22.2 Spatial Development Strategy for Bohol

22.2.1 Population Distribution Policy

1. Current Trends

The total population of Bohol was recorded at 759,370 in 1975 and its annual growth rate was 1.4% and 2.1% between the years 1960-70, and 1970-75 respectively. The estimated population growth rate in the future is 1.6% and 1.8% for the years between 1975-85 and 1985-2000 respectively. On the basis of the estimated growth rates, the population of Bohol is projected to be 887,610 in 1985 and 1,155,270 in the year 2000. The demographic trends of Bohol can be summarized as follows:

1) As indicated in Fig. 22.1, Population Distribution in Bohol, the pattern of population distribution is extremely dispersed with very few areas of concetnration. In the future years this trend as observed in other urban areas of the Philippines, will not be changed drastically since the major fabric of the Bohol society will basically remain agricultural.

2) The projected population for each BIAD is as follows:

	1985	2000	Annual Growth Rate (1985-2000)
BIAD I	221,340	298,490	2.0%
BIAD II	213,260	274,670	1.7%
BIADIIII	179,220	237,130	1.9%
BIAD IV	152,680	189,110	1.4%
BIAD V	121,110	155,870	1.7%
BOHOL	887,610	1,155,270	1.8%

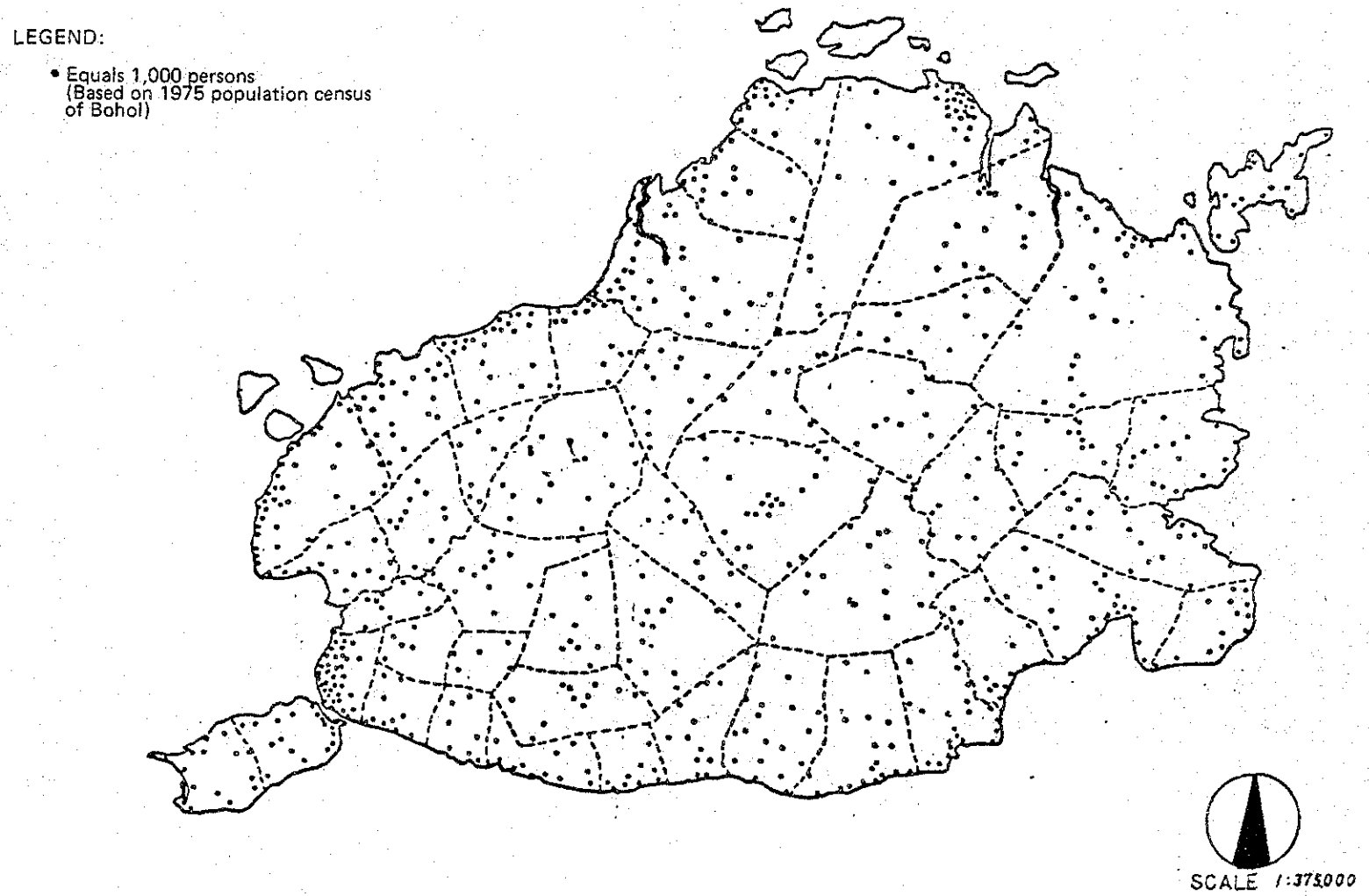
It must be noted that urbanization is a general demographic trend all over the world and has particularly become a pronounced trend in developing countries, bringing together with it various socio-economic problems. As can be observed from the map of Population Density in Bohol and Appendix 22-1,Population Density by Municipality, it is expected that the coastal belt area centered in the City of Tagbilaran will probably become relatively the highest density area in Bohol.

3) One of the marked trends of Bohol as well as the rest of the Philippines is that the age group of less than 14 years old occupies the largest share of the population. This pyramid shaped population distribution pattern is likely to pose a serious socio-economic problem to Bohol's society (See Appendix 22-2 to 22-7).

2. Population Policy Requirements

In view of the emerging and stable characteristics of the Bohol society, viz., 1) predominantly agricultural, 2) gradual urbanization trend along the coastal line of Tagbilaran, 3) a

Fig. 22-1 POPULATION DISTRIBUTION IN BOHOL



widely dispersed population with the exception of the few BIAD Centers, and 4) existence of a large-size young age group, the following population policy will be required from the point of view of spatial organization of the Bohol society.

1) Community development plan needs to be formulated for both urban and rural areas so as to ensure that infrastructure and social services' facilities are optimumly distributed and grow with the demand of the population.

2) Judged from the economic criteria of cost-effectiveness and of benefit-cost ratio, it is deemed very difficult to build up social infrastructure and social services network in an agricultural society where population is widely dispersed all over the region. In the light of this, strategic consideration must be given to the hierarchical role allocation of infrastructure and social services facilities. Viewed from this point of view, the regional development concepts of "municipal service centers (MSC)", "BIAD Growth Centers (BIAD-GC)", "Provincial Growth Pole (PGP) of the City of Trgbilaran", should be regarded as strategically and useful tools.

3) By the year 1985 the population residing in each BIAD is estimated to grow ranging from the smallest (BIAD V of 121,000) to the largest (BIAD I of 221,000). As the size of population expands, the functions and roles of cities must also become enlarged. Because of this projected trend of the population growth in the BIADs, the facilities and services capacity of BIAD Centers need to be strengthened in order to keep up with the service demand pressure deriving from population increase. It may become an urgent problem for integrated area development planners to formulate the policy measures with respect to:

   (a) Development of social indicators to determine the nature, type, and size of the social infrastructure and social services needed for the segment of population to be covered.

   (b) Development of industrial infrastructure required for supporting economic activities specific to each area, i.e., development of water supply system, physical distribution system, communication network, etc.

   (c) Identification of specific service demands coming from different segments of population, e.g., age group, occupational group, etc.

22.2.2 Spatial Role Allocation Strategy of Bohol Economy

1. Current Status of Spatial Role Allocation of Bohol Economy

As already explained in previous Parts, Bohol's economy has been and is still predominantly agricultural. The industrial

structure, measured by the number of employment by industry, is composed of three major sectors: 1) agriculture, forestry and fishery, 64.8%; 2) manufacturing 12.3% and 3) services 11.0% (NCSO, 1975). However, as far as spatial organization of Bohol's economy is concerned, it can be characterized by the following features (see also the map of Agricultural Resources, Appendix 22-8):

1) The coastal line is ringed with coconut growing areas.

2) Rice growing areas are more or less evenly distributed all over Bohol with a little concentration in BIADs III, IV and V. (See distribution of rivers, Appendix 22-9)

3) Small scale fishing is being conducted along most of the of off-shore areas.

4) Fish ponds are scattered here and there, showing some concentration in the Tubigon and Mabini areas.

5) Cottage industry, a major portion of manufacturing industry in Bohol, is scattered around coastal municipalities, particularly in municipalities lying between Tagbilaran and Tubigon.

6) Economic activities are roughly divided into two halves; the northern part is oriented toward Metro Cebu and the southern part toward Mindanao. (See Appendix 22-10)

7) Human settlement and community development pattern in Bohol tend to show a good deal of uniformity or similarity among different municipalities. A small-scale town-like urban settlement tends to be formed almost invariably in each municipality constituting the "poblacion" as a core. Almost without exception the poblacion consists of a city hall, church, public market, schools, retail outlets and small vendor shops, repairing workshops, etc.

2. Regional Development Concept of BIAD

As mentioned before, the Philippine Government has started shifting its regional development to a decentralized system of development planning. One of the notable approaches or tools developed from this trend is the concept of "Integrated Areas for Development (IAD)". Bohol province is divided into five BIADs, from BIAD I to BIAD V, and each BIAD is composed of varying numbers of municipalities. As indicated in Fig. 22.2, the BIAD approach is characterized by the following features:

1) Each BIAD has its growth pole or center:

BIAD I Provincial Growth Pole	: Tagbilaran
BIAD II Growth Center	: Tubigon
BIAD III Growth Center	: Ubay
BIAD IV Growth Center	: Jagna
BIAD V Growth Center	: Carmen

Fig. 22-2 BIAD AREAS AND GROWTH CENTERS

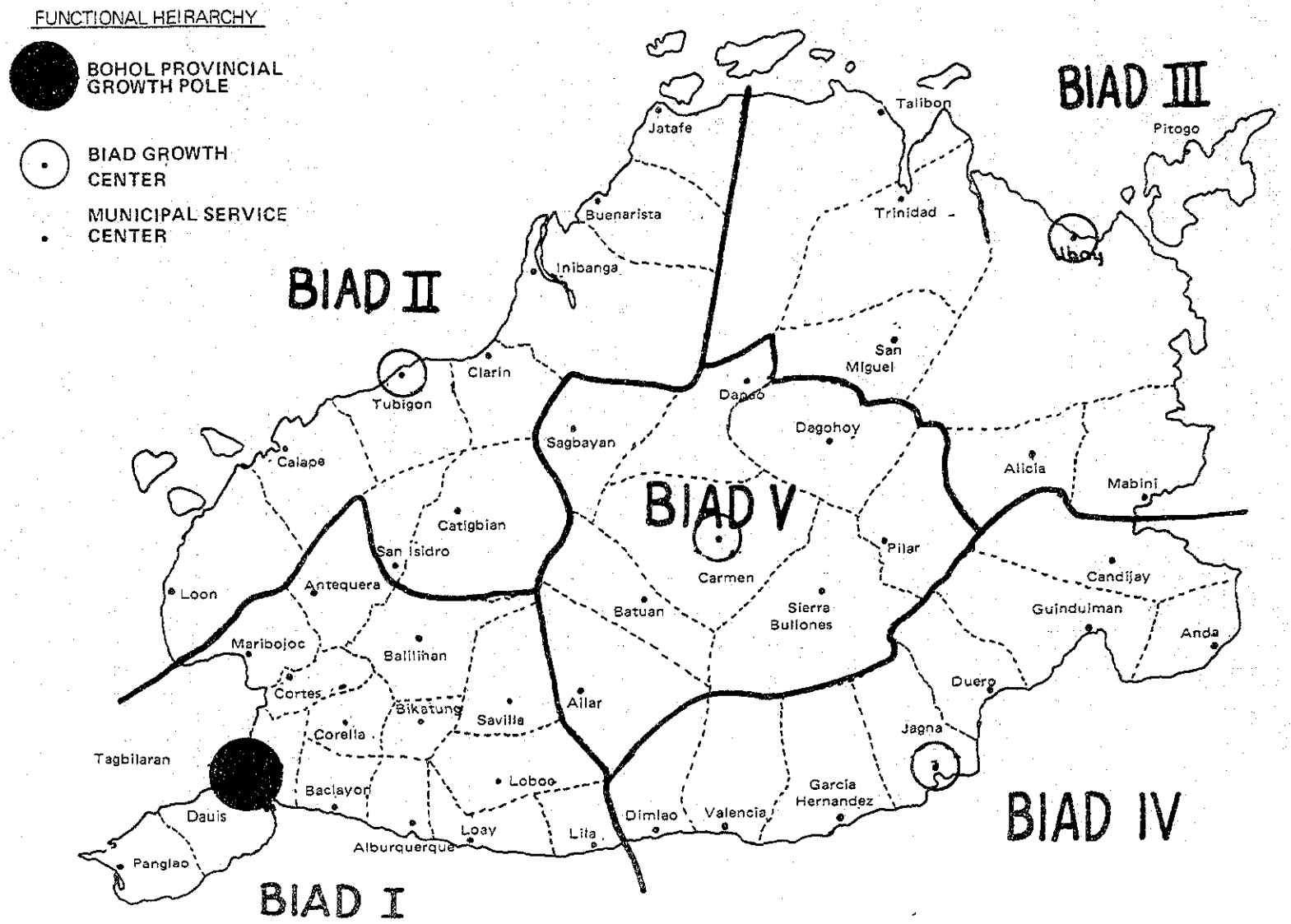


Table 22.2 Hierarchial Role Differentiation of Growth Centers and Poles

	OBJECTIVES	FUNCTIONAL REQUIREMENTS	PRIORITY POLICY PROBLEMS
Provincial Growth Pole (PGP) Tagbilaran	1) To serve as a major pole of development of Bohol. 2) To act as a major connecting link with neighboring regions. 3) To serve as a "nerve" center of administration, planning, control of economic development policy. 4) Population covered: 700,000 – 1 million.	1) To play the major "concentric" role in every aspect of life in Bohol. 2) To integrate activities of BIAD–GC, MSC. 3) To carry out efficient planning and budgeting policy. 4) To take into consideration comparative advantages of Bohol vis-a-vis neighboring economies.	1) Facilitation of social capital projects. 2) Improvement of supporting infrastructure for industrial estate, e. g. water resources, physical distribution network, etc. 3) Industrial development policy complementary to Metro Cebu and other regions. 4) Reinforcement of administrative capability at Provincial level.
BIAD Growth Centers (BIAD–GC) Tubigon Ubay Jagra Carmen	1) To serve as centers of BIAD plan. 2) To serve as a linkage of PGP and MSC. 3) To provide services and facilities not available at MSC. 4) To plan and coordinate actions required for IAD plan. 5) To act as centers of industrial activities. 6) Population covered: 100 – 200,000	1) To perform functions necessary for acting as centers of industry, commerce and social services in BIAD. 2) To posses capabilities and facilities required for being "agropolitan urban center". 3) To act as a "concentric" force in IAD.	1) Development of industries suited for BIAD. 2) Improvement of supporting infrastructure, viz., water supply, communication, physical distribution system. 3) Capabilities to provide services that cannot be easily received at MSC. 4) Promotion of industrial activities most suited for BIAD.
Municipal Service Centers (MSC)	1) To serve as the lowest level of centers catering to daily or routine needs of municipality residents. 2) Every facet of community needs to be satisfied, i. e., economic, social, political, informational, recreational, transportation, educational and health needs. 3) Population covered: 10 – 20,000	1) Appropriate number, size or scale of establishments, manufacture, wholesale or retail. 2) Appropriate size of service facilities. 3) A network of in and out-flow of commodities and information.	1) Social indicators to indicate amenity or social well-being level to be established. 2) A "critical needs list" to be drawn-up. 3) A priority order of improvement program to be established. 4) A need of establishment of a "multi-purpose community center" 5) Improvement of service level of "poblacions".

2) The lowest level function to be performed by a municipality is defined as "service center" of the area.

3) As a result, Bohol consists of "three tiers" (growth pole, growth centers and service centers) each of which is hierarchically arranged in terms of its functional role. Table 22.2 fully outlines the functional roles of each tier.

However, as can be observed from the data attached in Appendices 22-11 to 22-15, as far as agricultural land utilization is concerned, there is no marked difference observed in the areal economy of the BIADs with some minor variations concerning productivity per hectare, size and type of land holding pattern and so on. Therefore, Bohol's economy is more or less a homogenous agricultural society in which no significant difference exists in its socio-economic fabric. From this point of view, it can be said that the BIAD concept is nothing more than an areal planning unit artificially created for a administrative purposes. It is strongly urged that a careful examination should be made in the future as to how each BIAD can be differentiated from each other in its domestic economic role within Bohol.

