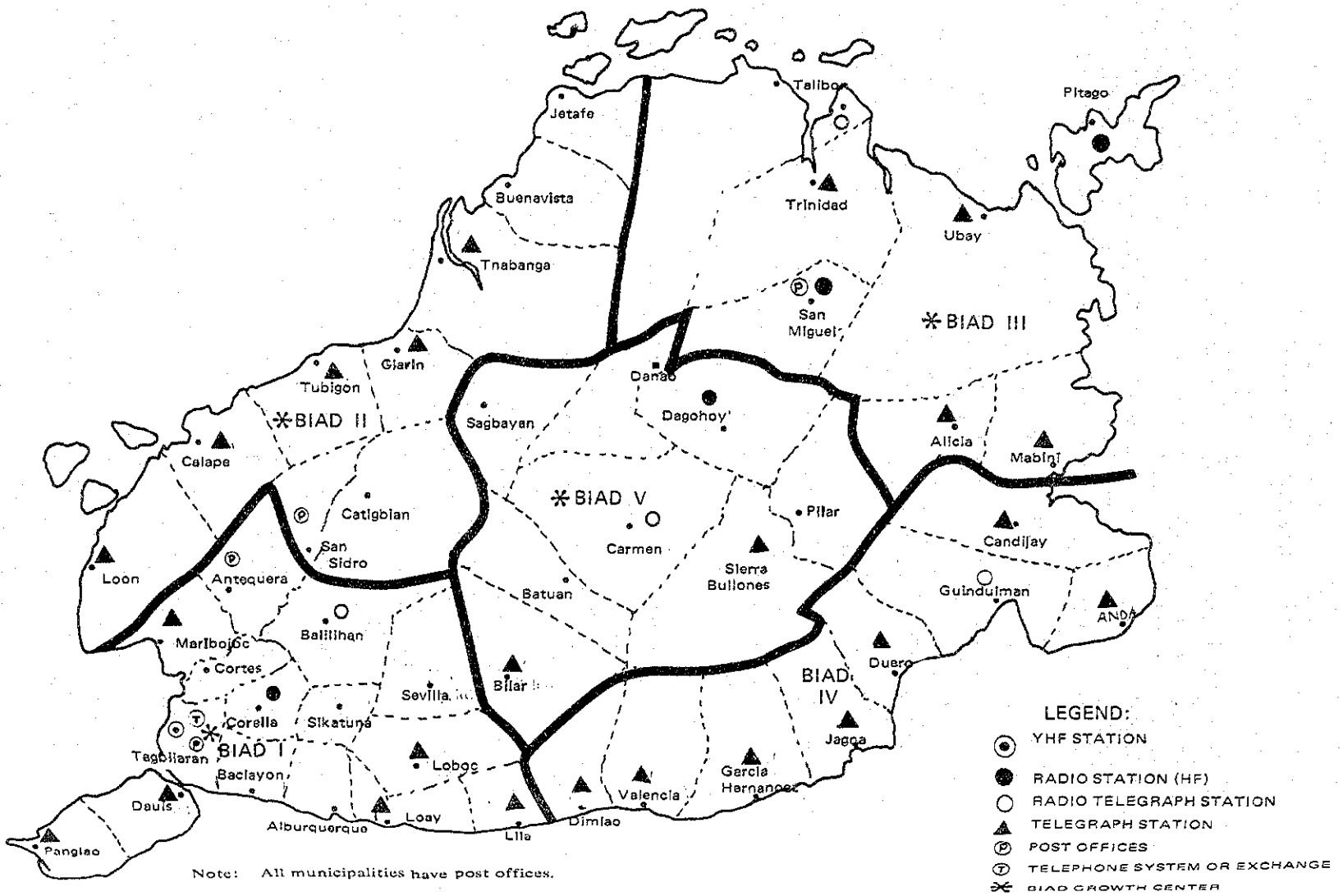
The present situation of communication in Bohol will be described in the order of postal, telegraph and telephone services. The total system of communication networks of Bohol is shown in the map in Fig. 16.1 and Table 16.1.

16.2.1 Postal Services

Post offices are under the control of the Bureau of Post and are undertaking mail and money order services. In Bohol, Post offices are usually located in the centers of the municipalities and installed in the municipal office or in its neighborhood.

At present there are 52 post offices in this province, each of which

Fig. 16-1 COMMUNICATION NETWORKS IN BOHOL



Note: All municipalities have post offices.

Table 16.1 Telegraph & Telephone Networks in Bohol

	VHF Station	Radio Station (HF)	Radio Telegraph Station	Telegraph Station	Telephone System on Exchange	Lacking Service
BIAD I						
* TAGBILARAN	⊙				(T)	
ANTEQUERA						x
MARIBOJOC				▲		
CORTES						x
BALILIHAN			o			
CORELLA		●				
SIKATUNA						x
BACLAYON						x
ALBURQUERQUE						x
LOAY				▲		
LILA				▲		
LOBOC				▲		
SEVILLA						x
DAUIS				▲		
PANGLAO				▲		
BIAD II						
* TUBIGON				▲		
LOON				▲		
CALAPE				▲		
CATIGBIAN						x
CLARIN				▲		
INABANGA				▲		
BUENAVISTA						x
JETAFE						x
SAN ISIDRO						x
BIAD III						
TALIBON			o			
SAN MIGUEL		●				
ALICIA				▲		
MABINI				▲		
TRINIDAD				▲		
* UBAY				▲		
PITOGO		●				
BIAD IV						
* JAGNA				▲		
CANDIJAY				▲		
GUINDULMAN			o			
ANDA				▲		
DUERO				▲		
GARCIA-HERNANDEZ				▲		
VALENCIA				▲		
DIMIAO				▲		
BIAD V						
* CARMEN			o			
BILAR				▲		
SAGBAYAN						x
DANAO						x
DAGOHOY		●				
PILAR						x
SIERRA-BULLONES				▲		
BATUAN						x

* Growth Centers/Poles

has a postal code. A postman who collects and delivers mails is called "a contractor." There is a center of collection and delivery in Tagbilaran City and sub-centers in Tubigon, Jagna, and Talibon. It does not take more than 2 days to have mail delivered within the province of Bohol.

In the future there will be the need to build and service mailboxes under the control of each post office.

16.2.2 Telegraph Service/Social Telegram Service

Telegraph has become one of the most popular means of communication in Philippines. According to the Philippine Year Book (1977), the Government's Bureau of Telecommunications and private companies operate in Bohol as listed below:

- Central Radio Communications (CRC)
- Philippine Telephone & Telegraph Corporation (PT&T)
- Radio Communication of the Philippines, Incorporated (RCPI)
- Sarmiento
- Bureau of Telecommunications (BUTEL)

The BUTEL handled a total of 2,492 (out-going 679, in-coming 1,713) messages per month in 1978. The BUTEL's telegraph facilities are as follows (Cf. Figure 16.1 and Table 16.1):

VHF Station	1
Radio Stations (HF Radio Stations)	4
Radio Telegraph Stations	4
Telegraph Stations	24
Telegraph Land Lines	34

Four private companies have 10 telegraph stations in Tagbilaran, Jagna, Ubay, Tubigon, and Loon.

A social telegram rate is now very popular and social telegram service is widely accepted by the public particularly by the students and persons for personal communication. This service is provided by the BUTEL and private companies in Tagbilaran City and some municipalities.

16.2.3 National Telegraphic Transfer Service (NTTS)

This service is called the NTTS, and it is used in sending money from one place to another. The BUTEL has taken over the NTTS from the Bureau of Posts since July 1974. The NTTS is now one of the major services of the Bureau of Telecommunications. The NTTS under the BUTEL started operations in October, 1974 with 62 pilot offices all over the Philippines, this increased to 185 by the end of 1978. There are only 3 offices of the NTTS in Bohol.

16.2.4 Telephone Service

In the Philippines, there are 84 private telephone companies, of which the major companies are the Philippine Long Distance Telephone Company and the Republic of Telephone Company. The BUTEL owned by the Government is also one of the major telephone service systems. The private companies are allowed to operate in any profitable area, but the BUTEL on the other hand, handles these areas which aee less profitable since it is subsidized by the Government. In Bohol, the BUTEL operates only in Tagbilaran City, and the provincial government provides a provincial telephone service mainly within the cities. The capacity of telephone exchanges are shown as follows:

- BUTEL Telephone System in Tagbilaran City

  4 digits (or channels) ----- 1,000 lines divided into;

  50%: Party lines
  50%: Individual lines

  Maximum Load: 1,500 subscribers
  (1,100 subscribers as of September, 1979)

- Provincial Telephone System

  233 lines divided into;

  106 lines: Residences, Business Offices
  123 lines: Provincial Offices, Police etc.
  4 lines: Dauis, Baclayon, Corella and Balilihan

  While the telephone density of the whole country was 1.3 telephones per 100 population in 1978, it is only 0.17 in Bohol, putting this province far behind the others in communication capacity.

- Demand and Supply of Telephone Service

  As mentioned above, the telephone density in Bohol is far below the average rational density, but there is now an over-capacity of 400 lines which is in the hands of the BUTEL has in Tagbilaran City. According to the NEDA's 10 years plan (1980 - 1990), the telephone density per 100 population is aimed at 2.2 telephones. The demand for telephones will be gradually generated as the result of the growth of Gross Domestic Product (GDP) in Bohol.

  However, GDP per capita in Bohol in 1990 is estimated to become only half the national average in 1975.

  If it can be assumed that the telephone density per population will go up in proportion to the growth of GDP, the telephone density in Bohol will be 0.60 in 1990, and the total number of telephones to 5,800.

16.3 Development Potentials

It is judged that Bohol is relatively rich in having plentiful human resources and well-developed social organizations. In addition, technological know-how is readily available to the Boholanos if they wish to introduce a modern system of telecommunication system. What Bohol lacks is the financial resources which could be invested for the improvement of communication system in Bohol. Given the limited financial resources, what is required most is a policy decision of the priority order of developing the communication system based on the frequency and intensity of people's communication service needs. The development potentials of communication system in Bohol must be evaluated by taking into consideration the following factors:

- Mobilization of limited financial resources
- Type of communication system to be developed.
- Areas or municipalities to be given priority consideration.
- Role to be played by the government.

Telecommunication will play a more important role as industrial activities become intensified in Bohol.

Therefore, the government will have to help the improvement of telecommunication systems.

According to the BUTEL, there were 10 major municipalities without telegraph service in 1979. Telegraph service is the fastest and a relatively cheaper medium of communication in the areas having no telephone service. It is imperative that telegraph service be established as early as possible by the BUTEL.

There are many old and inefficient telegraphic equipment and facilities in Bohol. For example, the BUTEL and some private companies now are using the method of CW (carrier wave). It will be necessary to replace these old equipment and facilities by HF radio telegraph station or telex system in the future.

In Bohol, only Tagbilaran City has telephone service. It will therefore, be necessary to have telephones installed in municipality offices, educational facilities, social welfare facilities and medical care facilities for the benefit of administrative efficiency and improvement of the standard of living.

It is estimated that it will take more than 10 years for general households to have easy access to telephones if the national income per capita is used as a basis of demand projection of telephone installation.

16.4 Objectives and Targets

Short, medium and long term development plans are spelled out by the

BUTEL as to how the communication system should be developed in Bohol. The plans were formulated on the basis of careful consideration of the communication service demand which will be generated as the economic development progress in Bohol. They provide a fundamental framework according to which specific development programs/projects can be identified.

Since the BUTEL plans to complete the telephone network connecting Tagbilaran with other main municipalities by the year 2000, the BUTEL's expansion plan is to establish 33 additional local telephone exchanges, 9 NTTS offices and 34 Telex stations.

The objectives of communication projects, implementation schedules and estimated project costs are shown in Table 16.2.

16.4.1 Short Term Development (1980 - 1985)

As stated before, 10 major municipalities now have no telegraph service. Telegraph service is considered to be a minimum requirement of communication service in this country. There will also be a strong need to establish a communication network for the inhabitants living in different municipalities in Bohol. The BUTEL has a plan to have telegraph equipment and facilities installed for the 10 major municipalities in the near future.

It is also necessary for the government to have telephone networks installed for the promotion of industry and alleviation of communication bottlenecks existing among the provinces. As mentioned before, Bohol will be in need of about 5,800 telephones by 1990. Therefore, it is necessary for the BUTEL to establish 4 telephone exchanges having 200 lines each and to expand to 5,000 lines from the present capacity of 1,000 lines of the Tagbilaran Exchange. It will also be necessary to have a 3-pos. switchboard at Tabgilaran.

At present the BUTEL and the provincial government operate telephone service in Tagbilaran City. There are two expansion plans for telephone service in the short term.

The provincial government's proposal to the world bank is to expand the present 1,000 lines of Tagbilaran Exchange to 5,000 lines and to establish an additional 3-pos. switchboard and 4 telephone exchanges having 200 lines each in Tagbilaran City. If this plan is implemented it would be possible for Tagbilaran to improve telecommunication services within the province of Bohol and with other provinces.

The BUTEL's plan is an expansion program of rural telephone systems in 5 municipalities (Calape, Carmen, Jagna, Loon and Ubay) between 1983 and 1987. Three of these municipalities (Carmen, Jagna and Ubay) are growth centers. In consideration of the important role to be played by telecommunication for the development of Bohol, it is considered necessary that 4 growth center telephone exchanges (including Tubigan) should be established first. It is recommended that this telecommunication expansion program should be completed in the first half of the 1980's (See Fig. 16.2).

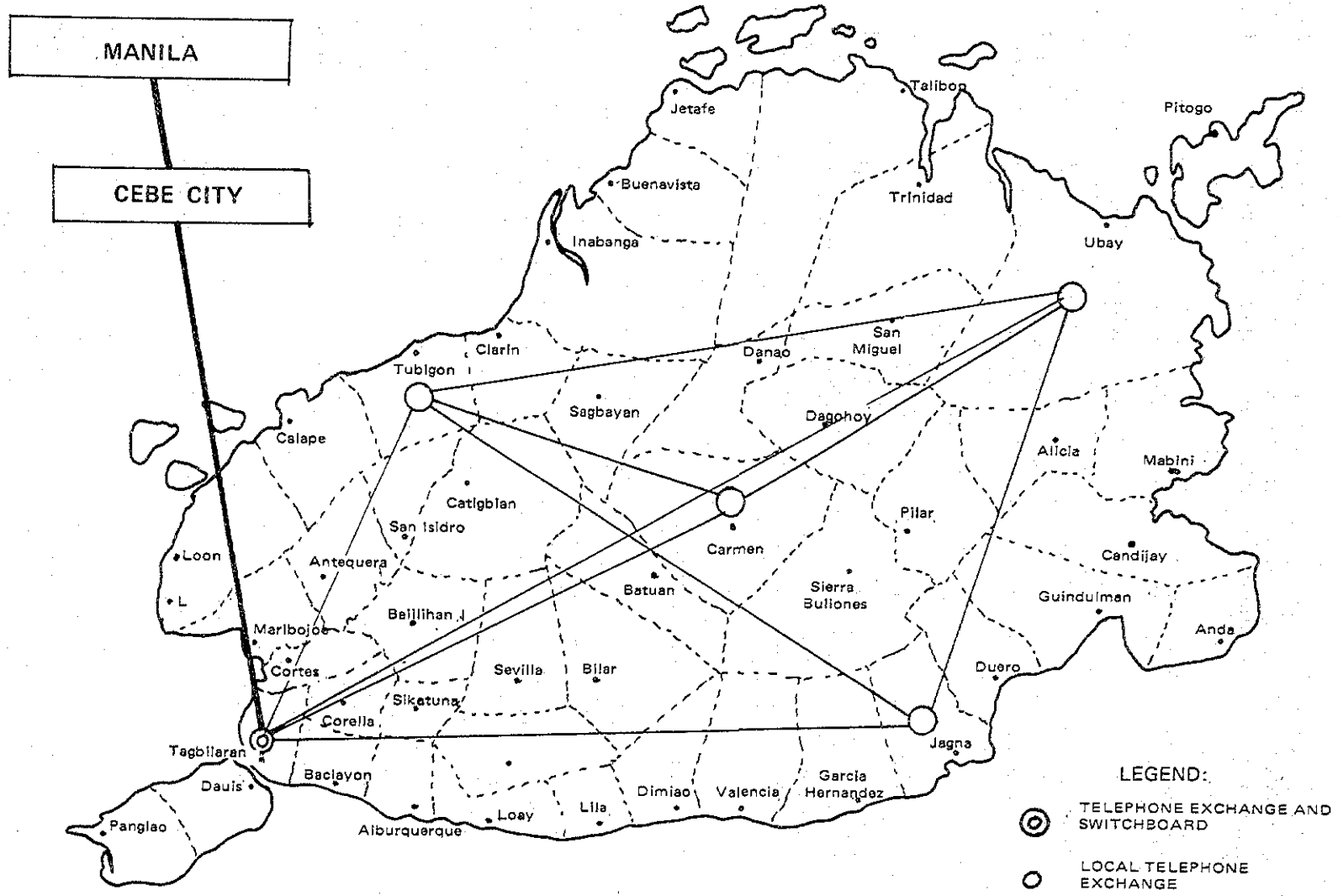
Table 16.2 Schedule and Project Costs for Expansion of Communication Networks

PROJECT	TOTAL NO. OF PROJECT UNITS 1/	ESTIMATED TOTAL COST (000₱)	SHORT TERM 1980 81 82 83 84 85	MEDIUM TERM 86 87 88 89 90	LONG TERM 91 92 93 94 95 96 97 98 99 2000
TELEGRAM SERVICE (HF RADIO STATION)	10 Stations	700	10		
NTTS (NATIONAL TELEGRAPHIC TRANSFER SERVICE)	9 Offices	315	1 — 1	1	2 — 3 — 1
TELEX (VHF RADIO/ TELEX SERVICE)	34 Stations	5,100		8	26
TELEPHONE SERVICE	TAGBILARAN EXPANSION				
	1. Switchboard	500	1		
	2. Exchange	16,500	1		
	GROWTH CENTERS INTRODUCTION – 4 Stations	6,200	3	1	
	OTHER CENTERS INTRODUCTION – 29 Stations	44,800		7	22
EST. TOTAL COSTS 2/		74,115	22,420	13,585	38,110

Notes: 1/ No. of Units per development term indicated in the respective bars above.