3. Spatial Development Strategy Recommended for Bohol

Since the concept of IAD (Integrated Areas for Development) was originally developed by NEDA as a conceptual tool for its regional development plan, there is no inherent reason that this concept must be used for Bohol integrated area development plan. Nevertheless it is our judgement that this concept should be retained for the time being until a more effective and alternative concept is devised for Bohol in the future on the basis of careful evaluation of the conditions prevailing in Bohol. The theoretical validity and practical usefulness of the IAD concept should be positively evaluated because of the following reasons:

(a) Development needs existing in locality of Bohol can be most effectively aggregated at the level of BIAD and it can be used as a practical development planning tool of the "bottom-up approach".

(b) A variety of planning exercises have already been performed in Bohol based upon the BIAD concept, and introduction of another concept would likely invite unnecessary confusion among the development planning officers.

(c) Alternative concepts or tools should be introduced later only when the merits and demerits of the BIAD concept are carefully weighed in the light of its actual contribution to the on-going process of planning in Bohol.

(d) Necessary and practical data can be most fruitfully generated and compiled at the level of BIAD.

Neverthless it must be noted that when it is viewed from a long term development planning, Bohol would be much better regarded as the basic areal unit of integrated development plan. This requirement will become apparent when the following is considered.

(a) Larger financial resources are commandable at the provincial level.

(b) A unified approach becomes possible for development planning without administrative tape to go through at various steps of coordination.

(c) Allocation of resources can be made more effectively by taking into account the real development needs and potentiality existing in Bohol.

(d) Limited resources of Bohol (skilled manpower, institutional, social and capital) can be mobilized and invested in problem areas of strategic importance for the future development of Bohol.

Thus, judged from the standpoint of a long range development plan, it is required that a spatial development strategy should be formulated so as to optimally allocate different economic roles among various areas. It must be understood that a spatial unit of integrated area development does not have to correspond to the administrative unit of local government. The spatial development strategy for Bohol should be formulated by taking into consideration the following criteria:

1) Existing pattern of resources allocation, i.e., distribution pattern of given natural resources and/or developed resources

2) Potentiality of development, i.e., facilitating and/or constraining conditions

3) Agglomeration and spatial linkage effects

4) Allocation of economic roles and division of labor

5) Advisability of "growth pole" approach under the prevailing conditions of scarce resources

6) A long term development framework of putting Bohol economy as "a supply depot" of Metro Cebu-Regional growth pole in Region VII

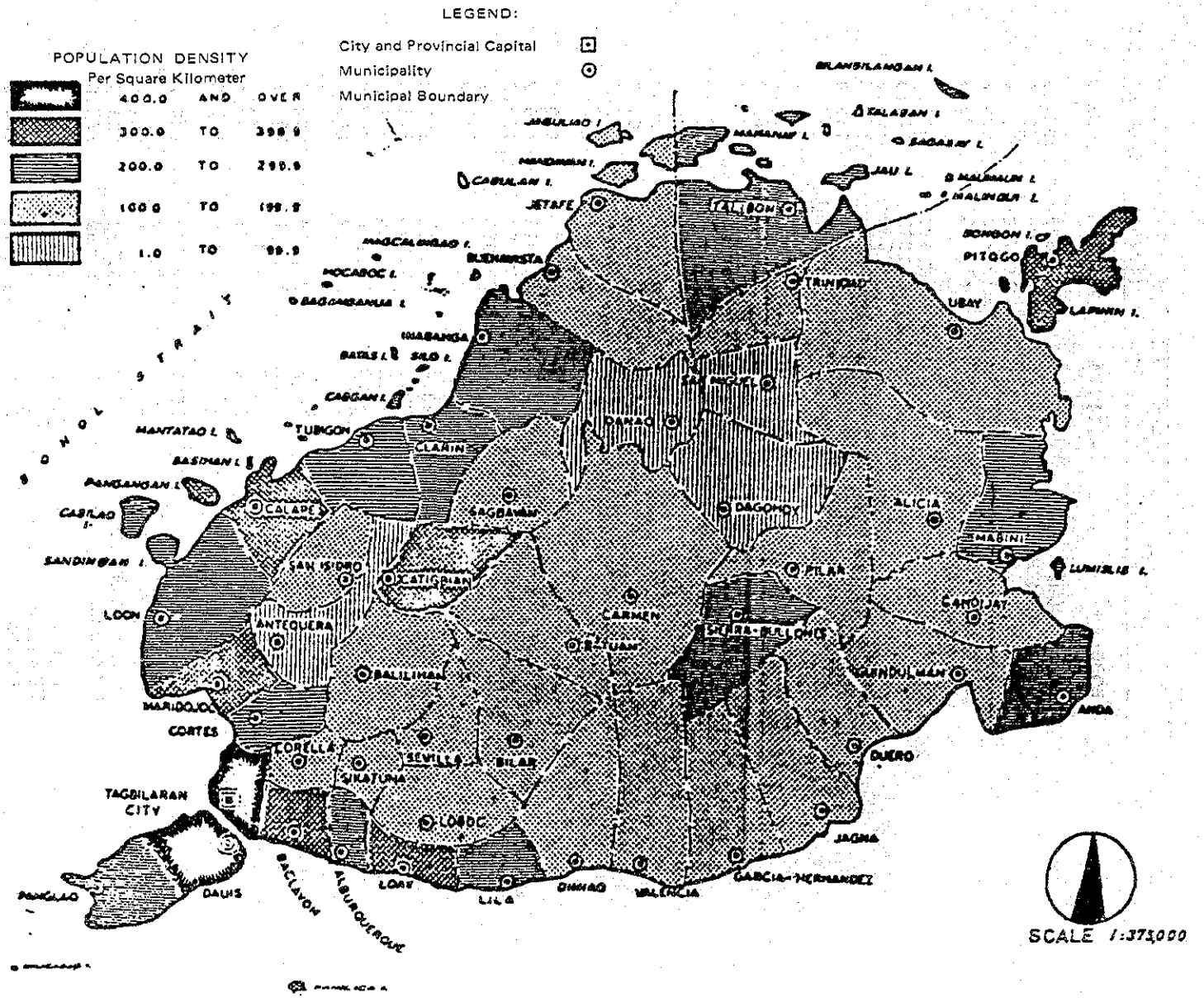
7) Uplifting the economic level particularly in depressed areas

APPENDIX

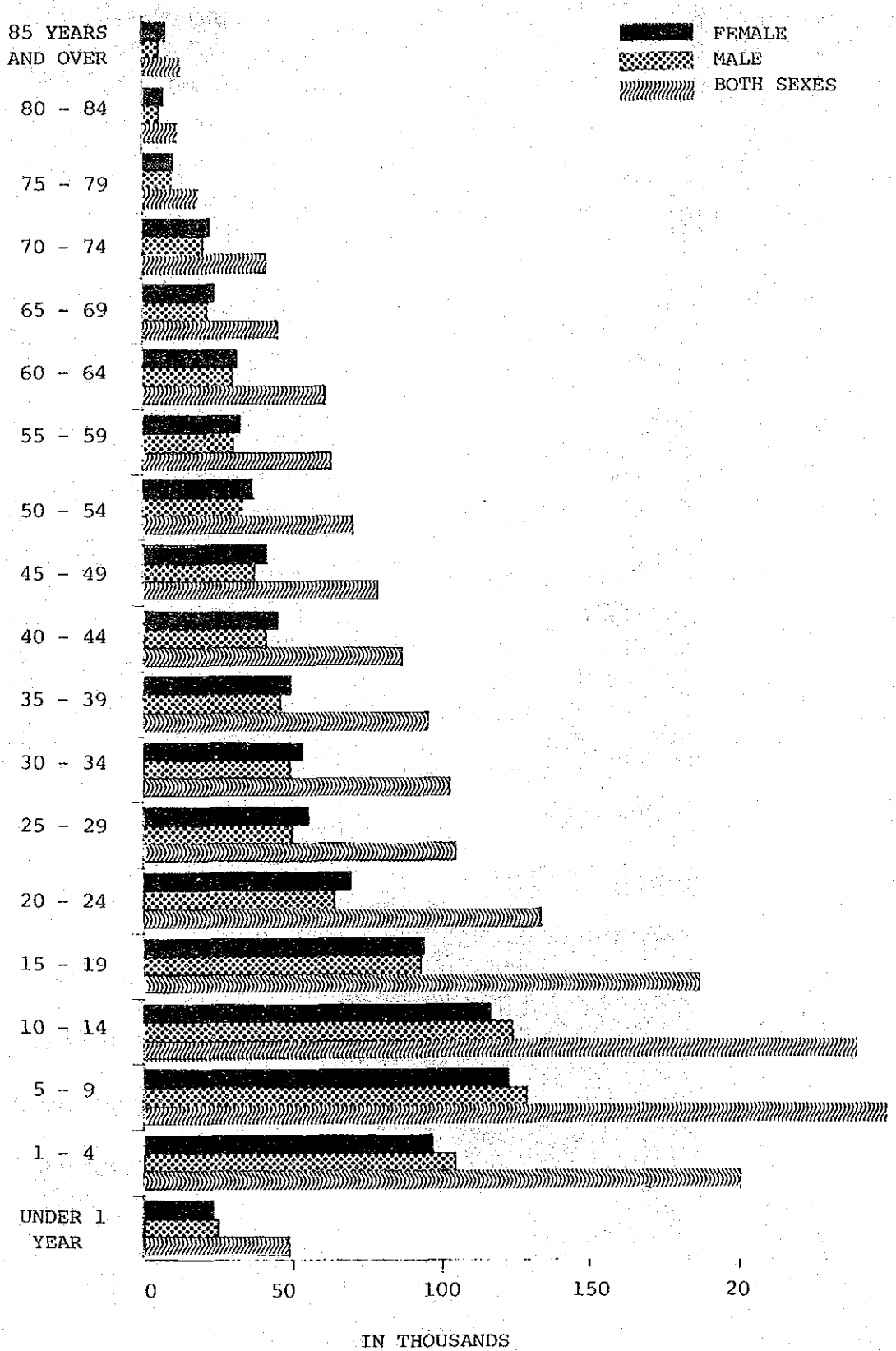
Population Density by Municipality, Bohol: 1975

MUNICIPALITY	LAND AREA (SQ. KMS)	POPULATION (1975)	DENSITY (PER SQ. KM)
BOHOL	4,117.3	759,370	184.4
TAGBILARAN	30.3	37,335	1,232.2
ALBURQUERQUE	22.6	6,505	287.9
ALICIA	96.3	14,770	153.4
ANDA	60.7	12,658	208.6
ANTEQUERA	118.7	11,130	93.8
BACLAYON	33.7	10,490	311.3
BALILIHAN	110.2	13,912	126.3
BATUAN	91.6	9,940	108.6
BILAR	91.6	12,226	133.5
BUENAVISTA	99.4	15,802	159.0
CALAPE	68.1	21,499	315.7
CANDIJAY	103.9	19,750	190.1
CARMEN	230.6	23,580	102.3
CATIGBIAN	41.3	15,570	377.0
CLARIN	62.4	13,105	210.1
CORELLA	31.3	5,286	168.9
CORTES	43.4	9,056	208.7
DAGOHOY	123.2	8,578	69.7
DANAO	115.0	8,447	73.5
DAUIS	42.5	17,955	422.5
DIMIAO	101.6	11,225	110.5
DUERO	88.5	11,522	130.2
GARCIA-HERNANDEZ	125.8	16,701	132.8
GUINDULMAN	127.6	23,563	184.7
INABANGA	119.2	31,820	267.0
JAGNA	120.6	21,895	181.6
JETAFE	109.5	15,903	145.3
LILA	32.1	8,728	271.9
LOAY	31.2	11,256	360.8
LOBOC	70.3	11,799	167.9
LOON	116.2	34,225	292.6
MABINI	83.9	19,071	227.3
MARIBOJOC	41.7	14,333	343.8
PANGLAO	55.9	13,624	243.8
PILAR	98.8	13,928	141.0
SAGBAYAN	99.9	12,500	125.2
SAN MIGUEL	-	11,117	-
SEVILLA	64.2	8,551	133.2
SIERRA-BULLONES	67.0	15,132	225.9
SIKATUNA	27.8	5,169	186.0
TALIBON	168.2	41,270	245.4
TRINIDAD	196.1	13,867	70.8
TUBIGON	69.2	28,275	408.6
UBAY	272.2	34,195	125.7
VALENCIA	100.8	18,229	180.9
SAN ISIDRO	53.1	7,281	137.2
PITOGO	54.8	16,579	302.9

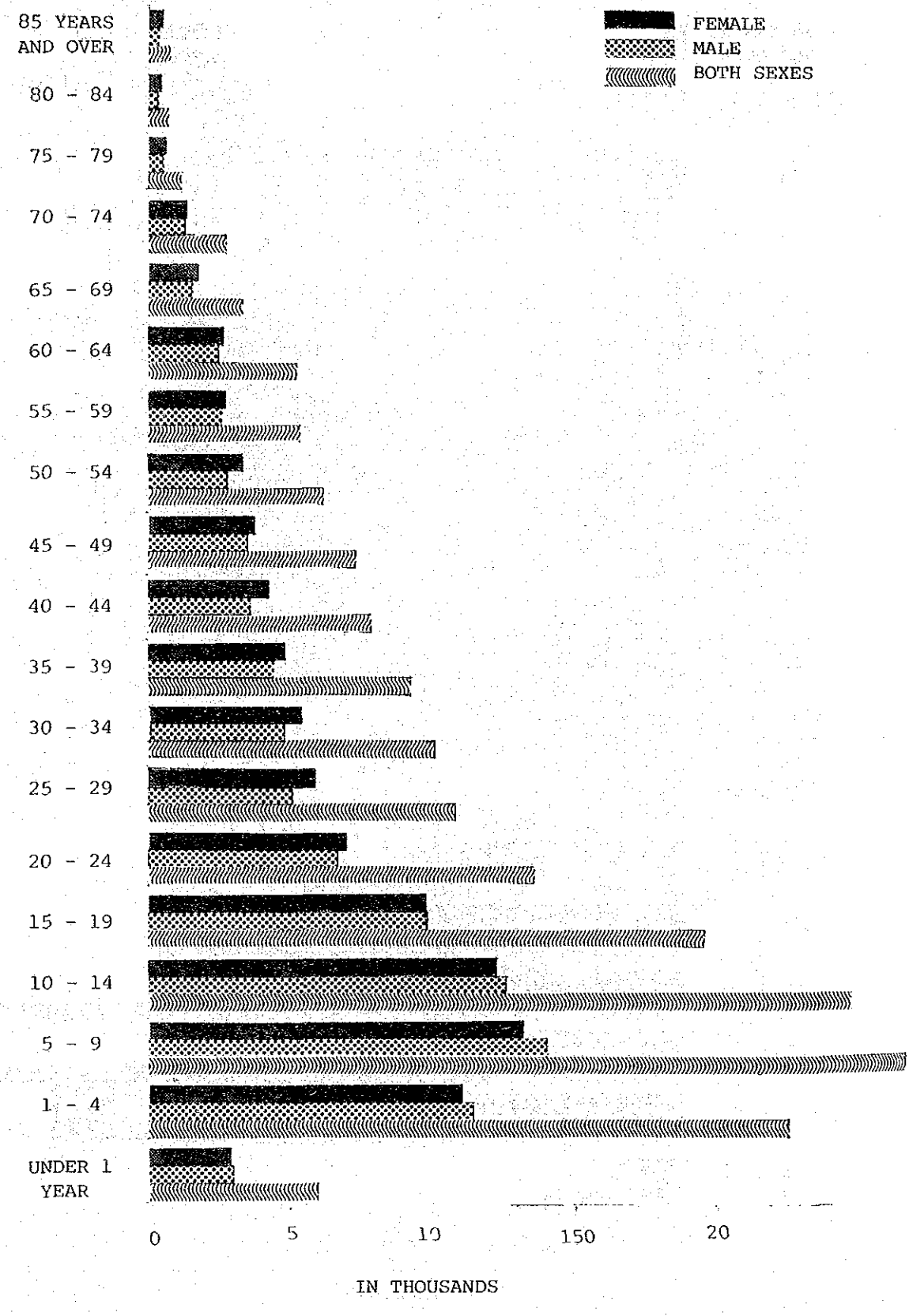
Population Density in Bohol (Based on Population Census of 1975)