2/ Total per development term estimated by direct proportion to the estimated total cost.

Fig. 16.2 TARGET OF TELEPHONE NETWORK (1980–1985)



The total cost of programs planned for the short term is estimated at about ₱23 million excluding the costs for expanding mail services which should be estimated during the feasibility stage of the project.

16.4.2 Medium Term Development (1985 - 1990)

During the medium term, the BUTEL plans to continue the expansion of the communication networks. The project to bring teleghone service to the 4 growth centers will be completed in addition to bringing service to at least 7 other municipal centers. Telex services will be established in at least 8 municipal centers. The total project cost in the medium term is estimated at about ₱14 million.

16.4.3 Long Term Development (1990 - 2000)

By the year 2000, the BUTEL will have reached its goal to establish communication networks throughout Bohol. In the long term period, telephone service will be brought to 22 municiplaities, telex service to 26 municipalities and 7 NTTS offices established. The total cost for the long term is estimated to be about ₱38 million.

16.5 Development Strategies

Telegraph service should be made easily available to all inhabitants living in the cities and rural areas to mitigate the problems caused by the lack of communication means among them. Although the PLECS (Provincial Law Enforcement Communication System) is currently operated in Bohol, it is unreasonable to expect that the system can be utilized for industrial and private purposes. Some other means of communication must be developed.

Since Tagbilaran City must play an important role as the development pole in Bohol and Tubigon, Jagna, Carmen and Ubay are to become growth centers, a telephone exchange system should be established between the growth centers as early as possible in 1980's. However, there are three problems or constraints that must be taken into consideration;

- Budget constraints
- Supply problems of electrical power
- Availability of a site or place for the construction of the building.

It will be unavoidable for the government to apply for a foreign loan due to budget constraints. The government should provide a basic telephone system as the minimum requirement within several years, since telecommunication demand is a "derived demand" generated as a result of industrial activity. In fact, the Butel and 5 municipalities (Calape, Carmen, Jagna, Loon, Ubay) are in negotiations with the PLESSEY (an organization of the United Kingdom) for a loan to assist the national government to set up a telecommunication system for the whole of Region VII.

It is expected that old telegraph equipment and facilities should be (such as the telegraph systems using the method of CW in Bohol) replaced by HF radio stations or VHF stations in the future.

16.6 High Impact Project of Communication (Expansion of Telegraph Service)

- Agency: BUTEL

- Objective

  It is necessary for the government to facilitate better and more efficient transmission of messages in municipalities lacking a telegraph system and to eliminate the communication gap existing among municipalities in Bohol.

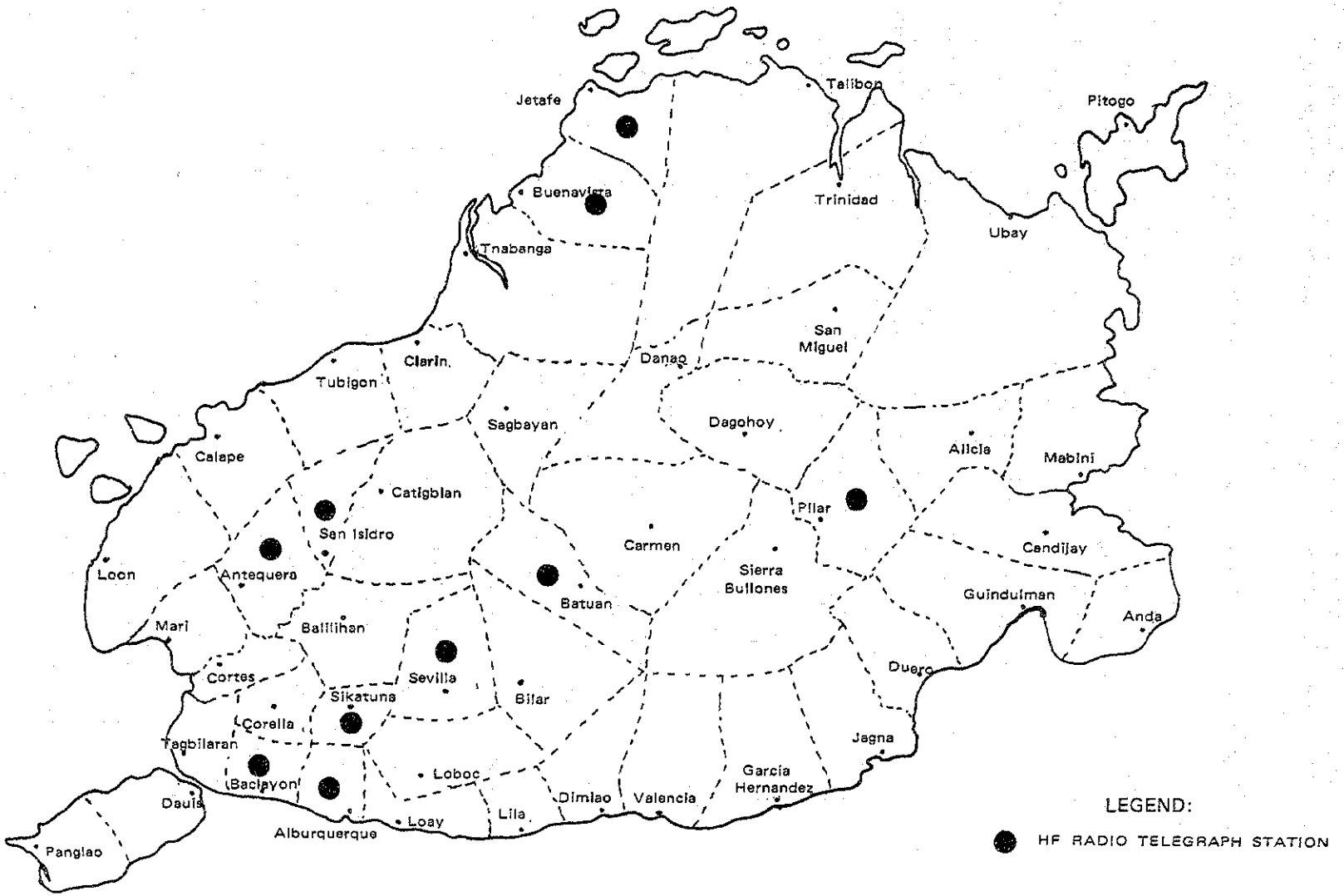
  Telegraph system should be installed as soon as possible in the main 10 municipalities which do not have telegraph service at present. These municipalities are as follows: (See Map in Fig. 16-3)

  Alburquerque
  Antequeura
  Batuan
  Buenavista
  Baclayon
  Jetafe
  Pilar
  San Isidro
  Sevilla
  Sikatuna

- Cost Estimates: ₱700,000

Aerials and Towers	33,000
Generators	67,000
Batteries	200,000
Transmitters & Receivers	33,000
Other Equipment	67,000
Construction and Installation	300,000
Total	₱700,000

Fig. 16-3 TARGET OF ESTABLISHMENT OF HF RADIO TELEGRAPH STATION (1980-85)



SOCIAL SERVICES SECTOR

CHAPTER 17
PUBLIC HEALTH DEVELOPMENT PROGRAMS AND PROJECTS

CHAPTER 17 PUBLIC HEALTH DEVELOPMENT PROGRAMS AND PROJECTS

17.1 Public Health Development Plan

17.1.1 General Background of Public Health in Bohol

The objective of area development is to upgrade the standard of living of people in all aspects. Simultaneously, effective and efficient social development may be achieved only by a society with good health. Although the government has been making efforts to improve the public health in Bohol Province, it appears that there are still high infant mortality, poor accessibility to the medical facilities an epidemical spread of schistosomiasis and malnourished children.

In order to tackle these problems, it is proposed to organize the system of medical services, and in particular, to implement the eradication of schistosomiasis program.

17.1.2 Analysis of Current Situation of Public Health

1. Mortality and Its Causes

One of the most pressing problems in the province is the high infant mortality. As of 1978, the province had an estimated population of 811,598, and the number of newborn infants was 20,769. This birth rate is 25.6 per 1,000 population. It is slightly lower than that of the whole country. The natural rate of increase is estimated at 18.9 per 1,000 population. However, the rate of deaths under 1 year is high, accounting for 50.1 per 1,000 population. It was higher than that of the whole country and also of Region VII in 1975. When the causes of death of newborn infants are examined, pneumonia is the most prevalent, followed by diseases induced by infection such as gastroenteritis and bronchitis, congenital abnormality and disturbance at the time of birth.

However, according to the Five-Year Development Plan, 1978 - 1982 Ministry of Health, the infant death rate of 47.68 per 1,000 1,000 population in 1978 is expected to be reduced to 45.58 per 1,000 population in 1982 in Region VII.

The targeted rate of maternal deaths will be lowered from a rate of 1.08 per 1,000 in 1978 to 0.98 per 1,000 in 1982 in Region VII.

In addition the following causes of death are expected to decrease:

(Unit: deaths/1000 pop.)

	1978 (Actual)	1982 (Projected)
Pneumonia	131.78	120.21
Tuberculosis	61.81	55.99
Gastroenteritis and colitis	30.37	24.17
Bronchitis	16.88	15.61

The overall death rate of 6.53 per 1,000 population in 1978 will decline to 6.12 per 1,000 population in 1982, in Region VII.

Since nowadays effective examination and/or treatments are available for these infectious diseases, the solution to the mortality problem and the successful attainment of the above target will largely depend on the provision of necessary medical services and facilities with required resources.

The biggest general problem of the province is schistosomiasis. A field survey was conducted undre the Schistosomiasis Control and Research Project in Leyte in 1972. Based on the results, estimates showed that these were 8,220 and 4,990 infected persons in the two districts of Talibon and Trinidad respectively in Bohol (a total of 13,210 persons). There is an independent office from the Ley office for the control of this infection in Trinidad. According to the authorities of this office, those infected with *Schistosoma japonicum have been found in six areas, four areas* in Trinidad district and two areas of Talibon district (See Fig. 17.1). The positive rate of infection varies from place to place, ranging from 10 percent or less, to about 30 percent. In the Philippines almost 500,000 inhabitants of 123 towns and villages of 20 provinces, which cover about 10 percent of the whole country, are infected with schistosomiasis. Furthermore, several millions of inhabitants are now exposed to this infection in the remaining part of the country. Most of the patients are farmers and their family. Schistosomiasis is not only an important problem of public health, but also a perennial problem of developing countries where agriculture is a main industry. It shows a tendency to be more and more prevalent rather than to decline in morbidity.

Schistosomiasis infects not only man but also some other mammals (cattle, dogs, goats, rats, and swine) at a high frequency. It is, therefore, an urgent task to make an effort to eradicate schistosomiasis.

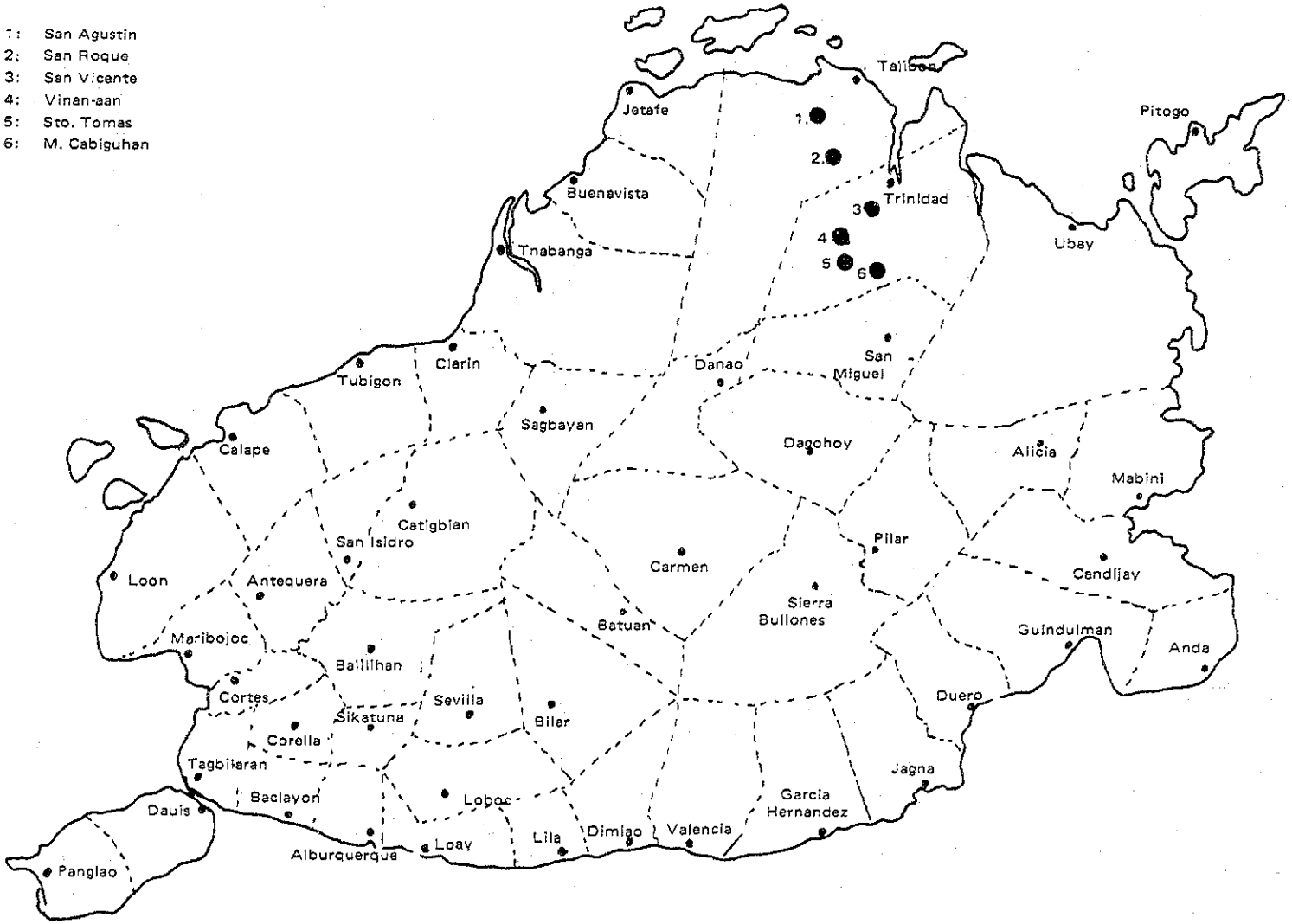
2. Medical Service and Facilities

According to the Five-Year Development Plan, 1978 - 1982, the followings are the target for the provision of medical facilities:

Rural Health Units	1 for each 20,000 people
Barangay Health Centers	1 for each 5,000 people
Hospital Beds	1 for each 1,000 people
Diagnostic Centers	1 for each province

In terms of the Bohol province, the existing medical facilities as of 1976 and necessary number of each facilities to meet with this set target are as shown below:

Fig. 17.1 SCHISTOSOMIASIS EPIDEMIC BARRIOS TALIBON AND TRINIDAD, BOHOL (1979)



Type of facility	Existing 1976	Target 1982	Required Facilities 1982
Rural Health Units	42	41	0
Barangay Health Centers	62	162	100
Hospital Beds	973	810	0
Diagnostic Centers	1	1	0
Est. Population	748,000	809,600	-

It appears that the number of medical facilities in the province are quite satisfactory except numbers of existing Barangay Health Center. However, their distribution is uneven as shown in Figures 17-2 and 17-3 and as is the case in many provinces in the Philippines. At present the total number of private and government hospitals are 15 which was increased dramatically in 1977 from 5 because of increase in number of private hospitals by 10 in that year. Accordingly, there was a large increase in the number of beds to the present level of 1: 1,271 population, which is far better than other areas in Region VII. However, the above numbers do not show distribution of bed. In fact, the greater part of the rural area in the province still suffering from the lack of medical facilities within convenient access, especially in the central and the northern parts of the province.