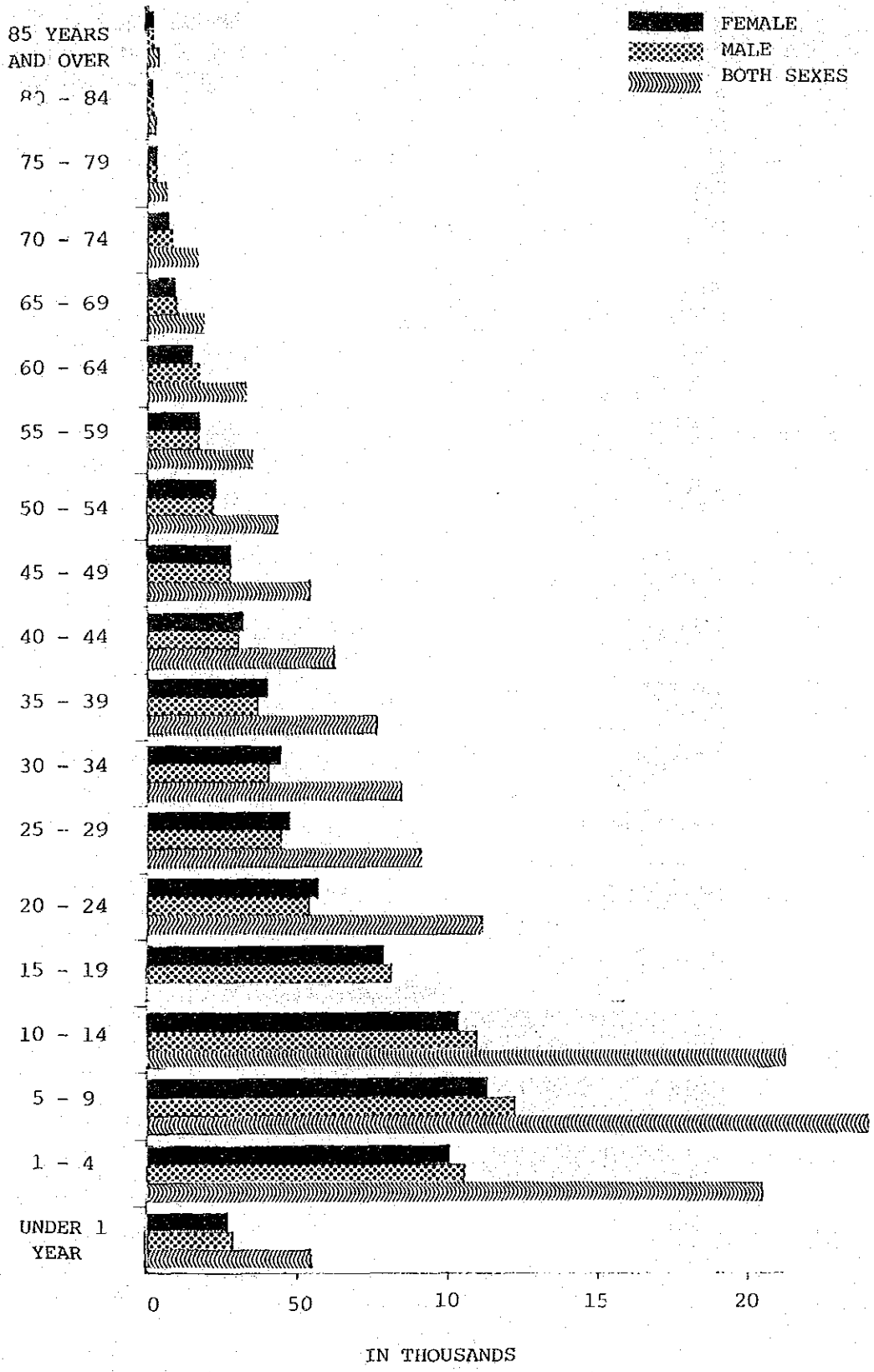
Age - Sex Composition of Biad I (1975)



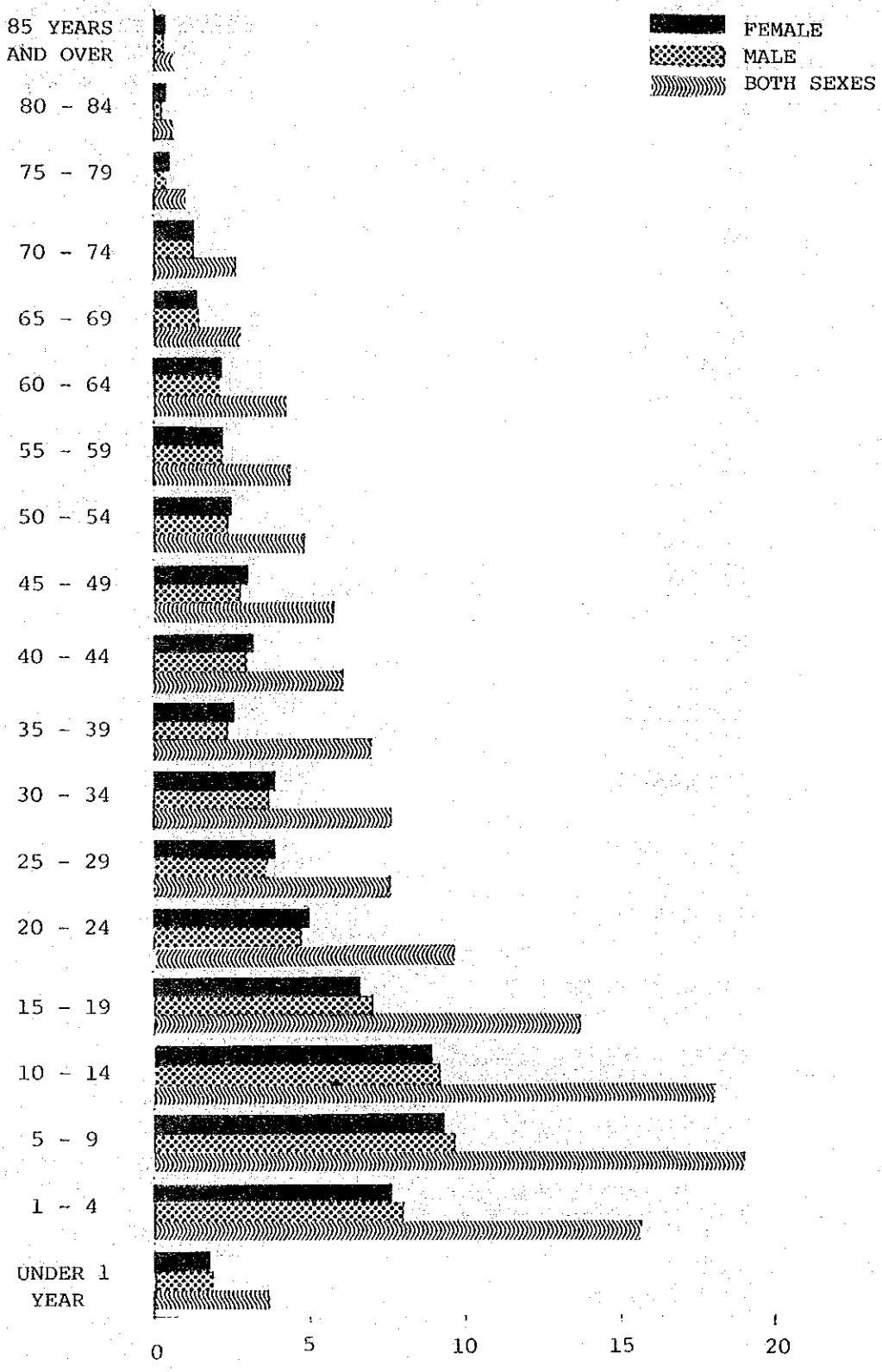
Age - Sex Composition of Biad II (1975)



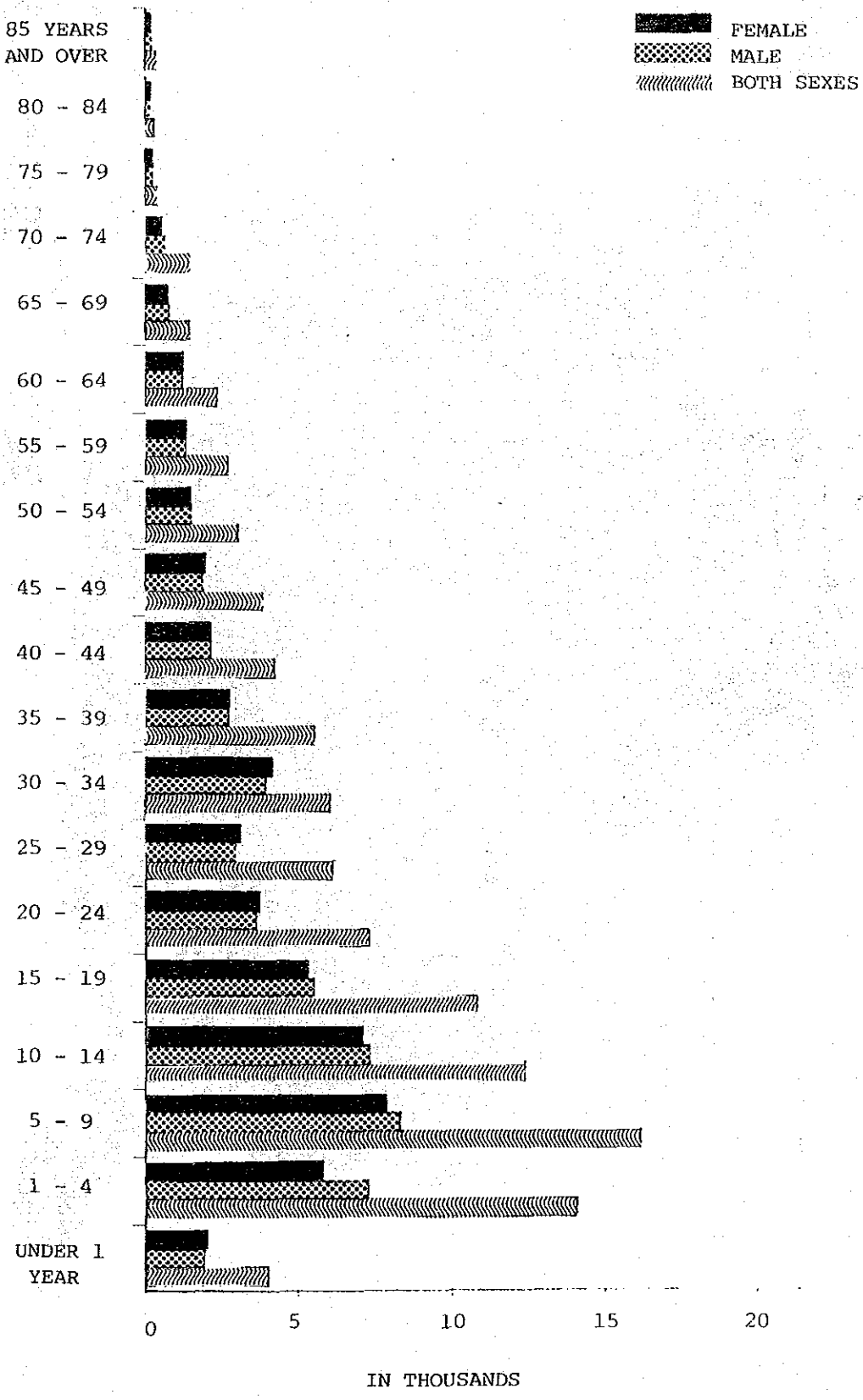
Age - Sex Composition of Biad III (1975)



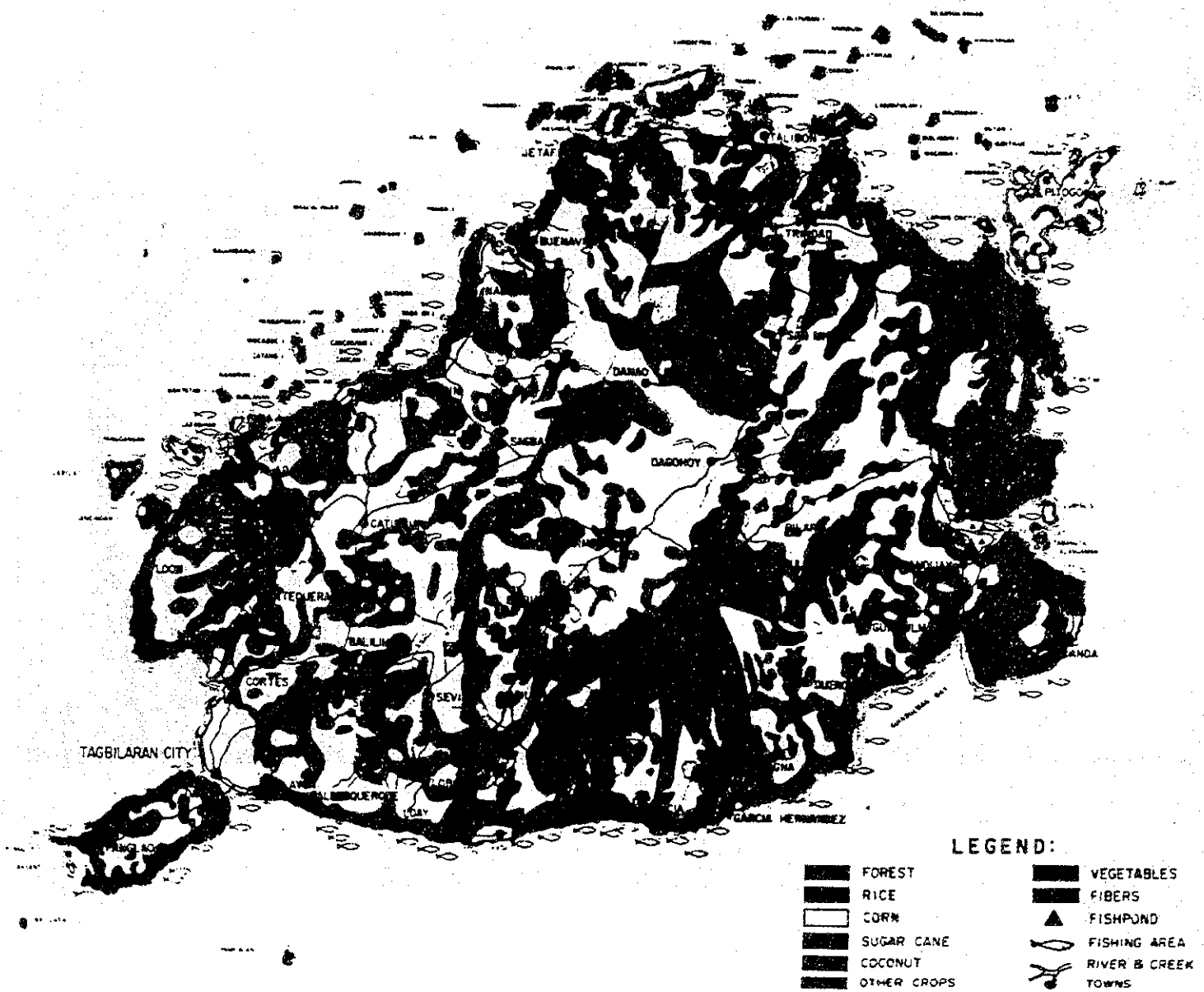
Age - Sex Composition of Biad IV (1975)



Age - Sex Composition of Biad V (1975)