In addition, provision for a better environment for the people is of importance in order to maintain public health. According to the strategies of the Five-Year Development Plan, 1978 - 1982, 70% of the population are to be served by sufficient and safe water supply and provided with sanitary toilets. For this purpose, comprehensive planning is urgently required to support the efforts to be made for upgrading of public health in the province.

Another aspect of medical services is lack of medical doctors and other related trained manpower. In each municipal center, there is a Rural Health Center, where at least one doctor, nurse and one midwife are supposed to be stationed. However, there vacancies for doctors in Rural Health Centers in 8 out of 45 municipalities (18%). The problem of health manpower in the long run involves attracting manpower into government health service and at the same time, maintaining a low cost services.

Under the circumstances, the full implementation of the Restructured Health Care Delivery System (RHCDS) shall be pursued.

Under the RHCDS scheme of health service delivery the municipality is divided into health areas staffed by a re-trained midwife based on a 1:5,000 population ratio. The health area may be composed of one or more barangays and must have a strategically located Barangay Health Station (BHS) where the rural health midwife resides and makes available the basic health services to the people. Under this set-up the health services are not only made available, but also becomes accessible to the people at all times.

Under this arrangement, the pattern of medical service delivery starts with the rural health midwife (capabilities to diagnose, screen and give treatment) who will be the first point of entry of medical care, and cases which can not be handled by the midwife will be referred either to the Public Health Nurse or the Municipal Health Officer (MHO) depending upon the case. Those referred to the Public Health Nurse that needed higher level care within the primary level will be refferred to the Municipal Health Officer. The MHO would refer some cases to the secondary level of the Community Hospital and Health Center (CHHC) or emergency hospitals for adequate care. However, cases which cannot be attended by the CHHC and emergency hospitals will be further referred to the provincial hospitals, regional hospitals and medical centers as the need arises.

But to make the full implementation of RHCDS effective additional sources must be provided such as:

1) Clinic equipments and facilities:

2) Laboratory supplies;

3) Drugs

4) Vehicle (motorcycle for sanitary inspectors, doctors midwives).

The delivery of health services to be effective must have the commitment of partnership with the people. In this connection, the Primary Health Care concept of health service must be implemented in the area. This is essential health care made universally accessible to individuals and families in the community by means acceptable to them, through their full participation an and at a cost that the community and country can afford. It should form an integral part of the country's health system of which it is the nucleus and of the overall social and economic development of the community. For this purpose, an initial task for improvement of medical services in Bohol is to organize a system to maintain the most effective service within the limited facilities and resources incorporating RHCDS.

Fig. 17.2 GEOGRAPHICAL DISTRIBUTION OF HEALTH CENTERS IN BOHOL (1979)

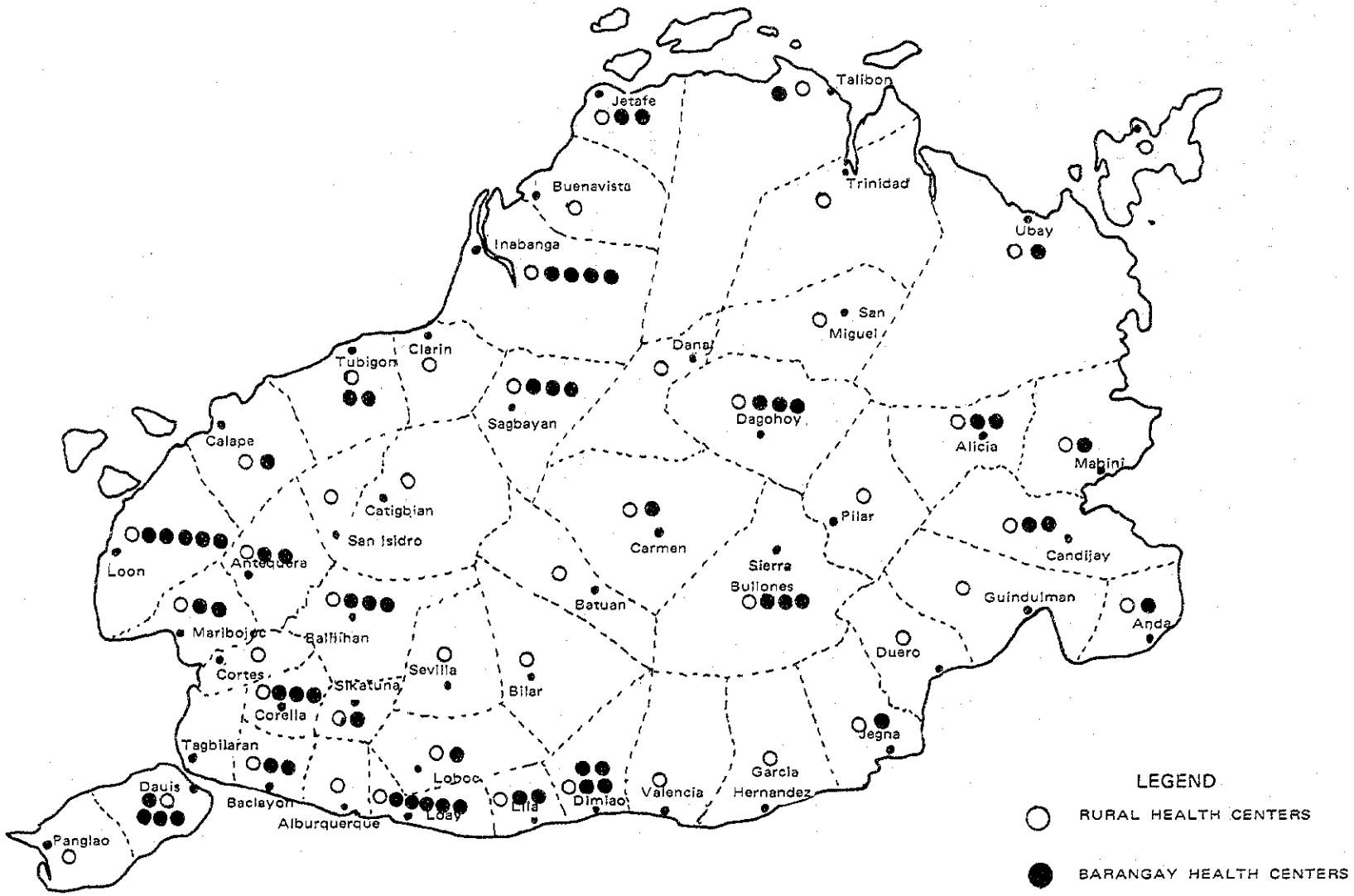
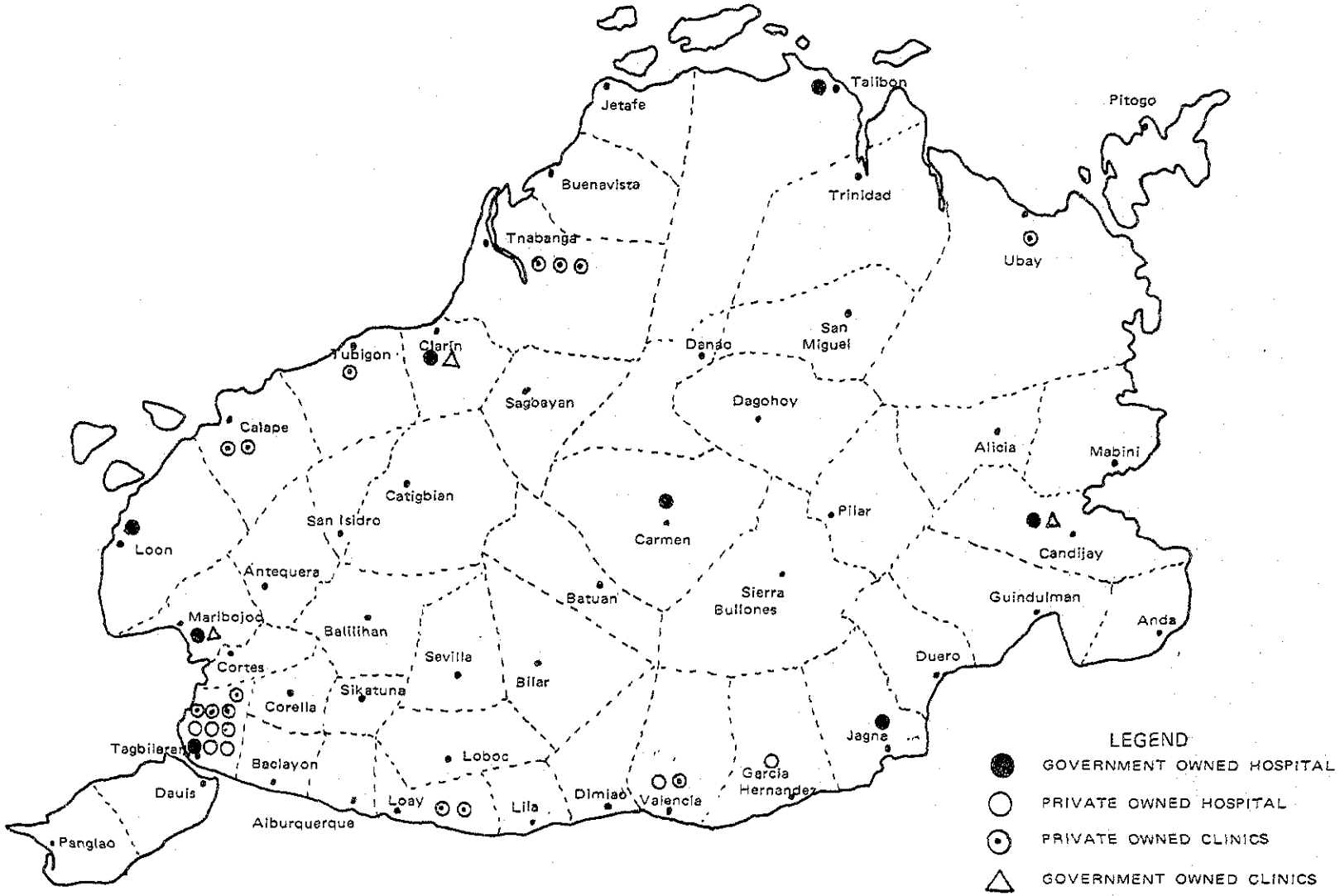


Fig. 17.3 GEOGRAPHICAL DISTRIBUTION OF HOSPITALS IN BOHOL (1979)



3. Nutrition

In the Republic, the different nutritional conditions of the various regions are classified into four groups based on relevant indicators (e.g., percent of mal-nourished population, families below minimal food threshold, literate population and food crop production).

Central Visayas falls in group III, together with Cagayan Valley and Northern Mindanao. According to the classification, these are defined as having a high level of nutritional welfare, but a low level of socio-economic development. The present advantage of the group II regions, however, should be viewed tentatively, since it can easily be imperiled by the presence of a large number of low-income and illiterate families sustained by a low food supply.

By virtue of agricultural production, the supply of food in Bohol province is satisfactory. As for protein-calorie malnutrition, local fisheries are serving to supply protein to the people in the areas along cost lines. Nonetheless, the follow nutrition related events exist in Bohol:

(a) high mortality of infants

(b) malnourished children

(c) high morbidity of infectious diseases of respiratory and gastrointestinal organs.

The major factors causing the above conditions are presumably insufficient supply of protein (especially to the inland areas), unbalanced food and poor environmental conditions together with insufficient and inconvenient accessibility to the medical services.

The integration of curative and preventive aspects of health care are urgently required to improve the present situation of nutrition. However, in order to eradicate the problems, health information has to be disseminated to educate the people on sound nutritional practices, especially on balanced diets, and infrastructure for transportation and communication, as discussed in other sections, needs to be inplemented.

17.2 High Impact Project – A:

"Strengthening of Schistosomiasis Center Research Service, Bohol, Project"

To establish effective measures against schistosomiasis, efforts should be made to undertake the following steps in Bohol: to identify numbers of inhabitants infected with schistosoma (community examination of inhabitants by intradernal reaction and fecal test should be carried out), to conduct an environmental surveys in areas where Miyairi snails

and infected inhabitants are living, and to take all the steps for the establishment of countermeasures as determined are necessary according to the survey.

17.2.1 Education on Schistosomiasis

1. Staff of Office

The staff of the office in the district must be trained in the techniques of epidemiology in all aspects such as field survey, diagnosis and treatment, snail destruction and methods of improvement of environment.

2. Inhabitants of Areas Concerned

For the implementation of the survey on schistosomiasis, it is essential to have mutual understanding and to get the cooperation of the inhabitants in the areas concerned. To ask the cooperation of the inhabitants for the survey, it is necessary to enlighten the inhabitants on the source of infection (pathogenic agent), the route of transmission and the effect of infection upon the human body.

17.2.2 Schistosomiasis Control Plan

Theoretically, the prevention of this infection is achieved by breaking a link between parasite eggs discharged from human beings and Miyairi snails acting as transmitting hosts, or a link between human beings and cercariae released from the snails. It is also effective to modify the environment in such a manner that the snails cannot inhabit it. It is a radical and definitive step of control of schistosomiasis to expel and exterminate the snails. Moreover, such mammals as cattle, dogs, goats and swine are readily infected with Schistosomiasis. Accordingly, it will be difficult to control schistosomiasis in the Philippines where domestic animals are raised freely in the rural areas. The following is a summary of the steps that can be taken to prevent the infection.

1. Steps for Snail Destruction

(a) Public works (physical methods)

- Drain wet and swampy lands

- Reclaim in enzootic areas

(b) Chemical method

Spray various molluscacidal chemicals (Bayluscide, NaPCP, etc.) after the above-mentioned public works for environmental improvement are undertaken.

2. Detection and Treatment of Patients

(a) Detect patients by fecal examination of inhabitants

(b) Treat the patients under medical supervision.

3. Improvement in Environmental Sanitation

(a) Supply water for drinking, bathing, and washing

(b) Perform excreta disposal and encourage the use of the privy.

(c) Construct bridges over rivers and ditches where Miyairi snails inhabit.

(d) Take intensive care of domestic animals, such as cattle, dogs, goats and swine.

(e) Promote health education for inhabitants of areas concerned.

17.2.3 Implementation of the Control Plan

Judging from the present condition of Bohol, the following steps should be initiated for the control of Asiatic schistosomiasis: Reconfirm the epidemic areas, search for other epidemic areas, and estimate the number of infected inhabitants. To carry out these steps, it is necessary to secure persons who will conduct the survey and train other persons. Some of these persons should be trained in the station of the Schistosomiasis Control and Research Project located in Leyte. It is recommended that one or two staff members should be selected every year to study abroad at the Public Health Laboratory in the Prefecture of Yamanashi, Japan, for about 6 months. This laboratory is the main center of research on schistosomiasis in Japan.

The presence of Miyairi snails, which act as transmitting hosts, is an indispensable condition for the occurrence of Asiatic schistosomiasis. The existence of water is an absolutely required condition for these snails to live. Therefore, if the water can be controlled in the epidemic area, it will be possible to prevent the occurrence of this disease to a considerable extent. If an flooding is caused by an intense rainfall, infected snails, will be spread to a new area, which will suffer from an epidemic appearance of schistosomiasis. Accordingly, steps should be taken to make the flow of rivers and ditches smooth and as straight as possible and improve the system of irrigation in the fields. Such steps have been reported to be effective enough to reduce the population of Miyairi snails by about 60% (This effect has been observed in experiments conducted by the Schistosomiasis Control and Research Projects in Leyte).

If the system of irrigation is improved in the field, Miyairi snails will decrease in population. At the same time, the amount of water that is not contaminated will serve as drinking and utility water for inhabitants. Such improvement is expected to prevent schistosomiasis and also other infectious diseases of the digestive organs.

In brief, public health workers should have cooperative relations with the agricultural authorities. Their control measures should benefit the system of farming by helping to ensure a sufficient supply of irrigation water.

The steps mentioned should be carried out by first taking the actual conditions of the province into consideration. Then the various methods of control already stated should be put into practice. In this manner the provincial health condition will be protected from Asiatic schistosomiasis.

17.2.4 Cost Estimate for Schistosomiasis Control

Since the station is suffering from insufficient supply of instruments and a vehicle, the followign are necessary for this program: autoclave, camera, electric centrifuge, compound microscope, stand-by electric generator and station wagon car. The total cost is estimated at ₱250,000.

17.3 High Impact Project – B:

"Mobile Medical Service"

In order to extend medical services into rural areas and to augment the existing medical facilities at rural health centers and Barangay health centers, it is proposed that a mobile medical service be established. Such a service would utilize four full-equiped medical vehicles and would consist of a team of doctors and medical personnel who would travel along a fixed route between existing health centers. The exact services provided and routes travelled qualifications of personnel required and specifications of vehicles will be determined in a later stage of planning. The mobile medical service should be planned in coordination with and controlled by the Ministry of Public Health. A rough estimate of the cost of the four vehicles is ₱700,000.

CHAPTER 18
COMMUNITY DEVELOPMENT PROGRAMS AND PROJECTS

CHAPTER 18 COMMUNITY DEVELOPMENT PROGRAMS AND PROJECTS

18.1 General Background for Community Development

Bohol is a sparcely populated agrarian province with only the exception of the City of Tagbilaran which is a relatively urban area. Most of the municipalities are more or less congregated around an amenity core complete with municipal Hall, Church, School, Market and other basic technical and social infrastructures. At the municipal level, no serious or urgent improvements are required; however, the most depressed area of community is at the Barangay level.

The main focus of the community Development Plan is placed upon the improvement of the depressed Barangays and the creation of new rural communities.

18.2 Analysis of Current Community Development Problems and Trends

The problems hampering the community development in the rural areas of Bohol are enumerated as follows:

1) Wide spatial dispersal of communities - thus lacking collective power to support various technical and social infrastructures

2) lack of community organization - especially at the Barangay level.

3) lack of financial resources due largely to excessive expenditure on cultural occasions, etc. instead of reinvestment in the community.

4) lack of knowledge and utilization of technology

5) lack of basic technical and social infrastructures

6) migration of younger generation to urban areas outside Bohol.

18.3 Community Development Potentials

18.3.1 Natural Resources

Although each Barangay has different sufficiencies and deficiencies of natural resources, Bohol in general has an adequate amount of the resources for livelihood and light construction work i.e., the necessary amount of foods, water, energy, etc. to sustain communal living with construction materials such as coconut tree, kipa, bamboo, gravel, etc.

18.3.2 Financial Resources

The low per capita income and rather high spending habit of local residents appear to cause the low capital formation for reinvestment to their own communities, and the mandatory 10% community development fund from local taxes is in sufficient to motivate the Barangay residents to initiate community development themselves.

18.3.3 Institutional Resources

Among various governmental agencies which are directed to assist community development at the Barangay level, two Ministries, the Ministry of Human Settlements and Ministry of Local Government and Community Development, are directly involved in this field. In addition, there are development committee and development staff at each provincial and city/municipal level.

Therefore, down to the city/municipal level, the institutional frameworks, are organized and complete. Only at the Barangay level, the institutional framework is still weak and ambiguous.

18.3.4 Existing Community Development Programs and Projects

Currently, the multi-level Bagong Lipunan Site and Service Program, so-called BLISS, through the Ministry of Human Settlements, in coordination with both governmental and private sectors is active.

This program focuses on depressed areas within province and city/municipality which are classified into three levels. The first level is the neighborhood community of 50 to 100 families in area of 2.5 hectares complete with the basic services. The second is the agro-industrial community of 100-500 families in an area of 50 to 200 hectares to be developed specifically for agro-industrial purposes. The third is the watershed-based eco-community to be set up in each region for areas with more than 200 hectares and 500 families and with potential for a water impounding basin.

The current status of the BLISS Projects are as follows:

The BLISS Program for the City of Tagbilaran in Bohol has selected the area with 2.66 hectares in DAO District. The activity undertaken at present is the acquisition of lot for the project site.

In Calape Bohol, the selected site is in Barangay San Isidro. The project site is already surveyed, but actual operation has not yet started due to the non-arrival of funds intended for the project.

For Jetafe, the site is in Barangays San Isidro and Barangay San Carlos in Talibon with an area of 2.5 hectares each. The Ubay project is located in the 3rd Bohol Cadre Area with an area of 3 hectares. These three municipalities have not yet started operation.

Final survey of the site is completed in Dagohoy, Bilar with an area of 15 hectares; Guadalupe, Carmen with an area of 5 hectares; and Poblacion, Pilar with an area of 50 to 500 hectares. Report of activities for Garcia Hernandez and Jagna is not yet submitted.

This program seems capable of demonstrating a new direction for community development.

18.4 Community Development Objectives and Target Variables

18.4.1 Objectives

- To develop and strengthen rural communities to become self-motivated and self-reliant.
- To halt migration of rural manpower into urbanized areas outside Bohol.

18.4.2 Target Achievements

1. Short Term (1980-85)

   - To identify depressed Barangays in need of immediate assistance and to take appropriate actions to upgrade grievous conditions.

2. Medium Term (1985-90)

   - To expand the identification program to each municipality and assist at least one Barangay for each municipality for the demonstration of new and better community development techniques.

3. Long Term (1990-2000)

   - To create inter-spatial and inter-communal linkage between Barangays in order to increase their collective power to afford technical & social infrastructures and amenities.

18.5 Community Development Strategy

18.5.1 Short Term (1980-85)

Promotion and encouragement of Barangay residents to identify the most critical areas of deficiencies and to self-correct the situations with guidance and assistance from the government sector.

18.5.2 Medium Term (1985-90)

The identification and self-correction efforts are expanded to cover Barangays without basic technical and social infrastructures. Each Barangay will be encouraged to form an organized Barangay cooperative.

18.5.3 Long Term (1990-2000)

In this phase, Barangays should be encouraged to form larger cooperatives with other closely located Barangays to collectively afford more technical and social structures as well as amenities.

18.6 Additional Community Development Programs and Projects

The following additional Programs and Projects are recommended:

18.6.1 Technical Assistance Program

- To help Barangay residents identify problematic areas of the community and to assist them formulate, plan, implement, and operate the formulated projects for correcting the mal-conditions.

18.6.2 Model Rural Community Development Program

- In addition to the BLISS Program, Model communities should be constructed, not by creating a new neighborhood, but by renovating and upgrading the existing rural communities.

CHAPTER 19
HUMAN RESOURCES AND EDUCATION DEVELOPMENT PROGRAMS AND PROJECTS

CHAPTER 19 HUMAN RESOURCES AND EDUCATION DEVELOPMENT PROGRAMS AND PROJECTS

"Education must be transformed so that it can become an instrument for the economic and social transformation of the Nation," State of the Nation Address, by the President of the Philippines, Ferdinand E. Marcos, January, 1972.

"To provide for broad general education that will assist each individual in coping with the peculiar ecology of his own society;

(a) To attain his potential as a human being

(b) To enhance the range and quality of individual and group participation in the basic function of society;

and

(c) To acquire the essential educational foundation for his development into a productive and versatile citizen.

To train the nation's manpower in the middle level skills required for national development,

To develop the high-level professions that will provide leadership for the nation, advance knowledge through research and apply new knowledge for improving the quality of human life; and

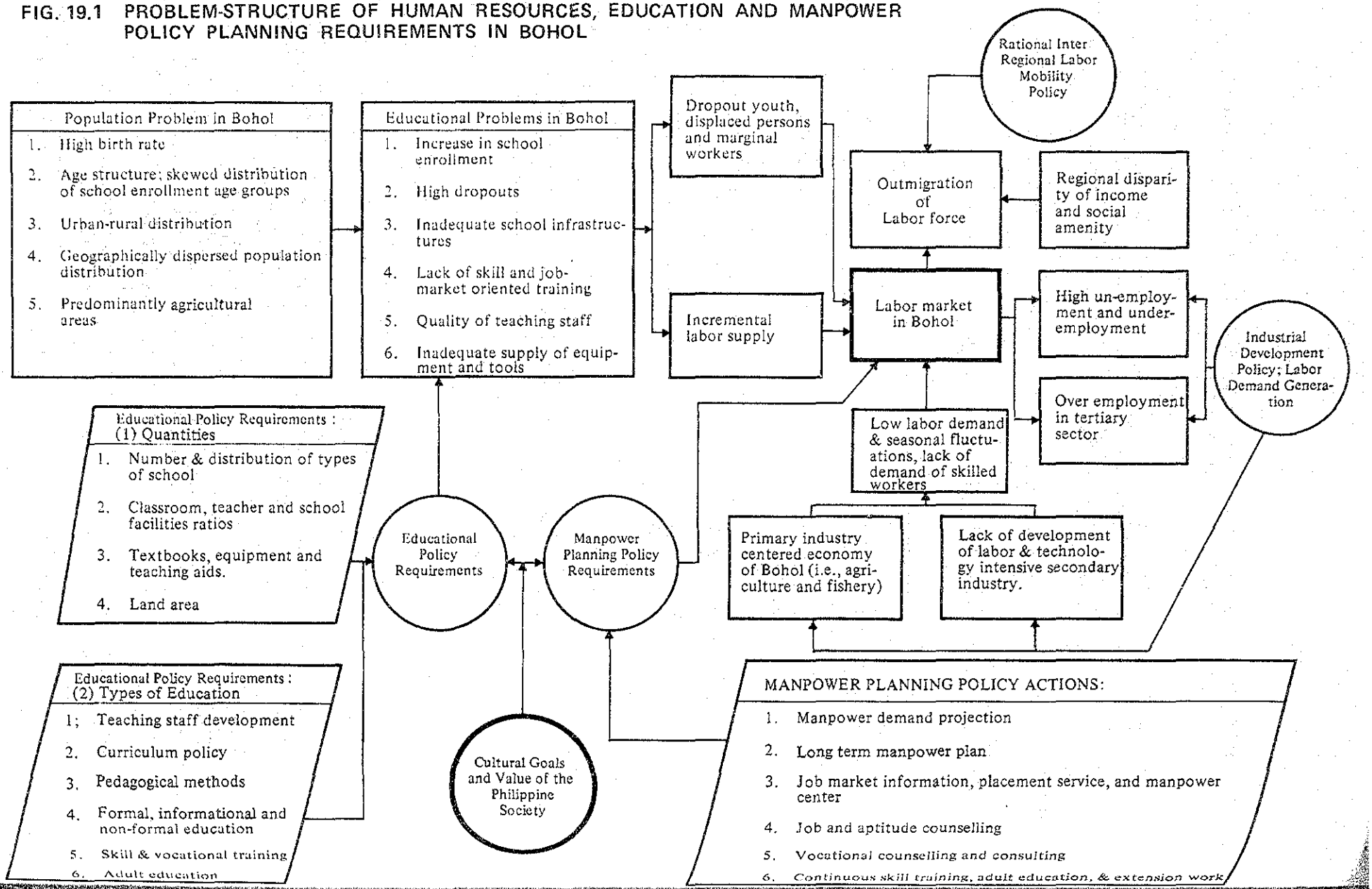
To respond effectively to the changing needs and conditions of the nation through a system of educational planning and evaluation," Presidential Commission to Survey Philippine Education (PCSPE), 1970.

19.1 Introduction

The human resources and education development plan in Bohol must go hand in hand with each other. Human resources are the most precious capital for the socio-economic advancement of Bohol. Fruitful results can only be brough about when proper educational measures and policies are carried out in the way most suited to realize the actual educational needs of the Boholanos. It must be grated, however, that the educational policy planning for the Bohol province falls into a public jurisdictional matter of the Ministry of Education and Culture (MEC), particularly of the Region VII Office of MEC, and it should therefore be considered more appropriate for us to concern ourselves primarily with other problems of human resources development, i.e., manpower planning and management problems.

For this reason, only brief descriptions and recommendations are made in this chapter regarding the educational problems of Bohol. The primary emphasis will instead be placed upon the critical development related problems of manpower: the problems of how primary and

FIG. 19.1 PROBLEM-STRUCTURE OF HUMAN RESOURCES, EDUCATION AND MANPOWER POLICY PLANNING REQUIREMENTS IN BOHOL



secondary industries can be developed in Bohol so as to generate income and employment, how infrastructure can be improved to directly support industrial activities, and how the level of training can be uplifted in the most depressed areas in Bohol.

Since manpower demand is derived from the increase in industrial activities; therefore, manpower planning should be closely coordinated with industrial development plans in Bohol. Manpower planning must be made for school age groups as well as for adult groups.

In the following sections, the current problems and trends regarding education and manpower are briefly described. Secondly, the evaluation of development potentials is made as to indicate patterns for their general development. Thirdly, a clear-cut indication is to be made concerning manpower development objectives and targets for long range planning. Fourthly, Bohol's manpower development strategies or guidelines are to be spelled out as the measures to achieve the long range goals. Then, a long range manpower development program will be formulated based on the preceding analysis. Finally, as the major output of this chapter, "high impact projects" will be identified to assist the Bohol province in rapidly developing its own system of manpower planning capabilities and facilities. Since project identification is considered as the primary objective of Part II, descriptions, explanations and other logical steps necessary are made as briefly as possible.

19.2 Analysis of Current Problems and Trends of Human Resources and Education in Bohol

19.2.1 Problem-Structure

The interrelationship of a variety of problems besetting Bohol in the field of human resources and education is schematically represented in Figure 12-1 together with manpower policy needs that must be taken into consideration. The problems requiring respective policy planning can be summarized as follows:

- Need for improvement and increase in school facilities, teachers, equipment and school infrastructure caused by the high population pressure of school enrollement age groups.

- Educational policy requirements for teaching staff development, curriculum policy and pedagogical methods which are suited for the manpower training needs specific to Bohol society.

- Vocational and skill training needs for dropout youth, disadvantaged and marginal workers and adults to be met by non-formal and informal education institutes.

- Increase in incremental labor supply and limited labor demand conditions in Bohol caused by its industrial structure and low level of economic activities.

Table 19.1: Number and Quality of Schools in Bohol

(1) Number of Public and Private Elementary Schools by Division, SY 1978-79

Area	Public			Private			Total
	Prim.	Elem.	Total	Prep.	Elem.	Total	
Bohol	449	406	855	1	2	3	858
Region VII	1,082	1,427	2,509	33	41	74	2,583

(2) Number of Public and Private Secondary Schools by Division, SY 1978-79

Area	Bar-angay H.S.	Public National	Gen. H.S. Prov'l Mun.	Public. Voc. Sch.	Pri-vate H.S.	Total
Bohol	32	1	2	4	43	82
Region VII	95	4	22	19	165	305

(3) Number of Public and Private Tertiary Schools by Division, SY 1978-79

Area	Public	Private	Total
Bohol	4	5	9
Region VII	19	40	59

(4) Teacher-Pupil Ratios for 1978-1979

Area	Primary Pupil	Inter-mediate Teacher Ratio	Teacher Needs	
			Primary	Inter-mediate
Bohol	1:36	1:19	-	-
Region VII	1:39	1:20	135	-

Source: MEC, Region VII

- High rate of outmigration, unemployment and underemployment requiring the establishment of industries with high absorption power.

- A long range manpower planning need in consideration of all these factors and trends.