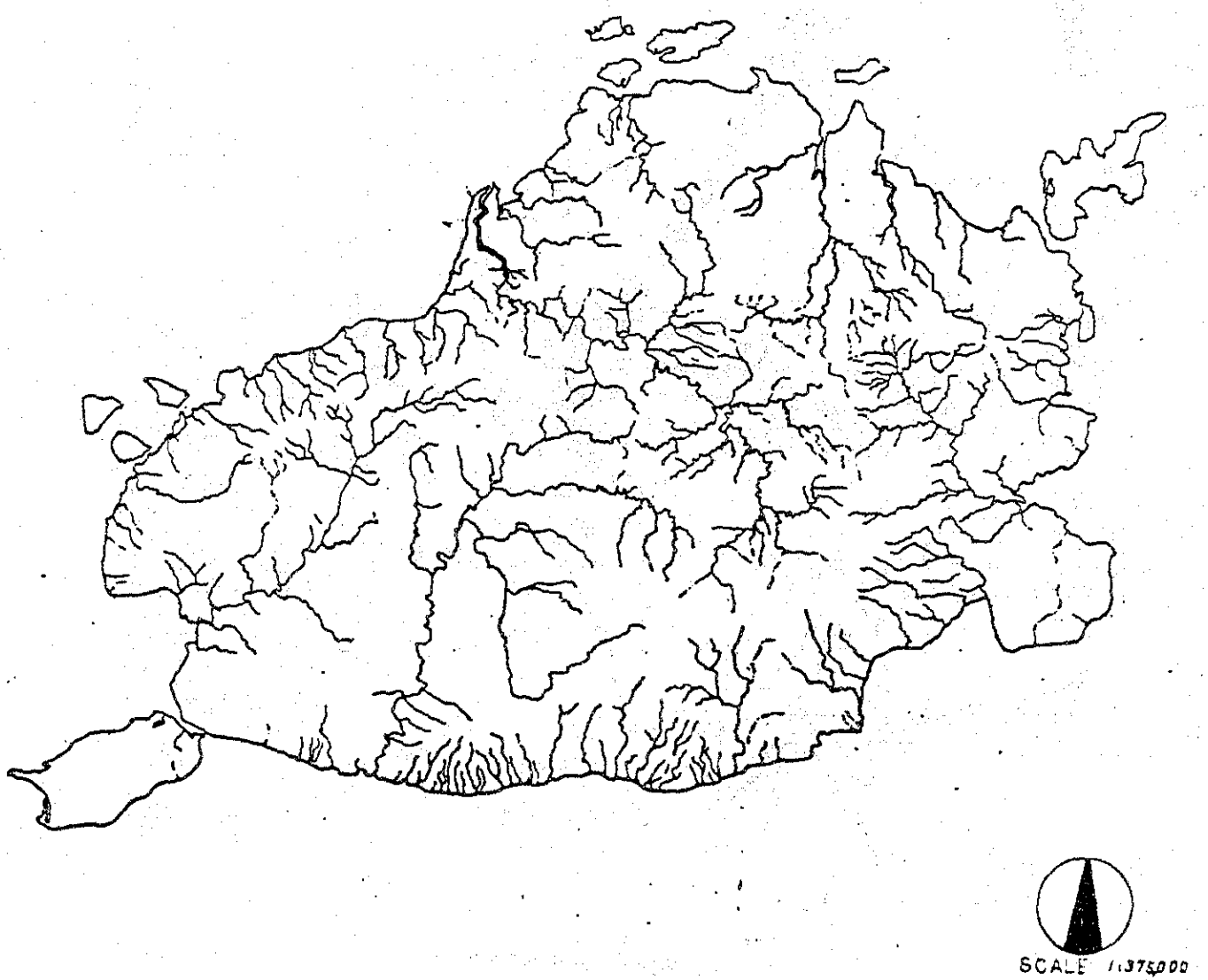


Agricultural Resources Map

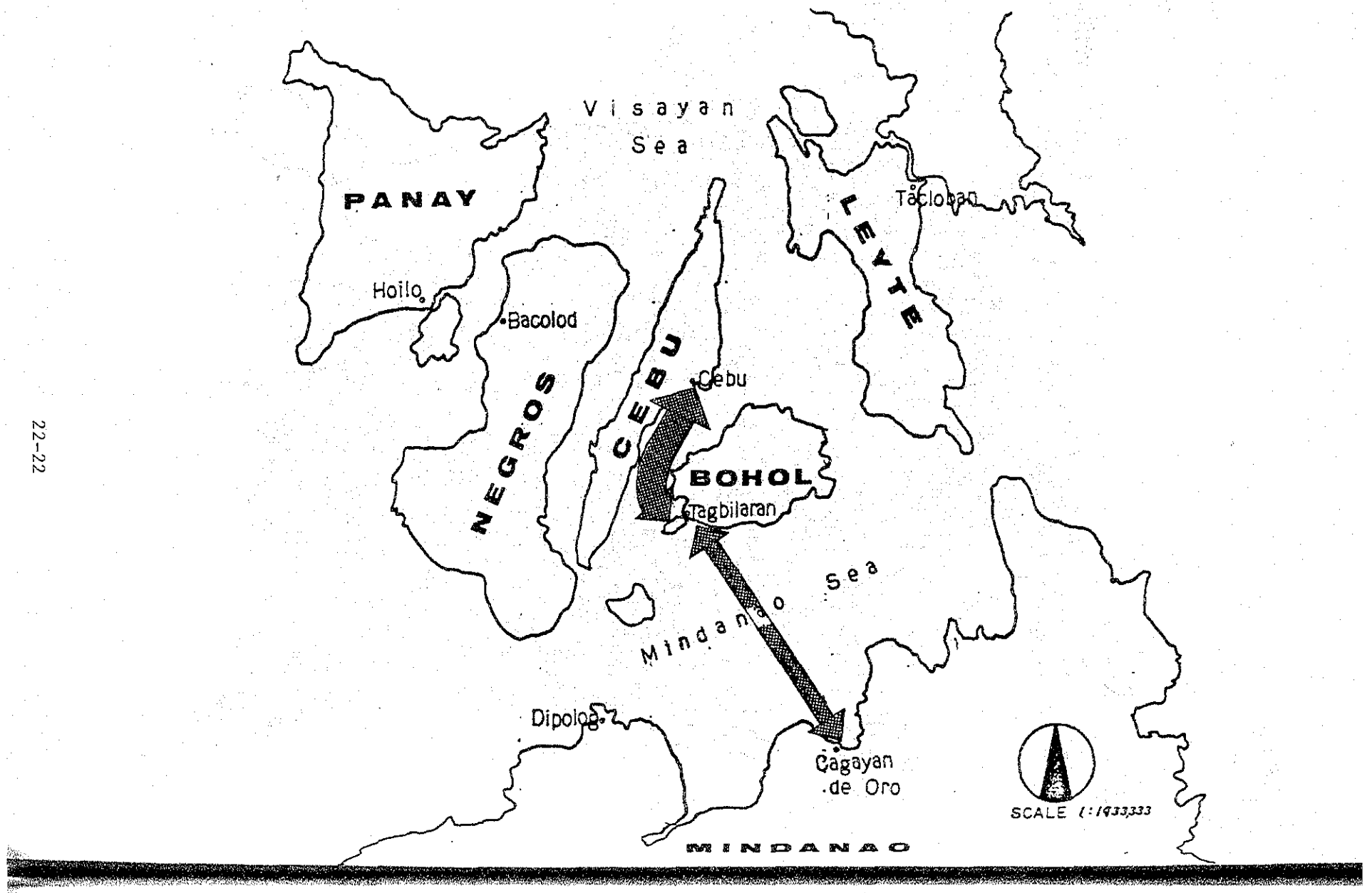


Rivers and Tributaries in Bohol

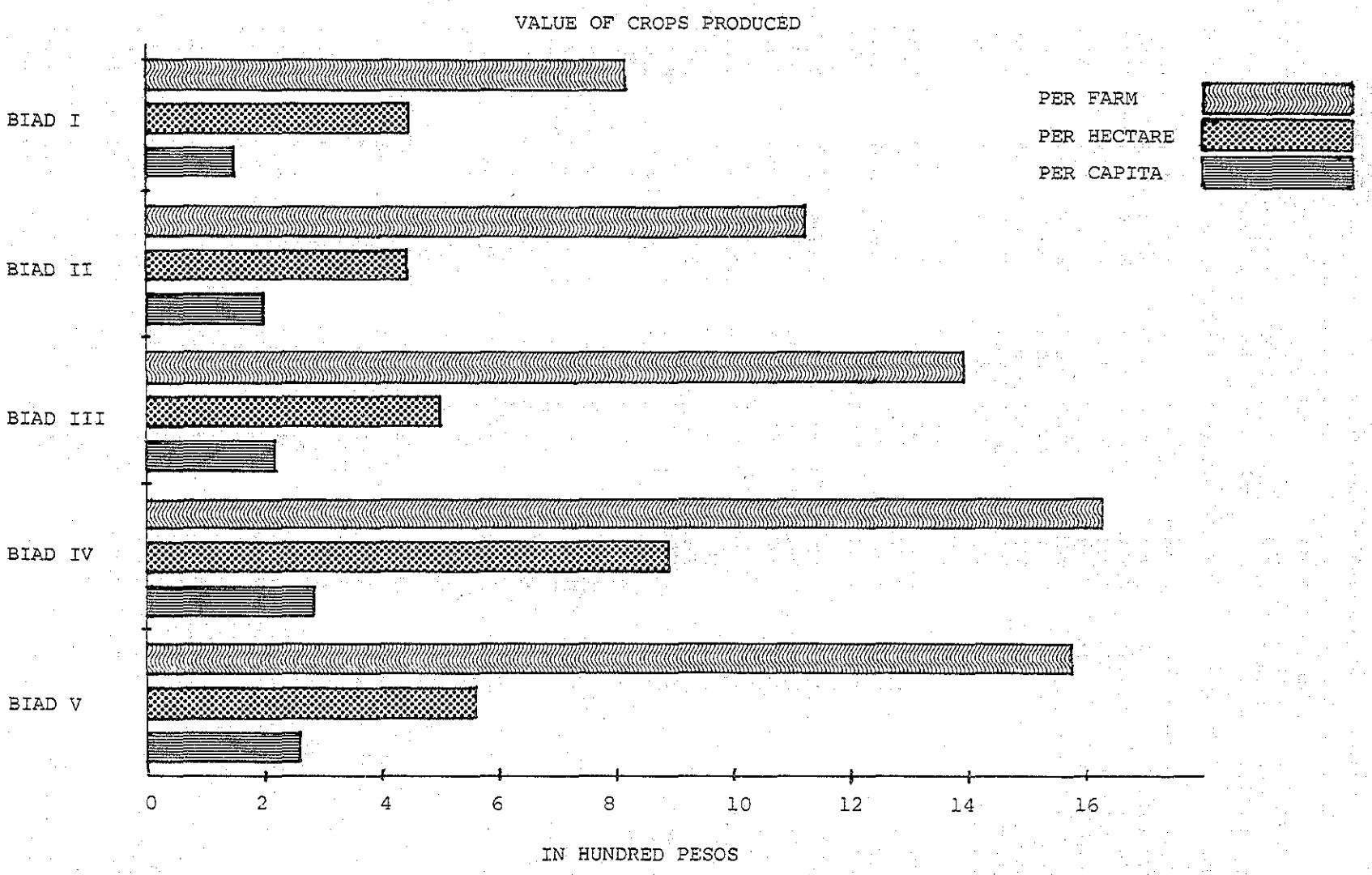
Appendix 22-9



Major Commodity Flow Routes



Average Value of Crops Produced by Biad (April 1971)



Farms: Number and Area by Land Use and by Biad (April 1971) (1)

BIAD	TOTAL NUMBER OF FARMS	TOTAL AREA OF FARMS (HAS.)	ARABLE LAND					
			ALL ARABLE LAND		PLANTED TO TEMPORARY CROPS		LYING IDLE	
			AREA (HAS.)	(%)	AREA (HAS.)	(%)	AREA (HAS.)	(%)
BOHOL	61,107	142,070.3	73,333.3	51.6	57,412.1	40.4	15,921.2	11.2
BIAD I	11,748	19,850.7	10,141.7	51.1	8,428.0	42.5	1,714.1	8.6
TAGBILARAN	300	397.4	237.0	59.6	210.9	53.1	26.2	6.6
ANTEQUERA	1,511	2,164.4	1,037.6	47.9	888.8	41.1	148.8	6.9
MARIBOJOC	735	1,135.9	519.3	45.7	484.1	42.6	35.2	3.1
CORTES	513	659.5	367.8	55.8	334.9	50.8	32.9	5.0
BALILIHAN	1,845	3,813.7	1,929.5	50.6	1,803.2	47.3	126.3	3.3
CORELLA	578	1,097.7	448.1	40.8	443.7	40.4	4.5	0.4
SIKATUNA	789	982.2	645.4	65.7	496.5	50.5	148.9	15.2
BACLAYON	511	767.4	509.9	64.8	273.1	34.7	236.8	30.1
ALBURQUERQUE	230	171.6	92.0	53.6	81.4	47.4	10.6	6.2
LOAY	435	903.1	233.3	25.8	142.7	15.8	90.6	10.0
LILA	411	560.0	203.5	36.3	136.6	24.4	66.9	11.9
LOBOC	801	1,733.8	754.1	43.5	568.6	32.8	185.5	10.7
SEVILLA	1,114	2,268.2	1,110.1	48.9	728.3	32.1	381.8	16.8
DAUIS	1,184	1,593.4	1,038.6	65.2	926.3	58.1	112.3	7.1
PANGLAO	791	1,582.4	1,015.5	61.2	908.9	57.4	106.8	6.8
BIAD II	14,712	27,696.4	14,010.1	50.6	12,756.4	46.1	1,245.3	4.5
TUBIGON	1,703	2,741.6	1,432.1	52.2	1,328.2	48.4	103.9	3.8
LOON	3,147	3,108.4	1,557.2	50.1	1,498.9	48.2	58.4	1.9
CALAPE	1,163	1,783.1	729.5	41.0	706.4	39.7	23.2	1.3
CATIGBIAN	2,010	4,264.5	2,170.1	50.9	2,011.7	47.2	158.4	3.8
CLARIN	1,415	2,888.5	1,298.4	45.0	1,214.7	42.1	83.7	2.9
INABANGA	2,197	4,636.2	2,606.2	56.3	2,350.2	50.7	256.5	5.6
BUSNAVISTA	1,379	3,706.8	1,955.7	52.8	1,696.1	45.8	250.6	6.8
JETAFE	756	2,327.8	1,151.4	49.5	962.1	41.4	189.2	8.2
SAN ISIDRO	942	2,239.5	1,109.5	49.6	988.1	44.2	121.4	5.5
BIAD III	11,356	41,412.6	21,123.2	51.0	13,263.9	32.1	7,859.2	19.0
TALIBON	1,718	4,682.5	2,276.6	48.7	1,739.1	37.2	537.5	11.5
SAN MIGUEL	1,597	5,577.8	2,664.9	47.8	1,939.7	34.8	725.1	13.0
ALICIA	1,588	4,575.7	2,817.0	61.6	2,026.3	44.3	790.8	17.3
MABINI	1,837	3,645.3	1,790.9	49.2	1,404.7	38.6	386.1	10.6
TRINIDAD	1,502	9,745.2	6,137.5	63.0	1,957.4	20.1	4,180.1	42.9
UBAY	2,698	12,166.7	4,918.8	40.5	3,776.4	31.1	1,142.4	9.4
PITOGO	416	1,019.4	517.5	50.8	420.3	41.3	97.2	9.6
BIAD IV	11,251	19,100.0	9,134.8	47.9	7,359.0	38.6	1,775.8	9.3
JAGNA	1,517	1,777.1	745.0	42.0	622.3	35.1	122.7	6.9
CANDIJAY	1,472	3,065.0	1,539.9	50.3	1,208.8	39.5	331.1	10.8
GUINDULMAN	1,870	3,036.5	1,484.1	48.9	1,274.2	42.0	209.9	7.0
ANDA	1,169	2,327.0	1,025.6	44.1	956.8	41.2	68.8	3.0
DUERO	1,082	1,431.8	747.5	52.2	494.8	34.6	252.8	17.7
GARCIA-HERNANDEZ	1,539	3,198.8	1,584.2	49.6	1,305.4	40.8	278.8	8.8
VALENCIA	1,570	2,486.6	1,317.0	53.0	988.5	39.8	328.5	13.3
DIMIAO	1,032	1,777.2	691.5	38.9	508.2	28.6	183.2	10.3
BIAD V	12,040	33,010.4	18,923.1	57.4	15,605.0	47.3	3,318.2	10.1
CARMEN	2,825	7,684.5	4,656.4	60.6	4,061.1	52.9	595.3	7.8
BILAR	1,159	4,709.4	1,228.9	26.1	1,088.3	23.1	140.6	3.0
SAGBAYAN	1,635	4,005.4	2,559.9	64.0	2,368.3	59.2	191.6	4.8
DANAO	1,178	3,721.9	2,644.2	71.1	1,907.5	51.3	736.7	19.8
DAGOHOY	1,038	3,450.0	2,040.3	59.2	1,629.8	47.3	410.5	11.9
PILAR	1,470	4,665.5	2,410.9	51.7	1,847.1	39.6	563.8	12.1
SIERRA-BULLONES	1,551	3,467.4	1,884.0	54.4	1,370.9	39.6	513.1	14.8
BATUAN	1,184	2,306.3	1,498.5	65.0	1,332.0	57.8	166.6	7.3

(Cont.)