19.2.2 Major Problems and Trends of Education

1. Demographic Trends and Education Problems

1) Increase in Enrollment and Demand for School Facilities

High birth rate combined with a greater share of school enrollment age groups has created a large demand for school facilities, teachers, textbooks, educational equipment and pedagogical kits. This population pressure and increasing number of school enrollments will present themselves as serious issues for each of the Municipalities in Bohol.

As indicated in Table 19.1 items (1) to (3), the number of schools existing in Bohol at present are as follows: 858 elementary, 82 secondary, and 9 tertiary schools. Problems related to schools are outlined below.

1) Since a large number of teaching staff is available in Bohol (amounting to 4,821 teachers in 1978), the teacher/student ratio has not yet become serious. The ratio for primary schools in Bohol is 1:36 while that of Region VII is 1:39 (See Table 19.1 - (4)).

2) A large number of school buildings in Bohol are reported to belong to the newer rypes of "Marcos" and "Bagong Lipunan" using prefabricated materials whose durability is longer than that of the old type of "Gabaldon" and "Magsaysay". However, it is reported that 173 school buildings needed to be replaced in 1978. Since 195 school buildings are to be replaced in five years, and 557 additional classrooms are needed in five years, etc. the shortage of school infrastructure will increase.

3) Shortages are also reported by MEC for Region VII of various kinds of teaching equipment, kits and tools; for example, the shortage of 3,300 teachers manuals, 3,000 supplementary readers, 462 science kits, 450 microscopes, etc.

2. Dispersed Population and School Allocation Problems in Agricultural Soeicty

As described elsewhere in this paper, the geographic distribution of population in Bohol is extremely dispersed making it very difficult to evenly allocate the required number of schools for each unit of population. Despite the fact that the urbanization

Table 19.2 Number of Schools in DDU* Areas by Division

Division	Complete Elementary	Complete Primary	Incomplete Primary	Total
1. Bohol	31	16	10	57
2. Cebu	40	25	25	90
3. Cebu City	12	3	-	15
4. Dumaguete	3	2	-	5
5. Lapu-lapu	5	1	1	7
6. Mandaue	2	1	-	3
7. Negros Or.	25	25	25	75
8. Siquijor	5	5	1	11
9. Toledo	23	5	2	30
Total Region VII	146	83	64	293

* Depressed Deprived Underserved Areas.
Source: MEC, Region VII

Table 19.3 Dropout Rates SY 1978-1979

Area	Grade I	Grade II	Grade III	Grade IV	Grade V	Grade VI	Total
Bohol	6.8	5.9	4.1	3.3	6.3	5.4	5.8
Region VII	4.73	3.83	4.17	4.35	5.02	4.91	4.45

Source: MEC, Region VII

trend is expected to strengthen in the future, the dispersed population pattern will not change drastically in the near future. The size, location, and effective management of primary and secondary schools for each barrios or barangays will become serious educational policy problems.

Bohol has been predominantly an agricultural society in the past and will remain so at least in the foreseeable future. Population migration from rural to urban areas caused by economic and non-economic factors can be expected to accelerate in the future. Problems may then arise as to whether curriculum design should be urban or rural-oriented, how educational gaps could be narrowed, how the quality of teaching staff can be maintained, and so on. Nevertheless, the existence of a small number of schools in depressed-deprived-underserved areas (so-called "DDU" Schools) is unavoidable in such a predominantly agricultural society. (see Table 19.2).

3. School Dropout Youth Problems

Bohol is experiencing a relatively large school dropout rate compared with other provinces in Region VII. It is reasoned that this is caused primarily by economic factors, e.g., low household income level, seasonal working hands required for harvesting time, a large family size, etc. School dropouts with insufficient education will cause serious social trouble unless they are accommodated into the society through proper vocational training. In this respect, what is crucially important are the skill and vocational training programs offered by National Manpower and Youth Council, (NMYC), non-formal and informal educational organizations of the Ministry of Education and Culture (MEC), the Ministry of Social Services and Development (MSSD), and other organizations, private or public. The same training needs must be recognized for those segments of population who might be characterized as "displaced or marginal workers" who cannot hold permanent or steady jobs for some reason or another. Table 19.3 shows relatively high school dropout rates for each grade level of primary school in Bohol as compared with those of other provinces in Region VII.

4. Problems of Educational Status of Bohol Population

Despite the fact that Bohol can be judged as being in relatively good conditions compared with other provinces in Region VII with regard to present level of school infrastructure and availability of teachers, it does not mean that Bohol is free from serious educational problems. Some of the major probjems can be pointed out as follows:

1) Although literacy rate of Bohol is 86.9%, the second highest in Region VII (the Regional average of 72.79%), in the population over 6 years old, 57.8% did not complete the sixth grade of primary school.

2) Children enrolled in primary school account for 84.90% of

the school age groups (7-12 years old) in Bohol, but the ratio of children who completed all education from the first grade up to the sixth grade is relatively low, 70.78% (See Table 19.4).

3) The relatively low education status of the Boholanos can also be observed from Figure 19.2, which graphically represent the different educational levels attained by different age groups.

19.2.3 Labor Market Problems in Bohol

Although quantitative analysis and projection of the supply/demand situation of labor in Bohol cannot be made in this M/P study report owing primarily to the lack of statistical data on labor to derive various estimates from the limited data available, the following observations can be effectively made on labor market conditions in Bohol on the basis of information available.

1. Limited Agricultural Labor Demand

Due to the industrial structure which is predominantly single industry based, Bohol's labor absorption power is very limited. As indicated in Table 19.5, the employment distribution by industry for both sexes in Bohol as a whole is as follows: primary sectors 65%, manufacturing 12.3% and services 11.1%. A similar distribution pattern can also be observed from the occupational structure of Bohol (Table 19.6). Labor demand of agricultural workers in Bohol is similar to other developing countries and can be characterized by the followign features:

1) Marginal productivity of agricultural labor tends to be close to zero resulting from over-supply of labor in a given cultivated area.

2) Labor input to agricultural production is apt to fluctuate greatly and is less structural due to varied and seasonal requirements for agricultural work such as seeding, weeding, harvesting, etc.

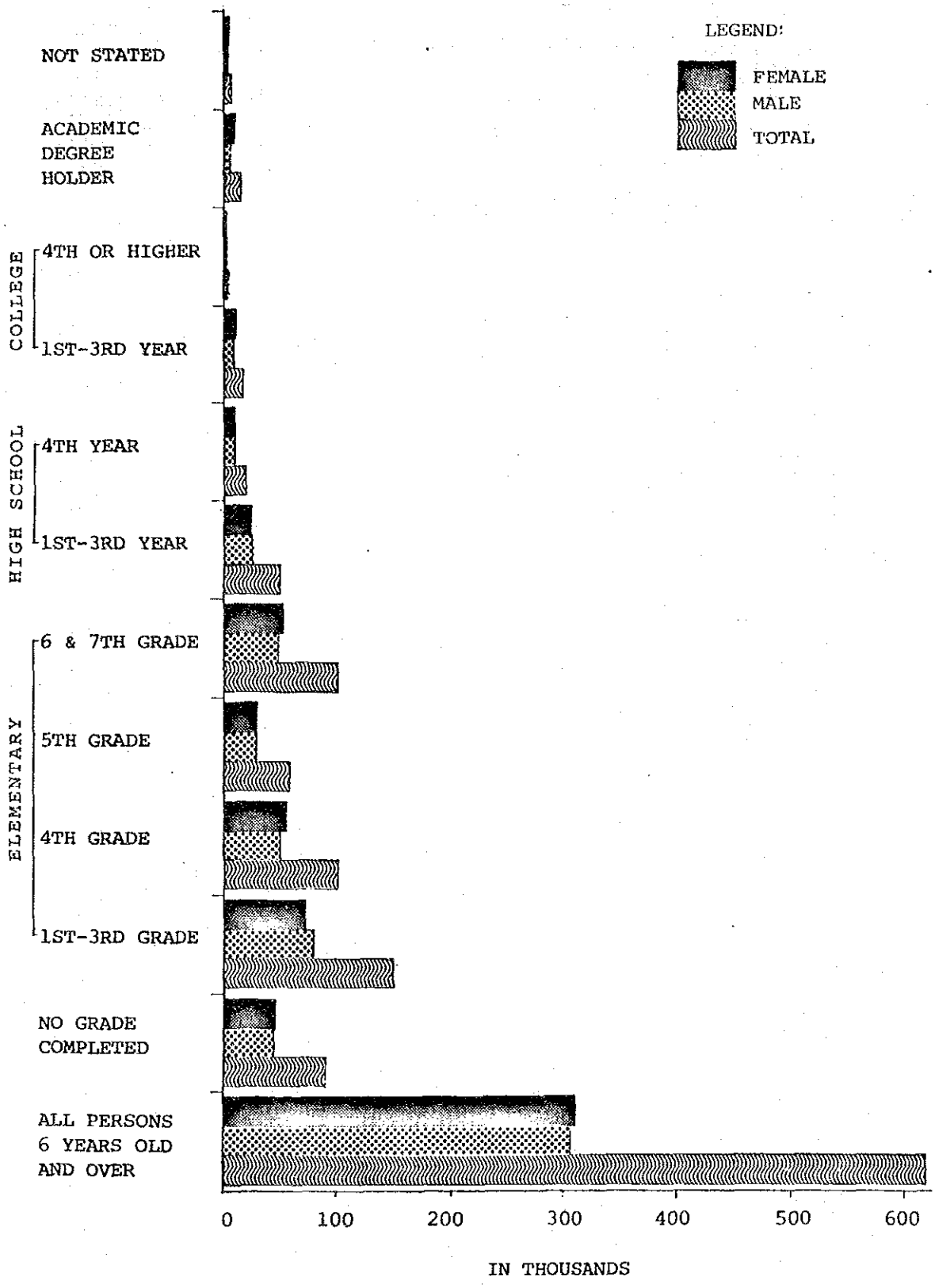
3) Abundant labor supply is available, stemming from the large size of agricultural households.

4) Agricultural labor utilization tends to remain in the constant state of "underemployment" or "disguised unemployment," primarily caused by the factors mentioned above.

5) The agricultural sector becomes a major source of labor supply to other industrial sectors, particularly manufacturing and service industries in metropolitan areas.

The agricultural sector of Bohol cannot be expected to become a growth oriented sector with high labor absorption power; on

Fig. 19.2 EDUCATIONAL STATUS OF THE POPULATION BY SEX
BOHOL: 1975



Source: 1975 Population Census of Bohol

Table 19.4 Educational Status of Bohol and Region VII

(unit: percentage)

Items	Bohol	Region VII	Bohol's Rank in Region
GRs 1-4 Survival rate = GR-1 Enrollment SY 73-74 / GR-4 Enrollment SY 78-79	70.78	60.01	4
GR-5 Transition rate = GR-4 Enrollment SY 77-78 / GR-5 Enrollment SY 78-79	90.12	86.66	3
GR-6 Transition rate = GR-6 Enrollment SY 77-78 / 1st-Yr. Enrollment SY 78-79	57.33	57.33	7
School Participation rate = GRs 1-6 Total Enrollment / Pop. 7-12 Years Old	84.90	84.88	3
Pop. below GR-6 Attainment = Pop. not complete GR-6 / Pop. 6 Yrs. old & above	57.78	50.04	7
Literacy rate = Actual No. of Literates / Pop. 6 Yrs. old & above	86.9	72.79	2

Source: MEC Region VII

Table 19.5 Household Population - Gainful Workers 10 Years Old and Over by Sex, Major Industry, Urban - Rural:

	BOHOL			BOHOL - URBAN			BOHOL - RURAL		
	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE
All Industries	232,824	177,876	54,948	32,550	21,667	10,883	200,274	156,209	44,065
Agriculture, Hunting, Forestry and Fishing	150,790	140,773	10,017	9,642	9,099	543	141,148	131,674	9,474
(%)	(64.8)	(79.2)	(18.3)	(29.7)	(42.0)	(5.0)	(70.5)	(84.3)	(21.5)
Mining and Quarrying	324	311	13	33	32	1	291	279	12
(%)	(0.2)	(0.2)	(0.02)	(0.1)	(0.2)	(0.01)	(0.2)	(0.2)	(0.03)
Manufacturing	28,564	6,821	21,743	2,734	1,418	1,316	25,830	5,403	20,427
(%)	(12.3)	(3.9)	(39.6)	(8.4)	(6.6)	(12.1)	(12.9)	(3.5)	(46.4)
Electricity, Gas, Water and Sanitary Services	251	221	30	119	102	17	132	119	13
(%)	(0.1)	(0.2)	(0.05)	(0.4)	(0.5)	(0.2)	(0.07)	(0.08)	(0.03)
Construction	3,648	3,600	48	1,165	1,144	21	2,483	2,456	27
(%)	(1.6)	(2.1)	(0.1)	(3.6)	(5.3)	(0.2)	(1.3)	(1.6)	(0.06)
Commerce	14,553	6,974	7,579	4,578	1,971	2,607	9,975	5,003	4,972
(%)	(6.3)	(4.0)	(13.8)	(14.1)	(9.1)	(24.0)	(5.0)	(3.2)	(11.3)
Transport; Communication and Storage,	4,396	4,322	74	1,608	1,577	31	2,788	2,745	43
(%)	(1.9)	(2.5)	(0.2)	(5.0)	(7.3)	(0.3)	(1.4)	(1.8)	(0.1)
Services	25,677	11,691	13,986	11,541	5,502	6,039	14,136	6,189	7,947
(%)	(11.1)	(6.6)	(25.5)	(35.5)	(25.4)	(55.5)	(7.1)	(4.0)	(18.1)
Industry not Adequately Described	4,621	3,163	1,438	1,130	822	308	3,491	2,341	1,150
(%)	(2.0)	(1.8)	(2.7)	(3.5)	(3.8)	(2.9)	(1.8)	(1.5)	(2.6)

Table 19.6 Occupational Structure of the Population of Bohol: 1975

Occupation Group	Bohol		
	Both Sexes	Male	Female
Population 10 Years Old and Over	530,699	261,029	269,670
Gainful Occupations (%)	232,824 (43.8)	177,876 (61.1)	54,948 (20.3)
Professional, Technical and Related Workers (%)	9,095 (1.7)	3,059 (1.1)	6,036 (2.2)
Administrative, Executive and Managerial Workers	1,121 (0.2)	925 (0.4)	196 (0.07)
Clerical Workers (%)	2,298 (0.4)	1,414 (0.5)	884 (0.3)
Sales Workers (%)	14,446 (2.7)	6,718 (2.5)	7,728 (2.8)
Farmers, Fishermen, Hunters, Loggers and Related Workers (%)	150,940 (28.4)	140,932 (53.9)	10,008 (3.7)
Miners, Quarrymen and Related Workers (%)	223 (0.04)	215 (0.08)	8 (0.002)
Workers in Transport and Communication Occupations (%)	4,486 (0.8)	4,421 (1.6)	65 (0.02)
Craftsmen, Production Process Workers and Related Laborers (%)	32,966 (6.2)	10,873 (4.1)	22,093 (8.1)
Service, Sports and Related Workers (%)	10,861 (2.0)	3,740 (1.4)	7,121 (2.6)
Stevedores and Related Freight Handlers and Laborers N.E.C. (%)	4,178 (0.7)	3,980 (1.5)	198 (0.07)
Other N.E.C. Occupations Unidentifiable (%)	2,210 (0.4)	1,599 (0.6)	611 (0.2)
Non-Gainful Occupations (%)	284,378 (53.5)	76,010 (29.1)	208,368 (77.2)
Volunteers (%)	164 (0.03)	87 (0.03)	77 (0.03)
Housekeepers (%)	132,057 (24.8)	3,375 (1.2)	128,682 (47.7)
Students (%)	106,835 (20.1)	52,854 (20.2)	53,981 (20.0)
Pensioners and Other Retired Person (Not Working) (%)	5,388 (1.0)	2,866 (1.0)	2,522 (0.9)
Other Non-Gainful Activity or No Activity Reported (%)	39,934 (7.5)	16,828 (6.4)	23,106 (8.5)

the contrary, it is more likely to become one of the major sources of labor supply in Region VII. Manpower policy requirements to alleviate these conditions will be:

1) Application of intensive cultivation and cropping methods

2) Developement of agro-processing and labor intensive industry in Bohol which will employ large numbers of the Boholanos.

3) Development of ancilliary farm organizations, which employ a large portion of the work force and which provide supporting services for farmers, such as marketing, credit facilities, storage management, processing and distribution, etc.