Farms: Number and Area by Land Use and by Biad (April 1971) (2)

BIAD	LAND PLANTED TO PERMANENT CROPS		LAND UNDER PERMANENT MEADOWS AND PASTURES		LAND COVERED WITH FOREST GROWTH		ALL OTHER LAND	
	AREA (HAS.)	(%)	AREA (HAS.)	(%)	AREA (HAS.)	(%)	AREA (HAS.)	(%)
BOHOL	47,301.8	33.3	14,872.3	10.5	2,772.5	2.0	3,790.4	2.7
BIAD I	7,975.9	40.2	869.4	4.4	417.5	2.1	448.2	2.3
TAGBILARAN	121.5	30.5	11.3	2.8	8.2	2.0	19.4	4.8
ANTEQUERA	1,002.1	46.2	36.1	1.6	54.9	2.5	33.7	1.5
MARIBOJOC	587.3	51.7	17.1	1.5	8.9	0.7	3.4	0.2
CORTES	231.5	35.1	7.7	1.1	15.3	2.3	37.1	5.6
BALILIHAN	1,399.0	36.6	172.7	4.5	179.5	4.7	133.0	3.4
CORELLA	379.3	34.5	109.5	9.9	66.4	6.0	94.3	8.5
SIKATUNA	291.7	29.6	3.0	0.3	3.7	0.3	38.5	3.9
BACLAYON	191.0	24.2	58.0	7.3	11.1	1.4	17.4	2.2
ALBURQUERQUE	78.8	45.9	.7	0.4	.0	-	.0	-
LOAY	661.7	73.2	.0	-	1.2	0.1	6.9	0.7
LILA	352.1	62.8	2.8	0.5	.0	-	1.7	0.3
LOBOC	751.3	43.3	175.0	10.0	45.7	2.6	7.7	0.4
SEVILLA	888.4	39.1	235.2	10.3	16.0	0.7	18.4	0.8
DAUIS	498.8	31.3	31.4	1.9	6.3	0.3	18.4	1.1
PANGLAO	541.4	34.2	8.9	0.5	.3	0.01	16.3	1.0
BIAD II	11,351.5	40.9	1,329.2	4.7	544.6	1.9	461.2	1.6
TUBIGON	1,216.1	44.3	49.3	1.7	24.8	0.9	19.4	0.7
LOON	1,486.9	47.8	12.0	0.3	26.4	0.8	25.9	0.8
CALAPE	1,012.0	56.7	.0	-	1.3	0.1	40.3	2.2
CATIGBIAN	1,498.0	35.1	239.9	5.6	217.7	5.1	138.9	3.2
CLARIN	1,394.8	48.2	95.1	3.2	2.8	0.1	97.4	3.3
INABANGA	1,867.4	40.2	138.9	2.9	1.9	0.04	21.5	0.4
BUENAVISTA	1,011.0	27.2	433.8	11.9	244.4	6.5	52.0	1.4
JETAFE	842.2	36.1	298.5	12.8	4.4	0.1	31.2	1.3
SAN ISIDRO	1,023.1	45.6	51.7	2.3	20.9	0.9	34.6	1.5
BIAD III	10,864.4	26.2	6,106.7	14.7	1,104.9	2.6	2,214.3	5.3
TALIBON	1,893.3	40.4	216.9	4.6	95.6	2.0	200.8	4.2
SAN MIGUEL	1,344.2	24.0	1,147.7	20.5	114.6	2.0	306.5	5.4
ALICIA	1,599.2	34.9	127.4	2.7	20.2	0.4	11.9	0.2
MABINI	1,428.8	39.1	246.2	6.7	61.7	1.6	117.8	3.2
TRINIDAD	2,192.5	22.4	1,259.5	12.9	89.2	0.9	66.5	0.6
UBAY	2,018.8	16.5	3,035.1	24.9	711.7	5.8	1,482.3	12.1
PITOGO	387.6	38.0	73.9	7.2	11.9	1.1	28.5	2.7
BIAD IV	8,578.6	44.9	699.8	3.6	350.3	1.8	336.6	1.7
JAGNA	719.3	40.4	228.2	12.8	46.9	2.6	37.7	2.1
CANDIJAY	1,388.4	45.2	38.8	1.2	22.3	0.7	75.7	2.4
GUINDULMAN	1,373.2	45.2	64.5	2.1	58.2	1.9	56.5	1.8
ANDA	1,167.5	50.1	58.4	2.5	47.8	2.0	27.7	1.1
DUERO	601.5	42.0	65.9	4.6	7.9	0.5	8.9	0.6
GARCIA-HERNANDEZ	1,406.9	43.9	132.3	4.1	64.3	2.0	11.1	0.3
VALENCIA	975.1	39.2	61.2	2.4	84.6	3.4	48.8	1.9
DIMIAO	946.7	53.2	50.5	2.8	18.3	1.0	70.2	3.9
BIAD V	8,531.6	25.8	5,867.5	17.7	355.3	1.0	333.2	1.0
CARMEN	2,036.6	26.5	783.7	10.1	89.4	1.1	118.4	1.5
BILAR	246.4	5.2	3,126.6	66.3	55.8	1.1	51.8	1.0
SAGBAYAN	1,219.5	30.4	136.9	3.4	56.6	1.4	32.5	0.8
DANAO	1,003.9	26.9	45.5	1.2	28.2	0.7	.2	-
DAGOHOY	934.8	27.0	380.3	11.0	52.5	1.5	42.2	1.2
PILAR	1,142.8	24.4	1,034.4	22.1	54.6	1.1	22.9	0.4
SIERRA-BULLONES	1,250.9	36.0	310.0	8.9	3.6	0.1	18.8	0.5
BATUAN	696.7	30.2	50.1	2.1	14.6	0.6	46.4	2.0

Farms: Number, by Tenure of Operator and by Biad (April 1971)

MUNICIPALITY	TOTAL NUMBER OF FARMS	TENURE OF FARM OPERATOR									
		FULL-OWNER	(%)	PART OWNER	(%)	TENANT	(%)	MANAGER	(%)	OTHER FORMS	(%)
BOHOL	61,107	35,741	58.5	16,026	26.2	8,795	14.4	18	0.03	527	0.9
BIAD I	11,748	8,232	70.1	2,849	24.3	517	4.4	-	-	150	1.3
TAGBILARAN	300	255	85.0	20	6.7	25	8.3	-	-	-	-
ANTEQUERA	1,511	447	29.6	1,045	69.2	19	1.3	-	-	-	-
MARIBOJOC	735	685	93.2	40	5.5	10	1.4	-	-	-	-
CORTES	513	271	52.9	137	26.7	78	15.2	-	-	27	5.3
BALILIHAN	1,845	1,359	73.7	426	23.1	48	2.6	-	-	12	0.7
CORELLA	578	459	79.5	99	17.2	20	3.5	-	-	-	-
SIKATUNA	789	617	78.2	132	16.8	34	4.3	-	-	6	0.8
BACLAYON	511	297	58.2	184	36.0	30	5.9	-	-	-	-
ALBURQUERQUE	230	92	40.0	96	41.8	42	18.3	-	-	-	-
LOAY	435	299	68.8	96	22.1	40	9.2	-	-	-	-
LILA	411	401	97.6	10	2.5	-	-	-	-	-	-
LOBOC	801	483	60.3	255	31.9	39	4.9	-	-	26	3.0
SEVILLA	1,114	831	74.6	119	10.7	83	7.5	-	-	81	5.5
DAUIS	1,184	1,032	87.2	147	12.5	5	0.5	-	-	-	-
PANGLAO	791	704	89.0	43	5.5	44	5.6	-	-	-	-
BIAD II	14,712	7,764	52.8	3,830	26.0	3,080	20.9	-	-	38	0.3
TUBIGON	1,703	587	34.5	538	31.6	578	34.0	-	-	-	-
LOON	3,147	2,317	73.7	755	24.0	65	2.1	-	-	10	0.4
CALAPE	1,163	580	49.9	283	24.4	300	25.8	-	-	-	-
CATIGBIAN	2,010	908	45.2	398	19.8	694	34.6	-	-	10	0.5
CLARIN	1,415	825	58.3	256	18.1	328	23.2	-	-	6	0.5
INABANGA	2,197	858	39.1	942	42.9	386	17.6	-	-	11	0.5
BUENAVISTA	1,379	518	37.6	270	19.6	590	42.8	-	-	1	0.1
JETAFE	756	510	67.5	127	16.8	119	15.8	-	-	-	-
SAN ISIDRO	942	661	70.2	261	27.7	20	2.2	-	-	-	-
BIAD III	11,356	8,252	72.7	1,628	14.3	1,444	12.7	11	0.1	21	0.2
TALIBON	1,718	1,381	80.4	217	12.7	120	7.0	-	-	-	-
SAN MIGUEL	1,597	1,566	98.1	24	1.5	2	0.2	-	-	5	0.4
ALICIA	1,538	575	36.2	714	50.0	294	18.5	-	-	5	0.3
MABINI	1,837	1,040	56.7	454	24.8	339	18.5	-	-	4	0.3
TRINIDAD	1,502	1,269	84.5	75	5.0	153	10.2	5	0.4	-	-
UBAY	2,698	2,067	76.7	130	4.9	492	18.3	2	0.1	7	0.3
PITOGO	416	354	85.1	14	3.4	44	10.6	4	1.0	-	-
BIAD IV	11,251	7,020	62.4	3,243	28.8	847	7.5	6	0.1	135	1.2
JAGNA	1,517	907	59.8	503	33.2	101	6.7	6	0.4	-	-
CANDIJAY	1,472	635	43.2	640	43.5	197	13.4	-	-	-	-
GUINDULMAN	1,870	1,494	79.9	303	16.2	58	3.1	-	-	15	0.8
ANDA	1,168	833	71.3	94	8.1	242	20.7	-	-	-	-
DUERO	1,082	904	83.6	148	13.7	30	2.8	-	-	-	-
GARCIA-HERNANDEZ	1,539	969	63.0	442	28.8	40	2.6	-	-	85	5.8
VALENCIA	1,570	684	43.6	738	47.0	116	7.4	-	-	32	2.1
DIMIAO	1,032	594	57.6	375	36.5	63	6.1	-	-	-	-
BIAD V	12,040	4,473	37.2	4,476	37.2	2,907	24.1	1	-	183	1.5
CARMEN	2,825	846	30.0	855	30.3	981	34.9	-	-	143	5.1
BILAR	1,159	307	26.5	736	63.5	116	10.0	-	-	-	-
SAGBAYAN	1,635	546	33.4	420	25.7	662	40.5	-	-	5	0.5
DANAO	1,178	457	38.9	515	43.8	200	17.0	-	-	6	0.5
DAGOHOY	1,038	428	42.3	329	31.7	281	27.1	-	-	-	-
PILAR	1,470	774	52.7	409	27.9	264	18.0	1	0.1	22	0.5
SIERRA-BULLONES	1,551	677	43.7	624	40.3	245	15.8	-	-	5	0.4
BATUAN	1,184	438	37.0	588	49.7	158	13.4	-	-	-	-

Farms: Number, by Size and Biad (April 1971)

MUNICIPALITY	TOTAL NUMBER OF FARMS	SIZE OF FARM: UNDER 1.0 HECTARE	(%)	1.0 AND UNDER 3.0 HECTARES	(%)	3.0 AND UNDER 5.0 HECTARES	(%)	5.0-10.0 (HAS.)	(%)	10.0-25.0 (HAS.)	(%)	25.0-50.0 (HAS.)	(%)	50.0 HAS. AND OVER	(%)
BOHOL	61,107	14,642	23.9	33,330	54.5	10,252	16.8	2,196	3.6	648	1.1	33	0.1	24	0.04
BIAD I	11,748	3,345	28.5	6,839	58.2	1,318	11.2	195	1.7	50	0.4	1	.5	-	-
TAGBILARAN	300	129	43.0	140	46.7	27	9.0	3	1.0	1	0.3	-	-	-	-
ANTEQUERA	1,511	587	38.8	812	53.7	95	6.3	7	0.5	10	0.7	-	-	-	-
MARIBOJOC	735	175	23.8	485	66.0	75	10.2	-	-	-	-	-	-	-	-
CORTES	513	242	47.2	236	46.0	31	6.0	3	0.6	1	0.2	-	-	-	-
BALILIHAN	1,845	310	16.8	1,181	64.0	315	17.1	32	1.7	7	0.4	-	-	-	-
CORELLA	578	62	10.7	413	71.5	103	17.8	-	-	-	-	-	-	-	-
SIKATUNA	789	328	41.6	415	52.6	45	5.7	1	0.1	-	-	-	-	-	-
BACLAYON	511	160	31.3	305	59.7	31	6.1	15	2.9	-	-	-	-	-	-
ALBURQUERQUE	230	146	63.5	84	36.5	-	-	-	-	-	-	-	-	-	-
LOAY	435	134	30.8	217	49.9	57	13.1	15	3.4	12	2.8	-	-	-	-
LILA	411	204	49.6	161	39.2	46	11.2	-	-	-	-	-	-	-	-
LOBOC	801	169	21.1	439	54.8	142	17.7	41	5.1	10	1.2	-	-	-	-
SEVILLA	1,114	187	16.8	717	64.4	163	14.6	39	3.5	8	0.7	-	-	-	-
DAUIS	1,184	384	32.4	697	58.9	85	7.2	18	1.5	-	-	-	-	-	-
PANGLAO	791	128	16.2	537	67.9	103	13.0	21	2.7	1	0.1	1	0.1	-	-
BIAD II	14,712	4,048	27.5	7,960	54.1	2,307	15.7	314	2.1	71	0.5	8	0.1	4	-
TUBIGON	1,703	638	37.5	846	49.7	184	10.9	29	1.7	5	0.3	1	0.1	-	-
LOON	3,147	1,841	58.5	1,200	38.1	102	3.2	4	0.1	-	-	-	-	-	-
CALAPE	1,163	368	31.6	637	54.8	151	13.0	7	0.6	-	-	-	-	-	-
CATIGBIAN	2,010	196	9.8	1,381	68.7	396	19.7	25	1.2	11	0.5	1	-	-	-
CLARIN	1,415	288	20.4	833	58.9	242	17.1	41	2.9	11	0.8	-	-	-	-
INABANGA	2,197	401	18.3	1,239	56.4	476	21.7	77	3.5	3	0.1	1	-	-	-
BUENAVISTA	1,379	206	14.9	746	54.1	340	24.7	59	4.3	21	1.5	4	0.3	3	0.2
JETAFE	756	85	11.2	370	48.9	228	30.2	52	6.9	19	2.5	1	0.1	1	0.1
SAN ISIDRO	942	25	2.7	708	75.2	188	20.0	20	2.1	1	0.1	-	-	-	-
BIAD III	11,356	1,515	13.3	6,001	52.8	2,692	23.7	849	7.5	277	2.4	11	0.1	11	0.1
TALIBON	1,718	227	13.2	991	57.7	319	18.6	128	7.5	50	2.9	3	0.2	-	-
SAN MIGUEL	1,597	71	4.4	944	59.1	461	28.9	102	6.4	18	1.1	-	-	1	0.1
ALICIA	1,588	137	8.6	918	57.8	375	23.6	112	7.1	45	2.2	1	0.1	-	-
MABINI	1,837	611	33.3	906	49.3	206	11.2	94	5.1	19	1.0	1	0.1	-	-
TRINIDAD	1,502	83	5.5	752	50.1	377	25.1	207	13.8	75	5.0	2	0.1	6	0.4
UBAY	2,698	298	11.0	1,311	48.6	822	30.5	198	7.3	62	2.3	3	0.1	4	0.1
PITOGO	416	88	21.2	179	43.0	132	31.7	8	1.9	8	1.9	1	0.2	-	-
BIAD IV	11,251	3.714	33.0	6,107	54.3	1,193	10.6	214	1.9	18	0.2	5	-	-	-
JAGNA	1,517	823	54.3	621	40.9	59	3.9	14	0.9	-	-	-	-	-	-
CANDIJAY	1,472	334	22.7	814	55.3	256	17.4	64	4.3	4	0.3	-	-	-	-
GUINDULMAN	1,870	545	29.1	1,180	63.1	125	6.7	14	0.7	6	0.3	-	-	-	-
ANDA	1,169	210	18.0	762	65.2	181	15.5	16	1.4	-	-	-	-	-	-
DUERO	1,082	521	48.2	459	42.4	98	9.1	4	0.4	-	-	-	-	-	-
GARCIA-HERNANDEZ	1,539	262	17.0	987	64.1	256	16.6	28	1.8	4	0.3	2	0.1	-	-
VALENCIA	1,570	663	42.2	730	46.5	127	8.1	44	2.8	4	0.3	2	0.1	-	-
DIMIAO	1,032	356	34.5	554	53.7	91	8.8	30	2.9	-	-	1	0.1	-	-
BIAD V	12,040	2,002	16.6	6,423	53.3	2,742	22.8	624	5.2	232	1.9	8	0.1	9	0.1
CARMEN	2,825	304	10.8	1,548	54.8	801	28.4	116	4.1	51	7.8	5	0.2	-	-
BILAR	1,159	512	44.2	537	46.3	88	7.6	20	1.7	-	-	-	-	-	-
SAGBAYAN	1,635	281	17.2	912	55.8	356	23.8	59	3.6	23	1.4	2	0.1	2	0.1
DANAO	1,178	132	11.2	543	46.1	376	31.9	86	7.3	40	3.4	1	0.1	-	-
DAGOHOY	1,038	52	5.0	487	46.9	326	31.4	139	13.4	34	3.3	-	-	-	-
PILAR	1,470	93	6.3	810	55.1	408	27.8	109	7.4	47	3.2	-	-	3	0.2
SIERRA-BULLONES	1,551	354	22.8	863	55.6	246	15.9	60	3.9	26	1 7	-	-	2	0.1
BATUAN	1,184	274	23.1	723	61.1	141	11.9	35	3.0	11	0 9	-	-	-	-

CHAPTER 23
LAND USE PLANNING

CHAPTER 23 LAND USE PLANNING

23.1 Geology

Predominating components of geology of Bohol Province consist of Miocene shale, sandstone and limestone. Miocene shale and sandstone occupy one third of the north eastern half of the Province and very thick non-crystalline limestone extends almost to the south western half of the Province together with well bedded sandstone and shale sequence of calcareous clastics derived from the surrounding limestone formation.

In the central part of the province, Lower Middle Miocene volcanic rocks are found although they extend only over a limited area.

In the northern part of the Province, Cretaceous-Paleogene slightly metamorphosed shale, sandstone and volcanics are found together with Upper Cretaceous-Paleogene massive body of diorite intrusion.

Intrusion of Upper Cretaceous-Paleogene ultrabasics into the metavolcanic and metasedimentary complex and Cretaceous-Paleocene basaltic volcanics flow are also found on the northern side of the Province.

Fluviatile alluvium is found only to a limited extent along the north and west coast lines.

23.2 Physiography

The general feature of the Bohol Province is a rather low lying terrain on the coast lines except Sagungan Mountain located at the south eastern part of the Province.

The highest peak of the mountain reaches 800 meters above sea level (A.S.L.) and mountain mass extends to the north western direction from Abilihan to Catugdaan occupying about 15% of the whole Province. The mountain consists of well compacted and crystallized thick limestones. The south eastern slopes of the mountain are very steep and deeply dissected by mountain streams flowing into the Mindanao Sea crossing a narrow strip of coastal plain below the slopes. The slopes on the north western side of the mountain are also steep and deeply dissected succeeding to the karst plateau.

A part of the higher altitude karst plateau ranging from 200 to 400m A.S.L. is lying on the thick and extensive limestones consisting mostly of soft and porous coralline limstones and some of slightly crystalline. A wide spread karst land form is predominating characterized by the chocolate hills.

The lower altitude karst landform extends to the further south west, occupying almost 30% of the south western part of the island together with the higher plateau.

The fringe of karst landform along the coast line is moderately to highly denudated.

Adjacent to the higher altitude plateau, there is an extensive moderately dissected or rolling terrain of metamorphic rocks and an undulating terrain of sedimentary rocks.

The altitude of both types of terrain is reduced gradually towards the coast lines.

There is a landform of low rolling hills with alluvial valleys developed on basic volcanic rocks on the north western corner of the Province to the southeast of Ubay.

A narrow strip on the southern coast line and the eastern end of the Province around Tagbilaran are karst plains on coralline limestone.

Along the coast line of the northern half of the island, there are narrow intermittent patches of mangrove swamps.

Coastal alluvial plain occurs only to a limited extent on the north western part of the province.

23.3 Soil Condition

Hydrosol appears on the patchy areas along the coast lines and mouths of the rivers. However the distribution of this soil is limited in areas covered by tuber producing plants and nipa.

At the mouth of streams and on the level lands along the coast line where deposition takes place, soils derived from secondary origin carried down from the higher elevations, characterized dark brown to brownish gray clay loam underlain by silty clay to sandy clay subsoil, are found. Although its distribution is limited to a narrow extent, due to level topography and its moisture condition, the soil profile is well developed for suitable agricultural production. The principal crop grown on this soil is rice.

Ubay series is the largest group of soils distributing in the north eastern part, covering about one third of the whole province. It has a wide range of topographic features from undulating areas around Ubay to the rolling and steep hills near Carmen and Sierra Bullones. In the more elevated sections are found depressions between hills which are more or less level where lowland rice is grown.

The soil dries up easily because of its physical nature. This is conditioned by its rolling relief and porous subsoil and stratum which results in easy percolation of water. The area is partly cultivated and planted to rice, corn, coconut, banana, sweet potato and cassava. The uncultivated areas are used for grazing.

Ubay series is further classified into three groups of soils according to the major components of soil: sandyloam, clay loam and clay. Sandy loam is found in a wide area along the coast line around Ubay.

This type is not much cultivated. Because of the sandy nature of the surface soil, it is not adapted to the cultivation of rice. The

porous subsoil and substratum make this a poor rice land. The land covered by this type of soil is used mainly for grazing purposes.

Clay loam is found along the upper Inabanga River in the middle part of the island. This soil is relatively fertile and is suitable for several kinds of crops like corn, sugar cane, rice, cassava and vegetable. The land covered by this type of soil is much more intensively cultivated compared with sandy loam area.

Clay soil of Ubay series comprises the biggest unit area (20%) of the province. The land of the upper terrace in this series is more rough than in either of the above two types. In the more hilly portions of the area are small narrow rice fields. Various kinds of crops are cultivated similar to the clay loam area.

In the south western half of the province, there appear only shallow poorly developed soils with 10cm to 25cm of top soil underlying calcareous shale, sandstones and limestones on various kinds of topography.

23.4 Present State of Land Use

The major industry in the province is agriculture. Agricultural production including staple food and cash crops has been playing the most important role in the economy of Bohol. The same situation can be expected in the future although some other sectors of industries will also attain greater development. In the light of the above, the analysis of land use in the province is focused on agriculture.

Past records indicate that in 1903 the arable land was 14% of the total area of the province and only 40% of it was cultivated. Since then the area of the arable land has been continuously increased. At present, the total arable land is 311,000 has. Out of this, 105,000 has. (34%) is cultivated for various kinds of crops.

Distribution of land use by crop type is shown in Table 23.2. Almost a half of the total cultivated land is used for non-permanent crops and the rest is planted by permanent crops.

Rice occupies almost a half of the non-permanent crop land and the rest is used for corn and other non-permanent crops like root crops, sugar cane and others. The major permanent crop is coconuts. The rate of the cumulative land use of non-permanent crops is estimated at 167%. An average rate of cumulative land use including permanent crops is 135% in the province.

As regards agricultural lands of rice cultivation, it appears that BIADs IV and V hold almost 50% of lands in the province with the highest rate of irrigation coverage in the rice fields. This may well be attributed by the fact that availability of water and farm lands in these two areas, is relatively high.

The size of land tenure of each household in the province is given in Table 23.1.

Table 23.1 Size of Land Tenure

	BIAD \ Farm size	0 – 1ha	1 – 3	3 – 5	5 – 10	10 – 25	25 – 50	50 –	Total (Real)	Average Farm Size(1971)
Farm number's ratio	I	.2847	.5821	.1122	.0166	.0043	.0001	–	1,000 (11.748)	1.78ha
	II	.2751	.5411	.1568	.0213	.0048	.0005	.0003	1,000 (14.712)	1.88
	III	.1334	.5284	.2370	.0748	.0244	.0009	.0009	1,000 (11.356)	3.55
	IV	.3301	.5428	.1060	.0190	.0016	.0004	–	1,000 (11.251)	1.70
	V	.1663	.5335	.2277	.0518	.0193	.0007	.0007	1,000 (12.940)	2.82
	Total	.2393	.5454	.1678	.0359	.0106	.0005	.0004	1,000	
	(Real)	(14,624)	(33,330)	(10,252)	(2,196)	(648)	(33)	(24)	(61,107)	2.32
Farm Area's ratio	I	.0919	.5745	.2402	.0594	.0319	.0021	–	1,000 (19.851)	
	II	.0771	.4862	.3074	.0719	.0352	.0094	.0127	1,000 (27.696)	
	III	.0190	.2605	.2394	.1339	.0975	.0091	.2406	1,000 (41.413)	
	IV	.1103	.5660	.2310	.0732	.0118	.0077	–	1,000 (19.100)	
	V	.0336	.3361	.2971	.1225	.0988	.0081	.1037	1,000 (34.010)	
	Total	.0563	.4076	.2654	.1005	.0650	.0078	.0975	1,000	
	(Real)	(7,995)	(57,901)	(37,713)	(14,282)	(9,232)	(1,103)	(13,845)	(142,070)	

Source: MEDA-NCSO, Bohol - 1971 Census of Agr., 1974
Note: "(Real)" unit = ha.

It is observed that there is an apparent difference in the distribution of an average size of farmland per household as summarized below:

1. BIAD III 3.6 ha
2. BIAD V 2.8 ha
3. BIAD I, II and IV 1.7 ha - 1.8 ha

However, the above tendency does not indicate the level of income per household. The source of income per household is summarized in Fig. 23.1. In BIAD V, most of the households are relying their agricultural source income while BIAD I and IV there are more households of off-farm income (craftsmen and production workers).

General tendency in the ratio of entirely farm holding households of the total households in each BIAD is assumed to be in the following relationship:

BIAD V BIAD III average of the province BIAD II BIAD I BIAD IV

Present state of the productivity in agriculture, in relation to the size of land tenure and land use, is summarized in Fig. 23.2.

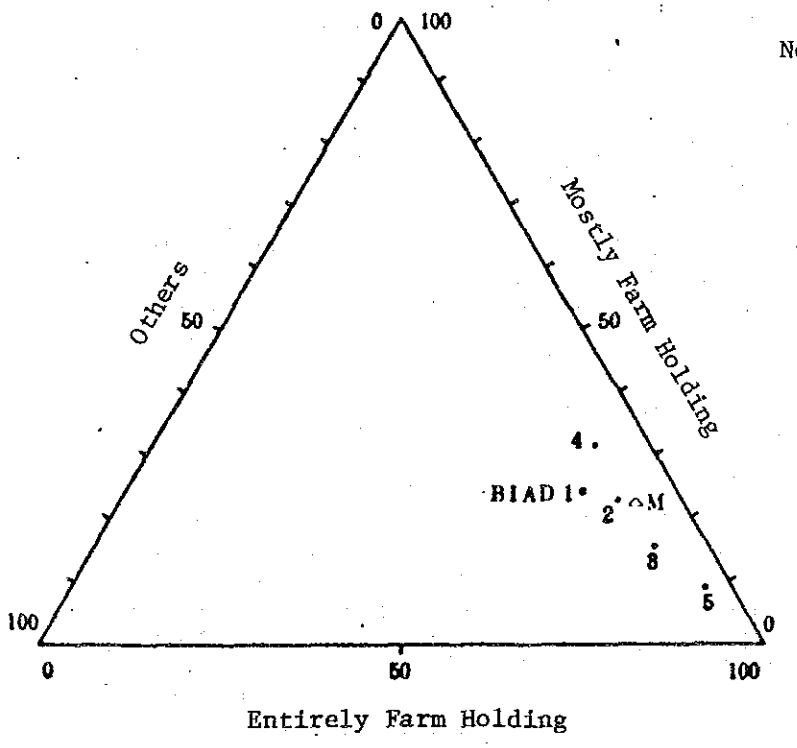
In the figure, it is indicated that BIAD IV has the highest productivity with the minimum size of an average land per household. As shown above, this BIAD has the highest coverage of irrigation with a relatively large size of the total cultivated land among five BIADs. On the other hand, a major part of the area consists of the mountain slopes of Mt. Sagungan and only limited extent of coastal plains.

Table 23.2 Distribution of Land Use by Crop Type

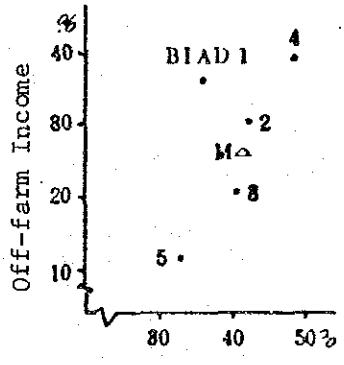
	Sort of Crops	(1) Physical Area	(2) Effective Area	(2)/(1) x 100
Temporary Crops	Palay	29,559 ha	51,306 ha	174 %
	Corn	14,462	27,225	188
	Root Crops	10,189	13,068	128
	Sugarcane	260	262	101
	Tobacco	167	216	129
	Others	1,272	1,711	135
	Sub-Total	55,909	93,572	167
Permanent Crops	Coconut	39,257	-	100
	Cacao	326	-	100
	Coffee	409	-	100
	Abaca	289	-	100
	Fruit Crops	9,408	-	100
	Others	1,791	-	100
	Sub-Total	51,480	51,480	100
Grand Total		107,389	145,052	135

Source: Bohol-1971 Census of Agr., 1974

Fig. 23.1 SOURCE OF INCOME BY BIAD



Notes: Relation between Off-Farm Income and Craftsmen/Production Workers.



Source: Bohol-1971 Census of Agr., 1974

By these facts it is envisaged that highly intensified land use is maintained in this BIAD, In addition, a significant aspect of this BIAD is that the dependence of the source of income on entirely farm holding is minimum in the province.

Crop value per capita in BIAD V is almost in the same level as that of BIAD IV and the major source of income depends on agriculture in the area. However, crop value productivity of physical land is relatively low compared with that of BIAD IV although farmland size is much larger than that of BIAD IV. Therefore, improvement of the farming system would be urgently required in this area in the future. Since this BIAD is located in the central highland, water availability is relatively fair especially at the south western part. However, due to geological condition, most of the area is covered by karst land form. Accordingly, the productivity of the soils associated in this area are rather poor. Under the circumstances, irrigation has to be applied as much as possible even in a small size and the remaining vast area would be utilized for rainfed agriculture of drought resistant crops.

In BIAD III, the crop value productivity of physical land is the minimum and the farmland size is the maximum among the five BIADs. At the same time about 80% of the source of income depends on agriculture. The physiography of the area is relatively flat terrain with partly undulating to rolling hills. In comparison with other areas, the soils are relatively fertile developed on shale, sandstone and partly basaltic volcanics. In addition, the south western half of the area is moderately wet with rainfall. It is, therefore, the existing potential in agricultural development had to be fully utilized in this area.

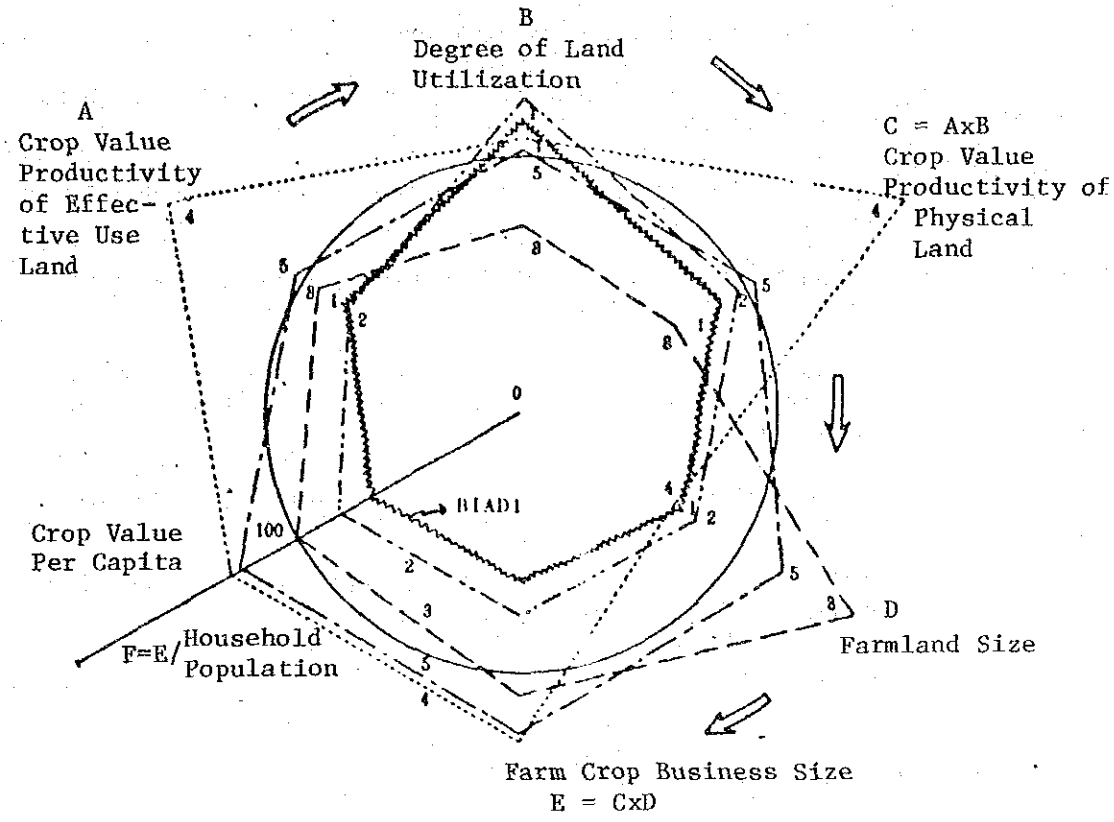
In BIAD I and II, both of the areas hold the highest degree of land use, however, productivity, farmland size and crop value per capita are minimum compared with the other areas.

This is attributed to the fact that percentage in the source of income relying entirely on farm holding is relatively low, and in fact, there are more households other than entire-farm-holding in these two areas together with BIAD IV in comparison with the others.

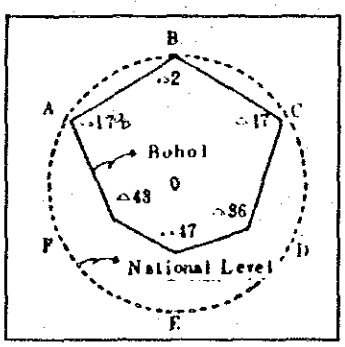
23.5 Future Land Use Planning

The detailed land use plan for Bohol should be made in the final planning stage and be based on an optional allocation of resources in terms of the long range developmental programs. Since the land use inventory data will be collected during a later project stage, a rough indication of the land use zones is given below in terms of general spatial conditions and integrated area developmental objectives.

Fig. 23.2 PRESENT STATE OF THE AGRICULTURAL PRODUCTIVITY



Notes



Item-F Rank \ BIAD	Distribution of Municipalities in each BIAD					
	I	II	III	IV	V	Bohol
Higher 41 ∿10	–	1	2	4	3	10
Middle 11 ∿37	7	7	4	4	5	27
Lower 38 ∿47	8	1	1	–	–	10
Total	15	9	7	8	8	47

Legend

A : Crop value productivity of effective land use
B : Degree of land use
C : Crop value of productivity of physical land (A x B)
D : Farm land size
E : Farm crop business size (C x D)
F : Crop value per capita (E/household population)

BIAD I
II
III
IV
V
Total

Source : NEDA-NCSO, 1971 Census of Agriculture, 1974

Location of general land use zones and area

1) Irrigation Oriented Agriculture Zone: eastern hinterland areas

2) Dry-Farming Oriented Agriculture: western hinterland areas

3) Paddy and Coconut Oriented Agricultural Zone: southern coastal areas

4) Coconut and Fruit Agricultural Zone: northern coastal areas of Bohol

5) Urban Vegetable and Coconut Oriented Agriculture Zone: coastal areas of BIAD II

6) Industrial Development and Urban-Vegetable Oriented Zone: western coastline belt area lying between Tubigon and Tagbilaran

7) Fisheries Oriented Zone: eastern coastal area of Bohol centered around Cogtong Bay

8) Tourism Oriented Areas: various sites such as Chocolate Hills Panglao and Baclayon areas

Spatial conditions and objectives of each classified zone or area are summarized below.