2. Lack of Development of Manufacturing Sector

The total number of business establishments existing in Bohol in 1978 was recorded to be 6,498, out of which only 746 (11.5%) establishments belonged to the manufacturing sector. Of the balance, 5,646 (86.9%) belonged to the tertiary sector. The scale of manufacturing business in Bohol tends to be very small, employing less than 10 workers and with a monthly sales revenue of less than ₱1,000. A predominantly large number of workers are employed by textile related industries (78.1% of the total workers employed in the manufacturing sector in Bohol).

The labor absorption power of the manufacturing industries has many limitations as indicated below:

1) Since most of the manufacturing industry in Bohol is individually owned and operated, the scale of business is actually limited, creating only little incremental labor demand when production is expanded.

2) Most of the textile and garment industry (which is considered as the most labor intensive industry) operates their business on the basis of sub-contracts or orders received from buyers or operators in Metro Cebu. No ready-made garment manufacturing factory employing large numbers of workers exists in Bohol.

3) Cottage-type industries operating in Bohol are also home-based. They are scattered around the northern coastal area of Bohol and produce a variety of handi-crafts such as bamboo and rattancraft, hat and mat weaving, shellcraft, etc. The industry has minimal capitalization and is operated on a small scale, and, in most cases, by households engaging in the business on a part-time basis.

19.3 Development Potentials of Human Resources in Bohol

19.3.1 Industrial Employment Structure

As described in Part I, the industrial structure of the future Bohol

economy is projected to undergo the following sectoral changes:

1) The share of primary sector is estimated to decline from 64.8% in 1975 to 58.1% in 1990.

2) A slight increase is expected for the secondary industry from 14% in 1975 to 17.1% in 1990.

3) The tertiary sector is estimated to show a slow growth in its share; an increase from 21.2% in 1975 to 24.8% in 1990.

As a result of these sectoral changes, it is expected that labor mobility will become more active than in the past, not only at the inter-regional level, but also on the inter-sectoral level, reflecting a gradual shift in the Bohol economy from primary industry to non-primary industry. In order to keep up with the changes in industrial structure of the Bohol economy, concomitant changes must be made in the human resources development policy of Bohol with particular focus on the following:

1) The Boholanos are highly regarded as hard workers in the Philippines by contributing a great deal to economic development either as immigrant workers or as local workers in Bohol. They should be given skill and vocational training-oriented education geared towards specific occupational requirements of the society.

2) Derived from the age group structure of the Boholanos, the incremental labor supply (i.e., number of new graduates from schools) will considerably increase in the future. It will cause a very serious problem for Bohol to provide employment opportunities most suited to them.

3) It will become increasingly important to carry out educational policy planning in close coordination with manpower planning, primarily because the type of education needed for the Boholanos must be based upon a careful examination of the types of occupations demanded in the future.

4) It is expected that the Bohol economy will become increasingly entangled with the economy of Metro Cebu (MC), the major growth pole of Region VII, and constitute a significant part of the "growth corridor" of MC. The closer Bohol becomes to MC, the more it will be subjected to the influence of MC. The human resources development policy must, therefore, take account of this fact.

5) As examined in Chapter 8, agriculture will remain as the major sector of the Bohol economy, employing the largest segment of workers in Bohol. However, it is expected that the demand for industrial workers will gradually expand with the implementation of the Tagbilaran Industrial Estate development program composed of various types of industrial plants, such as coconut oil milling, seaweed processing, meat packing, cottage industry, alcogas production, ceramics and ready-

made garments. The components of this Estate will be largely resource-based industries which will mainly utilize the resources available in Bohol. The number of workers required for these industries will gradually increase in the future.

19.3.2 Incremental Labor Demand and Outmigration

At this point, a quantitative analysis and projection of labor market conditions such as demand and supply of labor rate of unemployment, underemployment, and outmigration, cannot be made. However, the following characterstics of the labor market are known:

1) The annual growth rate of incremental labor demand in Bohol as a whole is estimated at 1.6% in the first half of the 1980's and 2.1% in the second half year. If these estimates are correct, they would imply that the additional labor demand per annum for all sectors will become approximately 4 to 5 thousand in the first half of the 1980's and 6 to 7 thousand in the second half.

2) It is estimated as highly likely that the annual incremental labor supply will exceed the above mentioned figures of annual incremental labor demand created in Bohol, thus creating a continuous trend of high unemployment or underemployment and outmigration of Boholanos.

3) It is expected that as labor productivity in primary sector increases, a concomitant decrease of labor absorption power in this sector will be inevitable. As a result, secondary and tertiary sectors must assume the responsibility to absorb as many new entrants from the labor market as possible in the future.

4) It must also be noted that free labor mobility is one of the means by which optimum allocation of human resources can be achieved using the labor market mechanism. Inter-regional labor mobility is caused by a host of socio-economic and psychological factors. The major cause, however, is the regional income disparity that exists between Bohol and other regions of the Philippines. Unless the disparity is narrowed, outmigration of the Boholanos cannot be stopped. Therefore, it is highly advisable that the Boholanos should be given proper skill and vocational training necessary for acquiring jobs suited to them.

19.3.3 Educational and Manpower Policy

Human resources development planning in Bohol should be formulated with two components: education policy and manpower policy. The major problem areas of these policy domains are discussed below.

1. Educational Policy

Policy areas with regard to school infrastructure and other quantitative problems:

1) Number and distribution of types of schools required for the coming years in Bohol.

2) Desired ratios of teachers, classrooms, textbooks, teaching equipment and other school facilities per unit of student as measured against national standards.

Policy areas with regard to quality and type of education and effectiveness of teaching method:

1) Improvement of the quality of teaching staff and alleviation of quality difference between urban and rural areas.

2) Curriculum policy with the view of raising the standard of education in Bohol up to the desired national level.

3) Pedagogical methods most suited to the cultivation of pragmatic and achievement-oriented attitudes and abilities.

4) Close coordination of formal, non-formal and informal education concerning adult education, skill and vocational training.

2. Manpower Planning Policy

The staff in charge of the integrated area development plan in Bohol should take cognizance of the serious and immediate need for rational and foresighted manpower planning for the Bohol province. Some of the major policy areas are indicated below.

1) Manpower demand projection for Bohol which can be made on the basis of estimates of labor productivity and labor demand functions of major economic sectors in Bohol.

2) A long term manpower plan as to what kind of occupational skills will be greatly needed in the future.

3) Provision of current market information within and outside Bohol and job placement services to job applicants.

4) Counselling services needed for job orientation and aptitude of individuals.

5) Vocational counselling and consultancy services for businessmen, middle management, family and individual owners and operators of business regarding management, planning and control of production, marketing and other related problems.

6) Vocational and skill training for adults, mid-career workers,

new entrants, etc., who should be placed in proper jobs or occupations.

19.4 Objectives and Tergets of Human Resources Development

Based on previous sections, the following objectives should be set forth for human resources development in Bohol. Due to the lack of empirical data essential for the estimation of target variables, very little quantification of objectives will be made.

19.4.1 Educational Objectives

In line with the objectives articulated in the Central Visayas Five-Year Development Plan (1978 - 82) and the Five-Year Educational Development Plan of MEC-Region VII, the following long term and short term educational plan objectives have been formulated:

1) Enforcement of administrative capability to plan to implement and monitor the programs/projects to be carried out in meeting the expansion or improvement demands of teachers, school facilities and other supporting educational means.

2) Upgrading the quality of the teaching staff in Bohol by means of teaching staff development programs.

3) Designing a curriculum most suited to realize the educational needs of the Boholanos at elementary, secondary and tertiary levels.

4) Narrowing down the gaps of educational standards existing between urban and rural areas and also existing between private and public schools.

5) Gearing vocational skill training towards the specific and occupational needs of Bohol.

19.4.2 Manpower Planning Objectives

1) Development of manpower planning and management capabilities for administration.

2) Development of research and technical knowledge required for manpower analysis and projection.

3) Training of instructors needed for vocational and skill training in Bohol.

4) Development of management, consulting capabilities of professional staff (private and public) in various technical field such as agriculture, fishery, manufacturing industry and service business.

19.5 Development Strategies of Human Resources in Bohol

The objectives spelled out in the preceding section can be implemented according to the strategies or policy guidelines suggested below.

19.5.1 Educational Strategies

1) Since financial resources available to education sector will be limited, they should first be invested in the most critical problems areas such as improvement of teaching staff, curriculum development, repair of school and buildings. For this purpose, a list of priority programs/projects should be drawn up.

2) One of the most critical problems in Bohol as well as in the Philippines as a whole is the large gap of educational standards existing between private and public schools. This problem can be solved only after overall educational reform is undertaken at the national level. Nevertheless, steps must be taken even at the local level to ameliorate the worsening conditions surrounding the public schools.

3) School buildings should be built in such a way that they can serve multipurposes.

4) In order to induce college graduates to teach at public schools in the rural areas, even for a limited duration, special programs should be designed.

5) In order to alleviate the limited availability of teaching equipment, tools and other materials, the idea of a mobile unit system of "demonstration school" equipped with modern audio-visual educational system, scientific experimentation tools, etc, should be seriously considered.

6) Facilities and functions of public libraries should be expanded to enable students and adults to have easy access to the information needed.

19.5.2 Manpower Planning Strategies

1) A variety of manpower training programs currently carried out by various administrative organizations should be closely coordinated with each other in order to realize their objectives efficiently.

2) Manpower training centers should be established in the long run at each center of BIADs. The type of training given at these centers should cater to the specific needs of the BIADs.

3) Since Tagbilaran will play an increasingly important role as a provincial growth pole in Bohol, the highest priority

should be given to the establishment of manpower training centers in Tagbilaran city.

4) Each training center should be charged not only with skill and vocational training, but also with job market information and placement services.

19.6 Bohol Integrated Manpower Development Center Program (BIMDCP)

In terms of the human resources problems existing in Bohol, top priority should be given to the following long range areas of manpower development planning.

1. Need for Labor Market Information

- Labor conditions within and outside Bohol will undergo constant or rapid changes in the future as the development of the Philippine economy is accelerated.

- Policy makers or planners in Bohol must, therfore, be required to keep abreast of up-to-date information of the prevailing labor market trends, demand and conditions, so that they can take necessary remedial actions promptly.

- For this purpose the following specific tasks must be carried out:

- Data and information collection and analysis of labor maket conditions within and outside Bohol.

- Projection of labor demand and supply by occupational groups.

- Information supply services provided to educational institutes in Bohol with regard to current labor market demand.

2. Need for Vocational and Skill Training

- While the literacy rate and number of educational institutes are judged to be at a sufficient level at present in Bohol, the vocational and skill training given in Bohol are by no means regarded as adequate.

- Separate training institutes, extension services and pilot and demonstration stations have been operating in Bohol. However, most of them are concerned either with agriculture or fishery which are administered by different line agencies with different objectives.

- There has been no coherent and long-term vocational and skill training program planned for the Boholanos as a whole. Different training programs and extension services have been carried out without mutual coordination.

- Despite the fact that Bohol's economy is primary-industry based, it is expected that the secondary sector will

increase its production and employment share in the future. If such is the case, a pronounced need for vocational and skill training geared towards the manufacturing sector will arise.

- It is also highly likely that Tagbilaran, the provincial growth pole, will expand rapidly resulting from its close and increasing industrial and trade association with Metro Cebu, and also from its self-sustaining development, i.e., development of the Tagbilaran industrial estate. In order to keep up with this trend, the need for industrial training will be intensified.

3. Need for Job Placement Service

- It is observed that there has been no systematic job placement service provided for Boholanos in the past despite the fact that large numbers of Boholanos had to look for job opportunities outside Bohol.

- It is judged as an immediate requirement for the Bohol province that job placement service should be institutionalized for job applicants seeking for employment within Bohol and also for those who wish to outmigrate.

- Job placement service is a direct link through which demand and supply of labor are properly matched with each other on individual basis between employers and empolyees.

- If the Boholanos are provided with a good system of job placement services, they will be able to orient themselves more adequately to occupational life in the Philippines.

In view of the manpower development policy needs mentioned above, it is proposed that Bohol Integrated Manpower Development Center Program (BIMDCP) will be formulated and implemented by an appropriate agency, preferably the government of Bohol, as a long term development program of human resources in Bohol. A description of BIMDCP is given below.

Program Title: Bohol Integrated Manpower Development Center Program (BIMDCP)

19.6.1 Goals and Sub-Goals of BIMDCP

1. Goals

- To ensure that the Boholanos will be provided with the information, vocational and skill training and placement services necessary for the enrichment of their occupational life.

- To fully integrate (vertically and horizontally) the manpower development policies of Bohol into a coherent system

of human resources development for the province.

2. Sub-Goals

- In close coordination with other organizations, public and private, Bohol Integrated Manpower Development Center (BIMDC) should be established in the major growth pole/centers at Bohol to provide the necessary manpower development services to the Boholanos.

- The BIMDC is envisioned as a "Multi-Purpose Center" by which all information and service will be given to the trainees as the minimum requirement for promoting their successful occupational life.

- The BIMDC should be designed to meet the specific demands or requirements of the locality where they will be built; they should be closely coordinated with each other in terms of planning, implementation and management.

19.6.2 Description of BIMDCP

1. Objectives

- To provide information, vocational and skill training and job placement services to school graduates, school dropouts, and mid-career adults in Bohol.

- To assure that they will be sufficiently prepared for entering into new occupational life.

- To contribute to the economic development of Bohol by means of labor productivity increase.

- The BIMDC envisioned for Tagbilaran City should be equipped with facilities, staff and other supporting infrastructure and materials to train about 1,800 persons per year in a one year program consisting of the following: 5 training courses lasting for three months, 30 students per course, and 4 semesters offered per year.

- To prepare periodical labor market information bulletins to be distributed to various educational institutes and public offices so that constant supply of information regarding current job market will become readily available to job seekers.

- To keep in close contact with business circles within and outside Bohol to ensure that effective job placement services will be provided.

2. Brief Description of BIMDCP

Bohol Integrated Manpower Development Center Program should include the followign projects:

1) Project Components

- Tagbilaran BIMDC Project
- Tubigon BIMDC Project
- Ubay BIMDC Project
- Jagna BIMDC Project
- Carmen BIMDC Project

2) Project Objectives

- To provide information, training and placement service specific to each areas

- To establish Tagbilaran BIMDC as the major center in Bohol

3) Project Requirements (Physical Facilities and Materials) for each BIMDC

(a) Capital Outlay

- Buildings for classrooms and/or workshops, office, and dormitory for trainees

- Assorted equipment and tools for training

(b) Staff Personnel

- Administration staff and clerks

- Instructors

- Maintenance and utility men

- Manpower reserarch staff

- Job placement officers

(c) Materials and Supplies

- Training materials and supplies

- Offices sundries

(d) Main activities of BIMDC

- Labor Market Information Service (LMIS)

- Labor market information collection and analysis

- Labor market demand and supply projection

- Publication of current labor market trends

4) Vocational and Skill Training Courses

- Training courses/workshops on various occupational knowledge and skills

- Lectures/seminars

- Job placement services

- Publication of job vacancy list by occupational groups required qualifications, etc.

- Establishment of files for job description and job applicants with attached qualifications.

- Interviews with applicants

- Arrangement of employment interviews

- Job counselling

5) Operational Requirements of BIMDC

. Feasibility Study

. Detailed Design

. Tender/Contract

. Construction

. Instructors' training

. Training of manpower specialists

. Job initiation, organization building

6) Locations of Proposed BIMDC

. City of Tagbilaran

. Tubigon

. Ubay

. Jagna

. Carmen

7) Program Implementation Schedule

- Tagbilaran BIMDC project is chosen as a "high-impact project" which should be implemented at the earliest possible time.

- The other BIMDC proejcts should be implemented as medium term development projects after a careful evaluation of

performance and results of Tagbilaran BIMDC.

19.7 High Impact Project of Bohol Integrated Manpower Development Center (BIMDC), Project Title: Tagbilaran BIMDC

19.7.1 Background

In view of the immediate need for information, training and job placement services in Bohol, it is advised that Tagbilaran BIMDC should be chosen as the "high impact project." This proposal is based upon the following reasons;

1) Outmigrating Boholano youth should be properly informed, trained and provided with better job placement services.

2) Tagbilaran has a high potentiality of becoming a provincial growth pole and will develop into a major urban center in Bohol.

3) It must become a model or prototype BIMDC in Bohol.

19.7.2 A Summary Description

1. Objectives

1) Accumulation, analysis and projection of labor market trends data inside and outside Bohol.

2) Vocational and skill training on the following industrial and trade fields:

- Industrial sewing machine operations
- Welding
- Auto-mechanics
- Electricity mechanics
- Industrial machine operations
- Design and quality control of cottage industry

3) Job placement services to be provided for the Boholanos seeking jobs in Bohol.

2. Project Description

1) Requirements

- Construction of necessary physical facilities in Tagbilaran City.
- Technical training involving: 1) manpower analysis, 2) voca-

tional and skill training and 3) job counselling.

- Other requirements mentioned in the section 19.6.

2) Operation

- Data generation and publication of labor market trends
- Provision of industrial training courses
- Job placement services

3) Cost Estimate

The project cost is roughly estimated at 4 million pesos. The breakdown of the cost estimates is as follows:

Building:	2,000 m^2 x ₱1,000 =	P2,000,000
Land :	2,500 m^2 x P 100 =	250,000
Equipment:		₱1,600,000
Technical Training		₱150,000
TOTAL		₱4,000,000

3. Implementation Schedule

It is recommended that construction of the physical facilities for Tagbilaran BIMDC Project should be completed within the initial two years as indicated in Figure 19.3.

4. Recommendation

In the light of the great importance attributed to the human resources developments plan by the government of the Philippines, it is strongly recommended that a feasibility study on the Tagbilaran BIMDC project should be carried out at the earliest possible time.

FIG. 19.3 IMPLEMENTATION SCHEDULE OF BOHOL INTEGRATED MANPOWER DEVELOPMENT CENTER PROGRAM (BIMDCP)

TITLE OF PROGRAM/PROJECT	ESTIMATED COSTS (₱1,000)	IMPLEMENTATION SCHEDULE PLAN			REMARKS
		1st Year	2nd Year	Medium Term	
Bohol Integrated Manpower Development Center Program (BIMDCP)					
Projects					
(1) Tagbilaran BIMDC	4,000	Feasibility study (4 mo.) (4m.) Detailed design (2 mo.) Tender/ contract (4 mo.)	Construction (12 mo.)	Project transfer (3 mo.)	
(2) Tubigon BIMDC				⇒	
(3) Ubay BIMDC				⇒	
(4) Jagna BIMDC				⇒	
(5) Carmen BIMDC				⇒	

CHAPTER 20
HOUSING DEVELOPMENT PROGRAMS AND PROJECTS

CHAPTER 20 HOUSING DEVELOPMENT PROGRAMS AND PROJECTS

20.1 General Background of Housing in Bohol

Among the basic needs of man, housing is considered essential next to food and clothing. The individual's right to housing is universally accepted and adequately recognized by the state. Housing is viewed more and more as a social concern and public responsibility. Housing includes not only provisions for shelter, but also the improvement of environmental conditions and the development of viable communities with the necessary facilities, services and other benefits so that food, nutrition, employment, education, recreation and culture can be integrated into the lives of the residents.

In the proposed development of Bohol, housing is one of the sectors being considered. Although the present supply of housing in the province is adequate because Bohol has an abundant supply of light material, gravel and sand and is not so densely populated, problems are expected to crop up in the near future attributed to the following factors: a) population growth, b) low rate of increase of family income and c) high rate of increase in cost of construction and materials for housing.

These circumstances affecting the province and other provinces in the country as well, prompted the government to create agencies financing low-cost housing. These agencies extend housing loans to the low income group especially the farmers. In 1975, the GSIS financed a low-cost housing project in Tagbilaran. The Ministry of Human Settlements, through the BLISS have several projects being proposed in Tagbilaran and other municipalities of the province.

20.2 Housing Condition in Bohol

In 1975, there were a total of 133,420 families in Bohol. Most of these families owned houses or dwelling units (one family/house), and some rented apartements, especially in Tagbilaran City. There were few cases where two (2) or more families shared one house or dwelling unit.

In the 1970 census of NCSO, (the only available data on dwelling units), there were a total of 120,122 dwelling units classified as follows: 112,204 single units, 1,601 duplexes, 328 apartments, 5,411 barong-barongs and the rest, commercial establishments.

The average family income in Bohol, as of 1975, was ₱3,892 annually while the average expenditure was ₱3,815 annually. About 10% of this expenditure went to housing, household furnishing and equipment, and household operations as shown in Table 20.1.

About 60% of the houses in Bohol are made of light materials (bamboo, wood, nipa, cogon, sawali, anahaw and buri), 20% are of a combination of light and strong materials and 20% are of strong materials (concrete, galvanized iron, asbestos, tile, hollow blocks, stone and aluminum).

Table 20.1 Income and Expenditure in Bohol Province (1975)

(Unit: ₱(%))

EXPENDITURE GROUP	TOTAL	URBAN	RURAL
TOTAL INCOME	518,580,023	81,890,548	436,689,475
TOTAL EXPENDITURE	508,365,755 (100)	83,036,930 (100)	425,328,825 (100)
A. Food, Beverages and Tobacco	324,185,063 (63.8)	47,291,290 (57.0)	276,893,773 (65.1)
B. Clothing, Footwear and Other Wear	33,584,778 (6.6)	5,473,825 (6.6)	28,110,953 (6.6)
C. Housing	32,512,914 (6.4)	6,862,807 (8.3)	25,650,107 (6.0)
D. Household Furnishing & Equipment	7,129,021 (1.4)	732,885 (0.9)	6,396,136 (1.5)
E. Household Operations	10,369,408 (2.0)	1,879,858 (2.3)	8,489,550 (2.0)
F. Fuel, Light and Water	26,729,256 (5.3)	4,265,704 (5.1)	22,463,552 (5.3)
G. Personal Care	5,723,433 (1.1)	1,041,602 (1.3)	4,681,831 (1.1)
H. Medical Care	3,673,552 (0.7)	944,126 (1.1)	2,729,426 (0.6)
I. Transport and Communication	12,421,597 (2.4)	2,632,746 (3.2)	9,788,851 (2.3)
J. Recreation	3,177,584 (0.6)	968,833 (1.2)	2,208,751 (0.5)
K. Education	11,742,726 (2.3)	3,001,848 (3.6)	8,740,878 (2.1)
L. Gifts, Contributions & Assistance to Outsiders	2,448,954 (0.5)	724,230 (0.9)	1,724,724 (0.4)
M. Taxes Paid	853,086 (0.2)	303,913 (0.4)	549,173 (0.1)
N. Special Occasions of Family	25,329,164 (5.0)	4,443,225 (5.4)	20,885,939 (4.9)
O. Personal Effects	1,320,850 (0.3)	827,034 (1.0)	493,816 (0.1)
P. Miscellaneous Good and Services	7,164,369 (1.4)	1,643,004 (2.0)	5,521,365 (1.3)
TOTAL NUMBER OF FAMILES	133,249 (100.0)	17,324 (13.0)	115,925 (87.0)
AVERAGE INCOME	3,892	4,727	3,767
AVERAGE EXPENDITURE	3,815	4,793	3,669

The presence of barong-barong (slums numbering 5,411 as of 1970) is the only existing problem. Otherwise, there is an abundant supply of light materials, gravel and sand, but a shortage of wood materials due to the scarcity of commercial forests. The province is not so densely populated (only 188/sq.km. as of 1978 and shown in Table 20.2), and there is no problem of land available for housing in the rural areas. The province has a favorable climate affected only by the monsoons with a rare occurence of typhoons. However, in the city of Tagbilaran, land and housing problems can be expected in the near future due to the high rate of in-migration from the rural areas due to the attraction of Tagbilaran as the major growth center of the province.

20.3 Low-Cost Housing

Through the BLISS program of the Ministry of Human Settlements, low cost housing projects are being proposed in Bohol categorized on 3 levels depending on size. A Level-I comminity is to be composed of 50-100 families living in an area of at least 2.5 hectares; Level-II is an agro-industrial community composed of 100-500 families living in an area of 50-200 hectares, and Level-III is a water supplied community composed of 500 or more families situated in a watershed area of at least 500 hectares.

Housing projects in Tagbilaran, Bilar, Calape, Carmen, Garcia-Hernandez, Jagna, Jetafe and Talibon fall in the Level-I category. One Level-II project is proposed in Pilar and one Level-III project in Ubay. The Tagbilaran housing project was started in June, 1979, consisting of 50 units.

It is highly recommended to continue low-cost housing programs and project to the fullest extent by the Government because for the majority of household, especially in urban area, it is very hard to finance the usual cost of housing and land. The typical price of a house including land should not exceed 2.5 times the buyer's annual income, and that housing expenditure should not exceed 25 percent of one's monthly income.

Outside the Ministry of Human Settlements there are four financing agencies or institutions involved in housing projects throughout the country: the Government Service Insurance System (GSIS), the National Housing Authority (NHA), the Development Bank of the Philippines (DBP) and the Social Security System (SSS). The following paragraphs offer an brief description of each.

20.3.1 Government Service Insurance System (GSIS)

The GSIS top priority program is low-cost housing projects. It implements its programs in three ways: a) on administrative or contract basis, b) as a "turn-key" project, or c) by integrated financing.

In 1975, the GSIS financed a low-cost housing project in Tagbilaran City, the Lindaville (Malasarte) subdivision with a land area of 25.10 hectares and ₱1.6 million financing. A total of 300 units were constructed.

Table 20.2 Provincial Population Density in Region VII (1978, 1982 and 1987)

Province	Land Area (sq. km)	Population ($x10^3$) 1978	1982	1987	Density per sq. km 1978	1982	1987
Bohol	4,117.3	773	816	893	188	198	217
Cebu	5,008.4	1,976	2,160	2,454	388	425	482
Negros Oriental	5,402.3	749	801	888	139	148	164
Siquijor	343.5	68	74	78	198	215	227
Total Region VII	14,951.5	3,566	3,851	4,313	238	258	288

In extending individual housing loans, the GSIS offers three amortization period arrangements:

- 10-15 years at 6 percent interest yearly
- 20 years at 7 percent interest yearly
- 25 years at 8 percent interest yearly.

The amount of loans depends on the payment capacity of individual homeowners, but each has to have an income of at least ₱500 a month which is well above the average for Bohol of ₱329/mon. Loans are offered under five plans:

Plan A - wherein land acquired from the closure of mortgaged properties is transformed into housing units.

Plan B - where developed properties are acquired and housing units are put on the properties.

Plan C - where the contractor/developer develops the area and the GSIS pays them.

Plan D - where in an interim-loan is provided and the collateral must be free from hinges.

Plan E - provides similar loan terms as plan A.

20.3.2 National Housing Authority (NHA)

The National Housing Authority (NHA) handles programmed economic housing and resettlement projects.

20.3.3 The Development Bank of the Philippines (DBP)

The DBP-financing scheme gives higher priority to purely residential buildings. This is designed to encourage home ownership and/or to ease tenants from renting apartment every year.

In 1960, DBP was engaged in the low-cost housing scheme which gave a ₱2,000 loan for houses costing ₱2,200 and in 1978, ₱12,000 for houses with an estimated cost of ₱14,000. The applicant himself provides for the balance in cash or as labor and materials. Amortization ranges from 10-25 years with an interest of 9 percent (minimum) annually.

20.3.4 The Social Security System (SSS)

The Social Security System (SSS) finances both individual and group housing. Like the GSIS, it extends loans only to its memebers.

20.4 State of Rural Housing in Bohol

In Bohol, as in agricultural villages throughout the country, the typical farm house is the nipa hut. Some mixed material houses can alos be found in villages and an occasional concrete house.

The nipa hut is typically made of light materials. It has walls of woven bamboo matting (sawali), a flooring of narrow split pieces of bamboo and a roofing of nipa, cogon, palm and buri leaves and other woven grasses. The split pieces of bamboo flooring are set about 1 cm. apart for free circulation of air. The flooring rests on bamboo stilts or wooden posts and elevated 0.9 to 3.6 meters above the ground as a precaution against floods and for full ventilation which eliminates moisture rising from the ground. This space is also utilized as bodega or storing space during the dry seasons.

Generally, the plan of a typical farm house consists of entry, living, dining and kitchen areas. The living and dining areas serve varied purposes such as receiving guests, working (in the daytime), sleeping and study (at night).

This type of house is well suited to the conditions and characteristics of the rural areas, but not for the crowded urban areas.

The present condition of these light houses in Bohol is satisfactory; however, improvement is necessary with regards to hygiene and sanitation, drainage, water supply, electrification/or lighting. Most of the rural households fetch their drinking water from exposed wells, springs, streams, rivers, irrigations, and rain. About 80 percent of rural houses have no sanitary toilet facilities. There is a need for a gradual change from light to mixed materials in terms of construction of these houses.

20.5 Objectives and Targets

In view of the current problems of the existing housing, the following objectives should be set up:

1. Objectives

   (a) To construct low-cost housing in the Tagbilaran City and Municipalities.

   (b) To improve and upgrade dwelling units made of light materials and replace the barong-barong slums and dilapidated houses.

2. Targets

   The targets for housing are based on the population for a five-year period and on the assumption that 6 new housing units for urban areas and 3 new housing units for rural areas must be built per thousand population each year and increase by 3 percent every year. Those figures are based on new marriages, reconstruction of old or small houses, separation of duplex houses and increase

of population. The proportion of population in urban and rural area is shown in Table 20.3.

	1980	1981	1982	1983	1984
Urban areas	618	636	657	675	696
Rural areas	2,010	2,070	2,130	2,196	2,262
TOTAL	2,628	2,706	2,787	2,871	2,958

Note: 60 percent of the total project housing units will be subsidized by the government andthe rest by the home owners.

After the Wahig Project is completed, approximately 12,000 persons will settle in the Wahig-Pamacsalan area. Therefore, 2,000 houses should be constructed in that area between 1985 and 1987.

20.6 Strategies:

1. Human settlements approach
2. To develop sites and services
3. To make land available for housing (city and municipality)
4. To develop forest resources for housing materials.
5. To make standards and criteria for housing.

Recommendations:

The provision of adequate housing is increasingly recognized as a basic human right and a top national priority. Acceptable housing will have a key influence on population growth and migration, and in the reversal of the pattern of income "drain" to areas outside the province.

In line with this policy, the followings are recommended;

1) The minimum lot area should be 180 sq. m. and the house floor area should be 40 sq.m. with provisions for expansion.

2) Housing in urban areas:

   (a) Low-cost housing programs by the Government should be promoted and implemented.

   (b) Barong-barongs and houses of light materials should not be allowed because of dangers of fires, and because strong material or mixed materials for housing is preferable.

3) Housing in rural areas:

(a) Houses of light materials and improvement of social infrestructure such as hygiene and sanitation, drainage, water supply and electrification/or lighting are recommended.

(b) Housing should be gradually changed from light to mixes materials.

20.7 Housing Program

Number of housing (units)	Year 1980	1981	1982	1983	1984
Urban	618	636	657	675	696
Rural	2,010	2,070	2,130	2,196	2,262
Total	2,628	2,706	2,787	2,871	2,958
Cost (₱1,000)					
Urban	15,450	15,900	16,425	16,875	17,400
Rural	26,130	26,910	27,690	28,548	29,406
Total	41,580	42,810	44,115	45,423	46,806

Note: 1. Basis of cost estimate is as follows;

₱25,000 per unit for urban housing

₱13,000 per unit for rural housing

2. 60 percent of the total project housing units will be subsidized by the government (GSIS, SSS, DBP, NHA and others) and the rest by the home owners.

Table 20.3 Population Statistics (1970 to 1975)

National/Regional Province/BIAD	Total Population 1970	1975 Total	Rural Number	Rural Percent	Urban Number	Urban Percent	Density 1975 per sq. km	Growth rate 1970 - 1975
National	36,648,486	42,070,660	28,764,767	(68.4)	13,305,893	(31.6)	140	2.8
Region VII	3,032,719	3,387,274	2,427,191	(71.7)	960,083	(28.3)	227	2.2
Bohol	683,297	759,370	646,917	(85.2)	112,453	(14.8)	184	2.1
BIAD 1	176,520	185,129	135,144	(73.0)	49,985	(27.0)	180	1.0
BIAD 2	170,070	183,480	165,501	(90.2)	17,979	(9.8)	248	1.5
BIAD 3	127,223	150,887	134,379	(89.1)	16,508	(10.9)	164	3.5
BIAD 4	119,877	135,543	121,989	(90.0)	13,554	(10.0)	163	2.5
BIAD 5	89,607	104,331	89,904	(86.2)	14,427	(13.8)	114	3.1

Source: National Census of Statistic Office

PART III

INTEGRATED AREA DEVELOPMENT PLAN OF PROGRAMS AND PROJECT

CHAPTER 21
PLANNING

CHAPTER 21 PLANNING

21.1 Summary of Background on Planning

The primary objective of Bohol Integrated Area Development Plan is to identify and formulate "high impact programs/projects" for the main sectors of the Bohol economy (i.e., the economic sector, and infrastructure and social services) which will provide the Bohol economy with initial thrusts essential for its taking-off from the present stagnated or retarded state. This approach can properly be called as a "high impact program/project oriented integrated area development plan" which is characterized, inter alia, by the following features:

(a) An integrated or complehensive area development plan is defined as "a heuristic device" by which a set of programs/projects is identified and formulated so as to expedite immediate policy actions.