1. Irrigation Oriented Agriculture Zone

(a) Spatial condition

Undulating to flat terrain is the predominating topography. Soils are relatively fertile.

Availability of water is fairly high especially the south western part.

At present productivity of agriculture is relatively low but lands are available.

Required improvement of social infrastructure, especially transport, communication and water supply.

(b) Objectives

- Extension of national and communal irrigations and improvement of agricultural productivity.
- Soil and water conservation.
- Forestation

2. Dry-Farming Oriented Agriculture Zone

(a) Spatial condition

Relatively flat land and karst land form are predominating.

Soils are generally poor, and soil erosion is prevailing. Moderate rainfall but availability of surface water is low. Present agricultural productivity is relatively low but lands are available.

Required improvement of social infrastructure, especially transport, communication and water supply. Required ground water development.

(b) Objectives

- Improvement of agricultural production and extension of dry farming with drought resistant crops.
- Soil and water conservation.
- Forestation

3. Paddy and Coconut Oriented Agriculture Zone

(a) Spatial Condition

On the slopes of Mt. Sagungan, the availability of lands is limited and lands are used intensively with irrigation. Surface water is available. Agricultural productivity is relatively high.

Improvement is required for road, bridges, water supply.

(b) Objectives

- Improvement of irrigation, especially small scale communal irrigation system for intensified land use.
- Increase in coconut production.
- Soil and water conservation.
- Forestation

4. Coconut and Fruit Oriented Agricultural Zone

(a) Spatial condition

Undulating to flat topography is predominating. Medium fertility of soils in the province. Lands are available but low productivity. Relatively high rainfall in the western part of the area. Partly surface water available.

Required improvement of social infrastructure, transport, communication and water supply. Groundwater development is necessary.

(b) Objectives

- Increase in production of fruits and coconuts.

5. Urban Vegetable and Coconut Oriented Agricultural Zone

(a) Spatial condition

Hill slopes and narrow strips of coastal plains are predominating topography. Soil fertility is moderate. Availability of land is limited and lands are used intensively. Availability of surface water is relatively poor.

Improvement of social infrastructure required for road bridges, water supply. Required groundwater development.

(b) Objectives

- Extension of urban-oriented vegetables.
- Increase in coconut production.
- Improvement and extension of small scale irrigations.
- Forestation

6. Industry and Urban-Vegetable Oriented Zone

(a) Spatial condition

Coralline plains are predominating topography. Concentration of population and services of social infrastructures.

Availability of surface water is relatively poor. Practice of cottage industries is developing. Required groundwater development.

(b) Objectives

- Aggregation of medium scale industries.
- Extension of intensified vegetable production.

7. Fisheries Oriented Zone

(a) Spatial condition

Suitable port site at Cogtong Bay and preferable condition for aquaculture in the area. Marine and inland resources are available.

(b) Objectives

- Increase in fishery production
- Establishment of fishery processing industry for domestic and foreign markets.
- Development of distribution system of fish within Bohol.

8. Tourist-Oriented Areas

(a) Spatial condition

Competitive resources against Cebu Island are available in a preferable distance from Tagbilaran City.

(b) Objectives

- Increase in numbers of tourists from domestic and foreign markets.

CHAPTER 24
INTER-SECTORAL LINKAGES OF DEVELOPMENT PROGRAMS AND PROJECTS

CHAPTER 24 INTER-SECTORAL LINKAGES OF DEVELOPMENT PROGRAMS AND PROJECTS

24.1 Introduction

The spatial development strategy and land use plan are concerned with the distribution problems of how economic roles and land use are to be optimally allocated in the different areal zones in Bohol. They constitute the large regional development framework within which the resource potentials are to be developed for achieving the overall and long range objectives of the Bohol economy. In addition to this spatial organization of the Bohol economy, what is required for the integrated area development plan is a structural consideration of how various sectors of Bohol's socio-economic fabric should be productively integrated. This is a very important structural problem area of industrial development policy, i. e., of how the industrial structure of the Bohol economy is to be determined in the future.

However, this industrial analysis can only be made when a sufficient amount of statistical data is available to development planners. Such needed economic statistics are input/output table, regional commodity flow, number of employment by industry, domestic final demand of Bohol as well as of other regions with which Bohol is closely related. It is highly desirable that development staff specialists will generate in the future such statistical data necessary for quantitative analysis and projections.

At present an industrial analysis of macro-framework cannot be made upon the Bohol economy. The best we could do about this problem is to approach it from the micro-level. Some statistical analysis at the micro-level calculations could be made upon such problems as: 1) what kind of economic effects could be generated by the high impact programs/projects, 2) how are they mutually linked with each other so as to create "multiplier effects" on Bohol's economy, 3) how much could they contribute to a rise in Net Provincial Product (NPP), 4) what are labor generating effects, etc.

Undoubtedly, the socio-economic analysis of the programs/projects is one of the most important tasks of the feasibility study. Detailed evaluations of various factors involved in their socio-economic effects should be made later when the feasibility study is made upon them. In this section, brief explanations will be made on the following: 1) a general framework of inter-sectoral industrial linkage of the socio-economic devellpment in Bohol, and 2) some of the important issues directly related with the high impact projects and integrated area development plan for Bohol.

24.2 Inter-Sectoral Linkage of Socio-Economic Development in Bohol

24.2.1 General Framework of Industrial Linkage

1. The Policy Measures for Economic Development in Bohol

As often pointed out, economic development tends to show certain fixed patterns of development for any country, region or area. Some of the notable examples are:

1) a shift of industrial structure from primary industry-centered one to secondary and tertiary industry-centered one

2) that development is apt to take place according to a certain stepwise evolutional pattern: traditional society--formation of preconditions for take-off--the take-off period--the drive to maturity--the stage of high-mass consumption--the stage of diminishing marginal utility of income; need for development of "leading sector or industry"

3) dissolution of dualistic economic structure, i.e., reduction of gap existing between modern industrial and urban sector, and traditional and agricultural sector

4) maintenance of appropriate level of capital coefficient

5) formation of income multiplier effects

If these general economic development patterns are equally applicable to Bohol, development planners of the Bohol province must take into their policy consideration the following:

Firstly, a long term development plan should be formulated for Bohol in order to stimulate the development of secondary and tertiary industries. In 1975, the industrial composition of employment was primary sector 64.8%, secondary sector 12.4%, and the rest 22.8%. This pattern of share should be gradually changed in favor of the non-primary sector, reflecting the projected changes in Bohol Net Provincial Product (NPP) which was already explained in Part One. This change is desirable primarily because the secondary industry based industrial structure will accelerate the growth rate of NPP. It must be noted that the potential NPP growth rate of the Bohol economy is determined by two factors: one is the rate of growth in labor productivity and the other is the growth rate of labor force in Bohol.

So long as the Bohol economy remains to be agriculture-based, neither a high rate of economic growth nor a rapid expansion of labor market can be expected in the future.

Secondly, W. W. Roston's now famous theory of stepwise economic development does provide insightful and strategic messages to the development planners in Bohol. Since this theory has already become common knowledge among the development planners, only the following note worthy points with regard to the preconditions of taking-off of the Bohol economy are mentioned here as follows:

1) Need for incessant increase in per capita income

2) Rate of agricultural productivity higher than the population growth

3) High rate of savings enabling a high rate of net investment ratio ($\Delta K/Y$; where Y: net production and ΔK: net investment) ranging from 5% to 10%

4) Development of a leading industry inducing the rapid development of the rest of the economy

One of the crutial factors stagnating the Bohol economy in the past is that neither agriculture nor any other industry in Bohol succeeded in playing a leading role to give stimuli to the development of the Bohol economy. A strategic consideration must be made by the development planners as to how such a leading industry can be effectively cultivated by fully utilizing the comparative advantage of resources available in Bohol.

Thirdly, it must be well reconized that regional disparities existing in the Philippines, particularly between Metro Manila Area (MMA) and the rest of provinces, are the epiphenomena of dualistic economic structure which characterizes the Philippine economy. It is observed that Bohol in the past acted as a traditional economic sector in the Philippines and its main role was to supply its surplus labor to the industrial sector. This fact served the Bohol economy in both beneficial and non-beneficial ways. On one hand, because of free labor mobility, Bohol could reduce the economic burdens of "disguised employment" or underemployment contributing in part to optimum allocation of labor in the Philippine economy. On the other hand, Bohol lost a substantial amount of productive labor force which partly caused the stagnation of the Bohol economy. In the short run, this dualistic structure of the Philippine economy cannot be drastically changed, necessitating that the Bohol economy remains to be ancillary or complementary to advanced industrial areas of the Philippines. However, in the long run, Bohol must ameliorate her conditions through implementation of industrial development policy measures such as the development of agro-business and processing industries fully taking advantage of the resources available in Bohol.

Fourthly, as will be described in chapter 25, the financial resources have been poor in Bohol and the provincial government has had to rely upon internal revenue allotment from national government even just to cover its operating expenses. As a result, little capital funds were available for investment which could stimulate the Bohol economy. In effect, the capital accumulation has remained low resulting in the high marginal coefficient of capital. The low economic growth was in part caused by its high marginal coefficient of capital combined with its low rate of savings ($\Delta Y/Y = s/v$ where $\Delta Y/Y$: production growth rate; s: saving ratio, and v: marginal coefficient of capital). It is obvious that one of the important policy measures is to

stimulate the Bohol economy by government expenditure, particularly by public investments on industrial infrastructure which can lift up the productivity of economic sector in Bohol.

Fifthly, it is a matter of necessity for the development planners of the Bohol province to duly consider how the income multiplier will effectuate the economic development of the Bohol economy. As is well known among development economists, the economic growth can be accelerated by the effects of income multiplier. One important policy variable, which the development planners can take resource to, is the investment multiplier ($Y = (1/s)I$ or $\Delta Y/\Delta I = 1/s$ where Y: income; s: marginal propensity to save I: investment). However, in the case of Bohol, the investment multiplier cannot be oeprative primarily because of the lack of financial resources and also because of the low level of economic activity or lack of opportunities upon which investment can be made. As a result, the policy planners may have to use other exogenous policy variable which will produce income multiplier effects. The strategic tool that should be used by the policy planners is the export multiplier, in that export is to be used as the source of "basic income" for the Bohol economy. This *export multiplier effect is expressed as :* $Yt = \left(\frac{1}{1 - \frac{Yn}{Yt}}\right) \cdot \Delta Yb$ where Yt: total income, Yb: basic income, and Yn: non-basic income.

This is one of the reasons why it is maintained in the present study that export-oriented industry should be developed in Bohol, particularly catering to the market demand of consumer and industrial goods in Metro Cebu, the major industrial growth pole in Region VII.

2. Policy Problems of Industrial Linkage

However, it must be understood that policy measures at the command of the development policy planners of the Bohol province can be effectively applied to Bohol only when they have a full recognition of how inter-sectoral industrial linkage operates in the Bohol economy.

The development strategy of the Bohol industry must be formulated on the basis of clear understanding of the nature of different industrial structural changes. The first type of change will take place relative to the "industrial mix" of the Bohol economy. This change often occurs when a new industry develops and older industry declines in term of their share of production. The vitality of the Bohol economy will be given extra-strength when a new industry of high industrial linkage effects emerges. The second type is a change in the "composition each industry's share" which is caused by the increase or decrease of capital stocks, employment, and productivity of constituent industries of the Bohol economy. The third type of change, which is most *important for a dynamic development of the Bohol economy, is a* structural change in industrial linkage or input/output relation of the Bohol economy. It must be recognized that the more industries in Bohol become developed and diversified, interlocked with each other, the higher the industrial linkage effects

become so as to raise the production level of the Bohol economy through the activation of the "inducement mechanism".

In general, there are two types of "inducement mechanisms" of industrial linkage observed in activating industrial productions in any country. The one is called "forward linkage effect" which implies that the development of one industry makes it possible to supply the materials to be used by other industries for their input. The other is called "backward linkage effect" which implies that the development of one industry will create a demand for its input materials which in turn stimulates other industries producing them. These two-way linkage effects of the inducement mechanism should be clearly understood by the development planners of Bohol.

In order to frame a long term development policy for the Bohol province on the basis of careful assessment of its industrial linkage mechanism, it is highly desirable that the industrial input/output table will be drawn up for the Bohol economy in the future. Once this table is made available to the development staff, it will become relatively easy for them to formulate a comprehensive development plan as to: 1) determination of the volume of production necessary for each industry to meet the final demand estimated for each sector, 2) projection of input materials required for each industry, 3) degrees of forward and backward linkage-effects of the development of a specific industry, etc. A typical example of such an input/output table is shown in Table 24-1.

24.2.2 Industrial Linkage Structure of the Bohol Economy

1. Industrial Linkage Structure of the Philippine Economy

The latest input/output table available to us is 1969 Inter-industry (Input/Output) Accounts of the Philippines published by NCSO of NEDA. Judged from the comparative level of per capita income of the present Bohol economy with the Philippine national economy in 1969, there is good reason to use this table for evaluating the industrial linkage structure in Bohol. Before going into the technical explanation, the terms used in input/output table should be briefly defined.

1) From the prototype of the input/output table shown in Table 24-1, technical coefficient (aij) is defined as:

$$aij = \frac{Xij}{Xi} \quad \ldots\ldots\ldots (1)$$

The meaning of the technical coefficient (aij) is "production price of i-industry required for producing one unit of j-industry"

Table 24.1 Industrial Input/Output Table

			Intermediate Demand							Final Demand				Industrial Production
			Sectoral Demand (j)							Demand Item				
			1	2	3	.	.	.	n	C	I	G	E	
Intermediate Input	Production Sector (i)	1	X_{11}	X_{12}	X_{13}	.	.	.	X_{1n}	C_1	I_1	G_1	E_1	X_1
		2	X_{21}	X_{22}	X_{23}	.	.	.	X_{2n}	C_2	I_2	G_2	E_2	X_2
		3	X_{31}	X_{32}	X_{33}	.	.	.	X_{3n}	C_3	I_3	G_3	E_3	X_3
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		.	.	.	.				.	.	.	.	.	.
		n	X_{n1}	X_{n2}	X_{n3}	.	.	.	X_{nn}	C_n	I_n	G_n	E_n	X_n
Import			M_1	M_2	M_3	.	.	.	M_n	M_C	M_I	M_G		
Value Added		W	W_1	W_2	W_3	.	.	.	W_n					
		π	π_1	π_2	π_3	.	.	.	π_n					
		D	D_1	D_2	D_3	.	.	.	D_n					
		T	T_1	T_2	T_3	.	.	.	T_n					
Industrial Production			X_1	X_2	X_3	.	.	.	X_n					

Note: Xi : (i) industry's production
Xij : industrial input from (i) industry to (j) industry
Ci : consumption demand for (i) industry's product
Ii : investment demand for (i) industry's product
Gi : government expenditure demand for (i) industry's product
Ei : export demand for (i) industry's product
Mj : import to (j) industry
Wj : (j) industry's payment to workers
πj : (j) industry's retained earning
Dj : (j) industry's capital costs
Tj : (j) industry's payment of tax (minus subsidy)

2) When it is defined:

$$\text{Production Vector } X = \begin{pmatrix} X1 \\ X_2 \\ \vdots \\ X_n \end{pmatrix} \quad \ldots\ldots\ldots\ldots (2)$$

$$\text{Final Demand Vector } Y = \begin{pmatrix} Y_1 \\ Y_2 \\ \vdots \\ Y_n \end{pmatrix} \quad \ldots\ldots\ldots\ldots (3)$$

$$\text{Square Matrix } A = \begin{pmatrix} a_{11} & \cdots & a_{1n} \\ \vdots & & \vdots \\ a_{n1} & \cdots & a_{nn} \end{pmatrix} \quad \ldots\ldots (4)$$

Then the following equation is derived:

$$X = AX + Y \quad \ldots\ldots (5)$$

$$X = [1 - A]^{-1} Y \quad \ldots\ldots (6)$$

3) The equation (5) implies that the industrial production equals intermediate production (AX) plus final demand (Y), and the equation (6) also implies that if the final demand is estimated, then calculation can be made upon the volume of production required for each industry. It must be further noted that $[1 - A]^{-1}$ indicates an inverse matrix of technical coefficients (aij).

Table 24-2 shows the technical coefficients of selected industries which are conceived as high in development potential in Bohol. From these figures the following can be observed:

1) As for agriculture and fishery sector, 9 commodity items were selected and their features are: (a) in general, added-value ratio is high in agriculture particularly in vegetables and root crops and labor distribution ratio is also high indicating that these commodities require little input from other industrial sectors, i. e., low in the backward linkage effects, and that they are naturally of labor intensive type; (b) Root crops, vegetables, fruits and nuts, corn, palay, and fisheries are to be highly recommendable to Bohol in terms of the value added ratio.