(b) The main time horizon used in this plan is a short planning period of five years (1980-85). A much longer time span of over twenty years often used in comprehensive regional development plans is not emphasized in this report primarily because this paper is concerned mainly with the identification of policy actions immediately needed for Bohol and not with the formulation of a long term development vision. Nonetheless, a medium planning period of five years (1985-1990) and a long range planning period of ten years (1990-2000) have been considered.

(c) In selecting the high impact programs/projects, the following evaluation criteria are being used among others:

- Their cumulative effects
- Inter-sectoral linkage
- Spatial integration
- New input in depressed areas
- Income-generation, employment creation and other economic effects

In the light of the method used in the present work, Part Two: Sectoral Development Programs and Projects, constitutes the most important portion of our work by which the high impact programs/projects are identified for each sub-sector. Nonetheless, taking cognizance of the importance of a long term development framework required for an integrated area development plan, a long range provincial development framework of Bohol has been briefly presented in Part One: Provincial Development Framework, regarding:

(a) Socio-Economic Profile of Bohol

(b) Development Problems

(c) Development Potentials

(d) Problems of Socio-economic Development of the Philippines and Region VII

(e) Development Objectives and Strategies

The framework drawn up in Part One is intended to provide a general guideline or theoretical scheme according to which a set of the high impact programs/projects were explored. In the Part Two: Sectoral Development Programs and Projects, the task of project formulation was undertaken, being divided into the major sectors and sub-sectors as follows:

(a) Economic Sector

- Agriculture and Livestock Industry
- Forestry
- Fishery Industry
- Mining and Manufacturing Industry
- Tourism

(b) Infrastructure Sector

- Water Resources Management
- Transportation Systems
- Energy
- Communication

(c) Social Services Sector

- Public Health
- Community Development
- Human Resources Development and Education
- Housing

21.2 Objectives and Contents of Part III

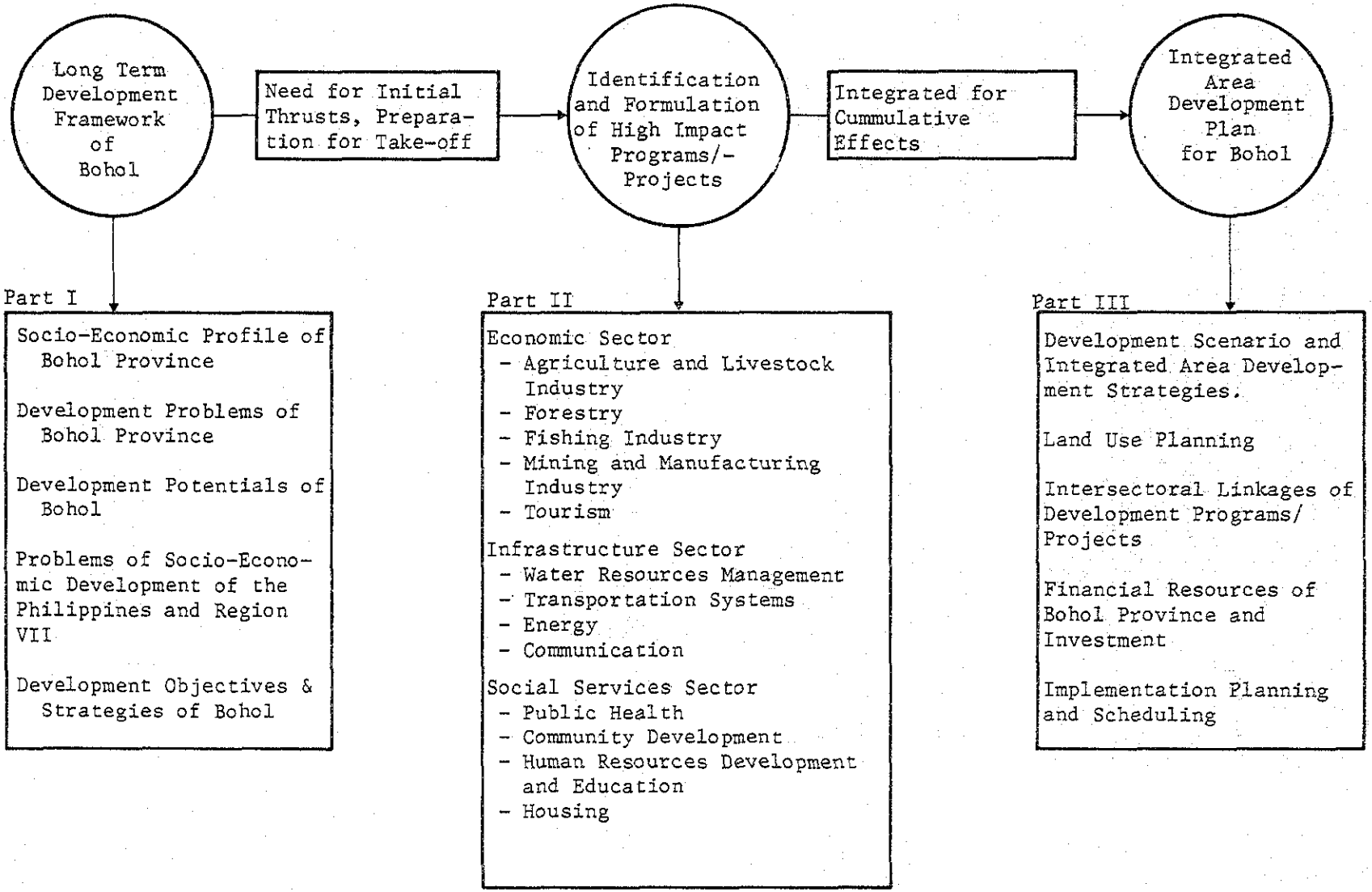
Part III: Integrated Area Development Plan of Programs and Projects, is the last portion of work in which the high impact programs/projects thus far identified are to be integrated into a coherent scheme of an area development plan of Bohol. For this purpose the following tasks are carried out (See Figure 21.1).

1) Formulation of development scenario and strategies for an integrated area development plan, viz., indication of the way in which the high impact programs/projects are to be carried out according to the framework established by the long term development scenario and strategies.

2) Indication of a broad guideline as to how land use in Bohol should be optimally distributed in the future by taking into account the potential utilities or values of land resources.

3) Explanation of inter-sectoral linkage problems of the economic development in Bohol; viz., brief exposition of how the economic development policy must be framed with careful consideration of

Fig. 21-1 HIGH IMPACT PROGRAMS/PROJECTS ORIENTED INTEGRATED AREA DEVELOPMENT PLAN FOR BOHOL



the inter-sectoral linkage effects and structure and also of how the high impact projects must be implemented so as to effectuate the inter-sectoral linkage at the micro-economic level.

4) Assessment of financial resources of the Bohol province, i.e., to evaluate Bohol's financial capacity to implement investment on its economic development programs/projects from its own financial resources.

5) Implementation planning and scheduling indicating how the recommended programs/projects should be carried out and what priorities should be given to them.

It must be understood, however, that this Part is intended to present a rough sketch or skelton of a comprehensive framework for Bohol Integrated Area Development Plan. Further technical analyses, projections, and plans must be made upon each sector, and program and project when the feasibility study is carried out in the future. When sufficient statistical data are generated in Bohol, it is highly recommended that a sectoral development plan should be formulated for each of the major sectors in Bohol by the development staff of the Bohol government. At later stage, whenever enough statistical data of high reliabilty becomes available to them, a long range and integrated area development plan should be formulated.

CHAPTER 22
DEVELOPMENT SCENARIO AND INTEGRATED AREA DEVELOPMENT STRATEGIES

CHAPTER 22 DEVELOPMENT SCENARIO AND INTEGRATED AREA DEVELOPMENT STRATEGIES

22.1 Development Scenario and Strategies

22.1.1 Background

Of the many reasons for planning the development of Bohol, the following are noteworthy: (a) to avoid over-concentration of regional development, to make the benefits of development as universally available as is economically feasible and to meet the regional goals established by the Philippine Government for Region VII (b) to utilize the resources in Bohol which are now being wasted and to further exploit its geographic location in proximity with regional growth centers such as Metro Cebu (c) to implement development of a sufficient economic base to finance the necessary development of infrastructure facilities without which the cost of development becomes excessive (d) to bring solutions to the basic problems which now confront Bohol such as: (a) a widening regional disparity in terms of income per capita and social amenity level, (b) a continuous trend of outmigration of the Boholanos, i.e., Bohol as a "supply depot" of surplus labor, (c) labor and industrial productivity remains very low with little incentives or public investment and infrastructure, (d) high rate of unemployment and under-employment increasingly worsened by the population pressure of young age groups creating a serious social problem, and (e) gradual expansion of Tagbilaran bringing about the creation of slum/squatter area.

22.1.2 Development Scenario Recommended for Bohol

From a practical point of view, the value of all development measures must be carefully considered in respect to their "opportunity costs", "trade-offs", "cost performance or effectiveness" and other criteria of economic evaluation. The fundamental principles or gist of the planning policy philosophy recommended by the Bohol Integrated Area Development Plan is summarized in Table 22.1. A brief summary of some of the major characteristics is presented below.

1) In the light of the fact that the Bohol economy cannot become by itself a viable economic entity with self-sustaining growth power, it should be regarded as an inseparable constituent of Metro Cebu regional growth pole, participating in it as "a part of MC growth corridor". The major functions ascribed to the Bohol economy will be to act as "a supply depot" of MC, particularly of agricultural and fishery products, manufactured goods of agro-based industries, cottage industry products, etc.

2) Bohol economy should be developed in parallel with MC's economy by playing a complementary or ancillary role to the economy of MC.

3) To take-off from the stagnated or retarded state of its economy characterized by "a self-perpetuating vicious circle" of low level of NPP, a large amount of stimuli or activating agents should be applied to the major problem areas of strategic importance.

4) The stimuli or activators will be provided by a set of high impact programs/projects which will create developmental momentum to Bohol's economy and form an economic base for its further expansion.

5) A long term development plan will not have practical value by itself unless it is implemented in Bohol. Any long term development planning must contain policy action programs as to how the initial phase of development plan is to be carried out. In the case of Bohol, the action programs of the initial phase are more important than the for formulation of long term development visions no matter how rigorously and comprehensively they are written up.

6) In order to increase the gathering force and cumulative effects of high impact programs/projects, they are formulated and implemented on the problem areas of strategic value for further development. The sectors of top priority on which concentrated efforts should be made are:

   (a) Agriculture, fishery, livestock and poultry industries

   (b) Industrial infrastructure of irrigation, transport system, electrification

   (c) Human resources development, public health

7) In consideration of the scarcity of resources (natural, human, financial and institutional) a concentrated public investment policy should be adopted. Consequently, the so-called "growth pole or center approach" must be regarded as the most advisable regional development strategy. In view of this, the fundamental conceptual framework of IAD Centers (Integrated Areas for Development) should be accepted as the working paradigm of development in Bohol. They are:

   (a) Provincial growth pole: City of Tagbilaran

   (b) BIAD growth centers; Tubigon, Ubay, Jagna and Carmen

8) Spatial development strategy for Bohol should carefully be formulated by taking into consideration various factor endowments and the future development potentiality of the areas. BIAD framework can be continuously used as the basic planning unit. However, the area zoning system in Bohol does not have to correspond with the BIAD.

Table 22.1 Policy Guidelines for Bohol Integrated Area Development Strategy (1980-2000)

Overall Development Strategy

HIGH IMPACT PRIORITY DEVELOPMENTAL BASES

1. Increase in the productivity of agriculture and fishery.
2. Development of resource based industries.
3. Improvement of supporting infrastructure.
4. Uplifting the level of crucial social services.

OUTER MARKET ORIENTED GROWTH

1. To characterize the Bohol economy as one of the major "supply depots" to Metro Cebu, the regional growth pole.
2. Bohol economy developed complementary, to Metro Cebu.
3. Tagbilaran considered the "growth pole"of the Bohol economy in view of limited resources.

INTEGRATED AREA DEVELOPMENT

1. Different economic roles should be ascribed to each BIAD.
2. Coordinated development with agglomeration and linkages effects.

A Strategy for Economic Sector

PRIMARY INDUSTRY

1. Productivity increased in rice, coconut, cassava, livestock, poultry and fishery.
2. Surplus products marketed to Metro Cebu.
3. Urban oriented vegetable farms developed.
4. Promotion of Beef Cattle production and research on soils and land characteristics.
5. Develop livestock production and combat spread of cogon.
6. Fishery resources fully utilized.
7. Development of a new fishery port.

SECONDARY INDUSTRY

1. Labor intensive and resources based industries should be developed.
   a. fish processing
   b. milling industry
   c. cottage industry
   d. coconut mill oil, etc.
2. Tagbilaran developed as a "secondary industrial estate".
3. Development of foot-loose industries suited for Bohol and associated technology developed.

TERTIARY INDUSTRY

1. Promotion of Chocolate Hills, sand beaches, historical sites, etc., as resources of tourism industry and market survey to monitor industry growth.
2. Development of Tagbilaran as a major commercial center in Bohol, connected with growth centers of BIAD.
3. Development of transportation and communication network linking municipal service centers in Bohol.

A Strategy for Infrastructure

IRRIGATION PROGRAM

1. Implementation of Wahig-Pamacsalan Irrigation Project.
2. A set of communal irrigation projects.

WATER SUPPLY SYSTEM

1. Water supply programs developed for the growth poles and centers.
2. Potable water supply programs planned for high priority rural areas.

URBAN AND REGIONAL ELECTRIFICATION AND POWER SUPPLY

1. Electrification program implemented according to priority needs of growth centers.
2. Alternative energy sources to be promoted.

TRANSPORTATION

1. A main transportation network designed in line with the economic growth of Bohol.
2. Improvement of Tagbilaran, Tubigon and Jagna ports and facilities.
3. Improvement of roads according to the estimate of increase in traffic density.
4. Improvement of Tagbilaran airport facility.

COMMUNICATION

Development of telecommunication network between municipality service centers and with Metro Cebu.

A Strategy for Social Service Sectors

HEALTH, NUTRITION AND FAMILY PLANNING

1. Increase functional capabilities of BHS, BHU, municipal service centers and BIAD growth pole.
2. Hierarchial referral system of information and services.
3. Development of mobile medical service.

COMMUNITY DEVELOPMENT

1. Development of multipurpose social service centers in BIAD growth centers.
2. Development of multipurpose community centers in municipalities.

HOUSING

1. Development of low-cost prototype of housing model using local materials.
2. Zoning classification: commercial, industrial, residential and public.

EDUCATION

1. Analysis and projection of manpower demand and supply.
2. Policy consideration of educational system.
3. Vocational and skill training development center.

Requirements

PRIORITIZATION OF GOALS

1. Income generation.
2. Creation of employment opportunities.
3. Improvement of critical infrastructure.
4. Uplifting the amenity level of depressed areas.

INFORMATION AND RESEARCH

1. Primary data generation.
2. Analysis.
3. Demand and supply projection of Bohol and neighboring regions.

ASSESSMENT OF RESOURCES/CONSTRAINTS

1. Financial
2. Manpower and other
3. Institutional
4. Technology

ROLE DIFFERENTIATION OF BIAD ECONOMY AND SPATIAL ALLOCATION AND ZONING

BIAD I – Growth pole, industrial estate development
BIAD II – Urban oriented farming
BIAD III – Development of fishery.
BIAD IV – Agriculture and coconuts.
BIAD V – Agricultural estate.

IMPLEMENTATION PLAN

1. Prioritization of high impact projects/programs.
2. Improvement of planning and implementing capabilities of the province.