2) As noted in Part One and Two, Bohol is relatively rich in limestone, silica and the like. It is shown, however, in the table that non-metallic mining and quarrying industry is purely exploitative with little input from other industries.

Table 24.2 Technical Coefficients of Inter-Industry Input/Output, 1969 (1)

	Palay	Corn	Fruit & Nuts	Vege-tables	Tubers & Root Crops	Coconuts & Copra	Live-stock	Poultry	Fisheries	Non-Metallic Mining & Quarrying	Meat Products	Rice Milling
Agriculture, Livestock Fishery & Forestry	0.04026	0.04037	0.04229	0.01512	0.02557	0.22475	0.09669	0.14656	0.01842	0.00874	0.58742	0.82278
Mining	0.0	0.0	0.0	0.0	0.0	0.0	0.00075	0.0	0.00210	0.0	0.00008	0.0
Manufacturing	0.03696	0.02858	0.03658	0.02624	0.01020	0.00938	0.08444	0.16512	0.06774	0.07287	0.05043	0.00559
Electricity, Gas & Water Services	0.0	0.0	0.0	0.0	0.0	0.0	0.00236	0.00335	0.00197	0.00042	0.00086	0.00029
Construction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00134	0.0	0.00017
Commerce	0.01580	0.01407	0.01335	0.00810	0.00408	0.01863	0.02629	0.03403	0.01923	0.02077	0.14568	0.06965
Transportation & Communication	0.00407	0.01073	0.00607	0.00484	0.00223	0.01109	0.00741	0.00683	0.00990	0.02412	0.02153	0.01104
Services	0.02029	0.02093	0.00547	0.0	0.0	0.00310	0.00383	0.00154	0.01444	0.01032	0.00222	0.00263
Input Sub-Total	0.11737	0.11468	0.10376	0.05431	0.04208	0.26695	0.22176	0.35744	0.13380	0.13857	0.80822	0.91215
Value Added (Wages & Salaries) 2)	0.88263 (0.50501; 57.2%)	0.88532 (0.47013; 53.1%)	0.89624 (0.28375; 31.7%)	0.94569 (0.39407; 41.7%)	0.95792 (0.41910; 43.8%)	0.73305 (0.28572; 39.0%)	0.77824 (0.38445; 49.4%)	0.64256 (0.27433; 42.7%)	0.86620 (0.36306; 41.9%)	0.86143 (0.26956; 31.3%)	0.19178 (0.04574; 23.9%)	0.08785 (0.00744; 8.5%)
Total	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

— continued —

- Continued -

Technical Coefficients of Inter-Industry Input/Output, 1969 (2)

	Wearing Apparel & Made-Up Textile Goods	Furniture & Fixtures	Coconut and Other Oils and Fats	Non-Metallic Mineral Products	Machinery Except Electrical	Electrical Machinery Apparatus & Appliances	Motor Vehicles	Electricity Gas and Water Services	Construction	Commerce	Transportation & Communication	Services
Agriculture, Livestock Fishery & Forestry	0.00269	0.01097	0.73273	0.0	0.0	0.00029	0.0	0.00237	0.01533	0.0	0.00205	0.02326
Mining	0.0	0.0	0.00002	0.08113	0.00050	0.00750	0.0	0.0	0.01328	0.0	0.00004	0.00014
Manufacturing	0.48701	0.29112	0.03036	0.26936	0.37221	0.37431	0.40321	0.19468	0.33826	0.03026	0.09279	0.08667
Electricity, Gas & Water Services	0.00472	0.01064	0.00354	0.01810	0.01151	0.00996	0.00377	0.10726	0.00150	0.00571	0.01700	0.00596
Construction	0.00001	0.00043	0.00013	0.00777	0.00366	0.00138	0.00190	0.00256	0.01886	0.01233	0.00174	0.00167
Commerce	0.06957	0.06178	0.05955	0.07048	0.07580	0.07335	0.09034	0.06201	0.06805	0.06279	0.06640	0.02794
Transportation & Communication	0.01125	0.01375	0.02304	0.01609	0.01871	0.01908	0.00921	0.01962	0.01431	0.02310	0.02477	0.00972
Services	0.01178	0.00913	0.01105	0.03258	0.02096	0.04063	0.02008	0.03839	0.05135	0.07959	0.04402	0.04448
Input Sub-Total	0.58668	0.39782	0.86042	0.49551	0.50335	0.52649	0.52851	0.42689	0.52094	0.21378	0.24881	0.19982
Value Added (Wages & Salaries) 2)	0.41332 (0.19847; 48.0%)	0.60218 (0.25929; 43.1%)	0.13958 (0.03530; 25.3%)	0.50449 (0.19694; 39.0%)	0.49665 (0.21992; 44.3%)	0.47351 (0.17346; 36.6%)	0.47149 (0.18608; 39.5%)	0.57311 (0.23399; 40.8%)	0.47906 (0.23720; 49.5%)	0.78622 (0.23436; 29.8%)	0.75119 (0.35742; 47.6%)	0.80018 (0.63940; 79.9%)
Total	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

SOURCE: National Census and Statistics Office, NEDA, 1969
Interindustry (Input/Output) Accounts of the Philippines

NOTE 1) Technical coefficient (aij) is calculated by:

$$aij = \frac{Xij}{Xj}$$

where: Xj : j–industry's output
Xij : j–industry's input from i–industry

2) Percentage figure of Wages and Salaries is a proportion of Value Added.

3) As far as manufacturing sector is concerned, it can be pointed out: (a) Meat products, rice milling, and coconut oil are low in their value-added ratios but high in the backward linkage. In consequence, Bohol can supply raw materials to these industries, though the establishment of an agro-based industry which requires relatively large amount of capital investment; (b) The rest of manufacturing industries cited in the table are high in value-added ratio but low in labor intensity. These industries can greatly contribute to a rise in NPP of the Bohol economy if good markets are found for their products; (c) In general, intra-industry linkage effects are high for the manufacturing industry indicating that its establishment requires interlocking system of the forward and backward linkage within its own sector.

4) Obviously, the sectors of electricity, gas, water services, and construction require relatively large inputs from manufacturing sector. Added values are also naturally high in the tertiary sectors of commerce, transportation and communication, and services. The tourism industry can contribute a lot to the Bohol economy, if it is effectively developed and marketed.

2. Industrial Linkage Plan for the Bohol Economy

Since the industrial input/output table is not available to us, the technical indications cannot be made in quantitative terms as to what kind of strategy should be drawn up for a long term inter-sectoral linkage of the development programs/projects. However, based upon the foregoing observations, the following guidelines should be established for the development of the Bohol economy.

1) Establishment and development of industries of high forward linkage effects in the early stage of development.

   (a) Production increase of root crops, vegetables, fruits and nuts, corn, palay, and fisheries because of their high added value.

   (b) Export effort of these products in seeking export multiplier effects.

   (c) Gradual development of agro- and fishery-based industries using surplus products of the primary sector, e. g., coco-oil, cottage type industries, etc.

2) Development of industries of high backward linkage effects in the later stage of development.

   (a) Establishment of light manufacturing industries, machine shops, machineries, electric appliances, etc.

   (b) Development of industries of weaving apparel and made-up, and furniture manufacturing because of their relatively high added value and labor intensity.

3) Role of the tertiary sector

(a) High added value to raise NPP of the Bohol economy

(b) High labor absorption power

4) Effective demand creation policy

(a) High priority to be given to export-generation for full utilization of export multiplier effects of income determination of the Bohol economy.

(b) Final demand of the consumer sector should be shifted from the demand of food items to that of non-food items.

(c) Investment and government expenditure cannot be expected to play a leading role in the Bohol economy primarily because of its insufficiency of financial resources.

24.3 Inter-Sectoral Linkage Structure of the High Impact Projects

24.3.1 Introduction

What has been described so far is primarily concerned with the problems of inter-sectoral linkage in the macro-framework of the Bohol economy. Now, we have to turn our attention to the specific problems of how a set of high impact projects proposed in this report will be carried out in such a way that the inter-sectoral linkage is duly effectuated. In other words, we have to squarely face with the more concrete or short term problems of how to implement the high impact projects within the context of a long term development plan of inter-sectoral linkage formation.

As frequently noted before, the high impact projects were devised to serve the purpose to give the initial thrusts or push to the Bohol economy which has stagnated up until now. Nevertheless, it is obvious that any program or project cannot be implemented in isolation without considering the requirements for and expected results of inter-sectoral linkage. In this case, the linkage problems necessarily entail not only those of the economic sector but also those of other sectors of infrastructure and social services.

In addition, it must be noted that the projects should also be undertaken by taking into a careful consideration the needs or effects of inter-spatial linkage of the Bohol economy. It is needless to say that the program/project location ought to be selected according to the framework established for integrated area development plan of Bohol. This spatial linkage problem will be approached from two criteria: the first is whether the spatial linkage envisioned by the high impact project-oriented development plan is "integrated" at the provincial level, and the second is whether it is "integrated" at the level of area where a specific project is planned to be implemented.

Finally, even at this stage some evaluation will be made upon the economic effects which are generated by the high impact projects. In the following brief explanations are provided for some of the important issues mentioned above.

24.3.2 Linkage Problems of High Impact Projects

It is proposed that careful detailed scrutiny be made upon the linkage effects of the high impact projects for both aspects of inter-sectoral and inter-spatial context as a part of the task of pre-feasibility or full feasibility study. Only a rough sketch is presented here to indicate the general framework of the problems involved.

1. Intensity of Linkage

   As schematically represented in Figure 24.1, different level of linkage will be observed concerning different sectors, i. e., the linkage of economic sector, infrastructure, and social services. There will be variations in the intensity of linkage, e. g., strong and weak linkages in the short term and in the long term. There is no denying that the economic sector and infrastructure are commonly strongly linked with each other.

2. Network of Linkage of High Impact Projects

   A conceptual scheme of how the high impact projects are linked with each other is also indicated in Fig. 24.2. The social services sector is dropped from this chart, because it is believed that it is relatively independent of the effects expected from the high impact projects of economic sector and physical infrastructure. It must be also remembered that the inter-sectoral linkage is effectuated in terms of the time frame of prior and posterior to the sequence of service and/or material flow.

3. Integrated Area Linkage of High Impact Projects

   It is necessary that an integrated area linkage development plan should be drawn up for each of the high impact projects particularly concerning the economic sector projects. How this can be done is indicated in Fig. 24.3. The chart only indicates how the high impact projects are mutually related with each other precluding other possible effects and feedbacks taking place with other sectors or problems.

4. Spatial Organization of High Impact Projects

   The spatial distribution of the high impact projects is indicated in the following map. As shown in these maps the projects are located around the areas of coastal line with exception of Wahig-Pamacsalan project and other small scale projects. This derives in part from the fact that the growth pole and centers in Bohol province (Tagbilaran, Tubigon, Ubay, Jagna) were selected in coastal areas (except for Carmen).

Fig. 24.1 INTER–SECTORAL LINKAGE

Supporting Sectors / Economic Sectors		TRANSPORTATION			ENERGY		WATER		TELE-COMMS.	SOC. SERVICES	
		Roads	Airport	Ports	Elec-tricity	Others	Water Works	Water Supply		Edu-cation	Pub. Health
Crops/Agriculture		L			s	s	L				
Livestock				s							
Forestry		s						L			
Fishing	°Commercial	s		S	s			L			
	°Municipal			1							
	°Aquaculture	L		1							
Tourism		S	S	S	L			S	1		
Mining		1		1	L			1			
Manufacturing		L	s	S	S	S		S	s	s	
Tertiary Sector		L	L	S	L			s	s		
Government Services									L		L

S = Short term primary linkage
s = Short term secondary linkage
L = Long term primary linkage
1 = Long term secondary linkage

Fig. 24-2 INTER-SECTORAL LINKAGE OF HIGH IMPACT PROJECTS

ECONOMIC SECTOR	PROJECT	INFRASTRUCTURE SECTOR PROJECTS													
		WATER MANAGEMENT				TRANSPORTATION								ENER-GY	TELE-COMM.
		Wahig-Pamacsalan Irrigation	Cahayag Communal Irrigation	Tagbilaran Water Works	Groundwater Development	Tagbilaran-Tubigon Road Improvement	Tagbilaran-Jagna Road Improvement	Loay-Carmen Road Improvement	Tagbilaran Port Improvement	Tubigon Port Improvement	Jagna Port Improvement	Catagon Port Construction	Tagbilaran Airport Improvement	Alcogas Refinery	Telecommunications
AGRICULTURE	Soil Research + Agro Promotion Center	○			○									○	
„	Wahig-Pamacsalan Pilot Farm	◎							○						
„	Vegetable Promotion Center		◎			◎				◎					
FORESTRY	Watershed Rehabilitation	○			○										
FISHERIES	Catagong Bay Processing-Complex				○							◎			
TOURISM	Tourism Mkt. Survey/Promotion												○		○
„	Sea Resort Hotel Dev. Planning			○		◎		◎	○				◎		◎
INDUSTRY	New Tech. Dev. for Small Scale Industry	○		○		○	○	○	○	○	○			○	

Legend
◎ Primary Link
○ Secondary Link

Fig. 24-3 INTEGRATED AREA LINKAGE OF HIGH IMPACT PROJECTS CENTERED ON AGRICULTURE

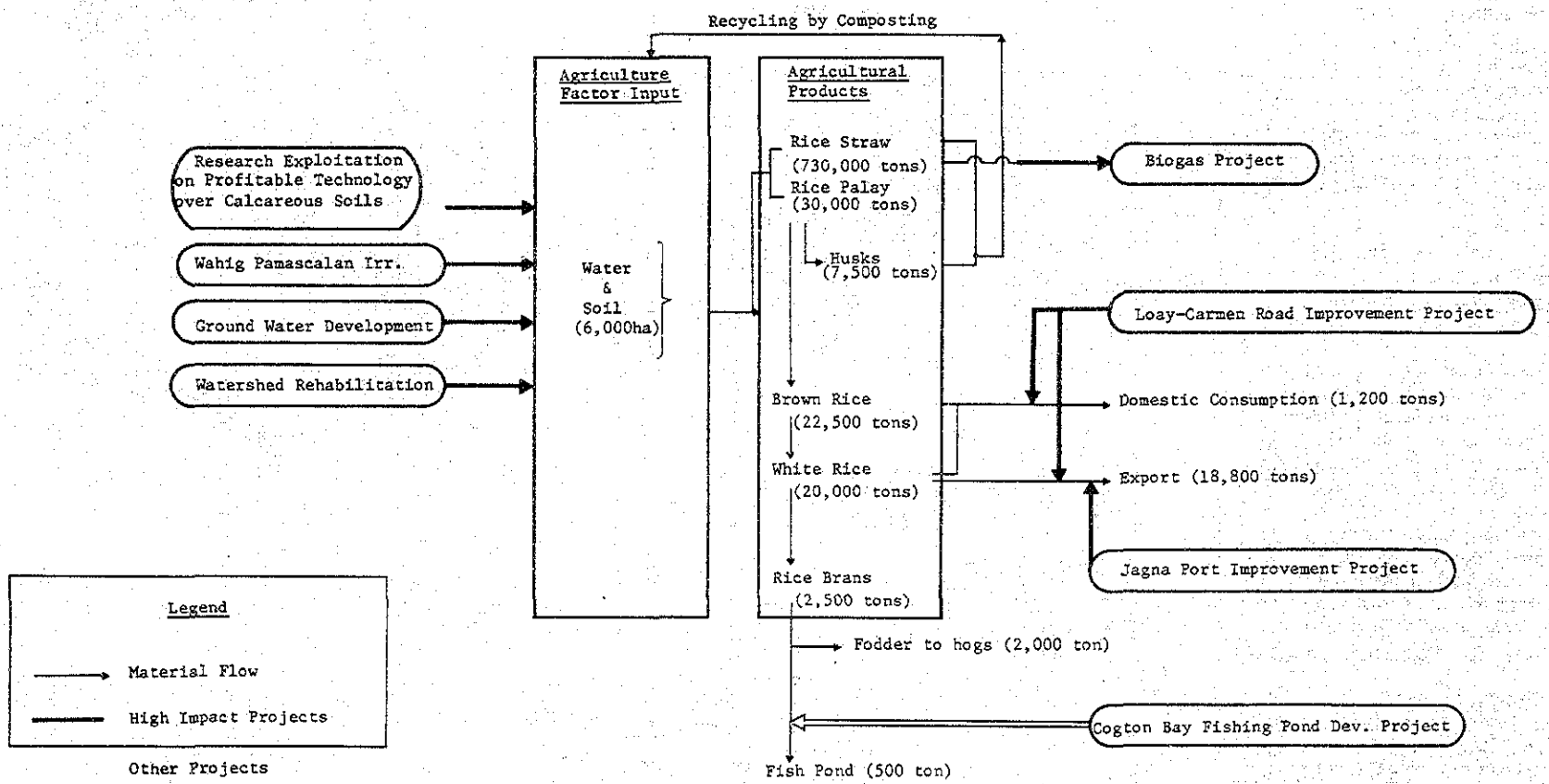
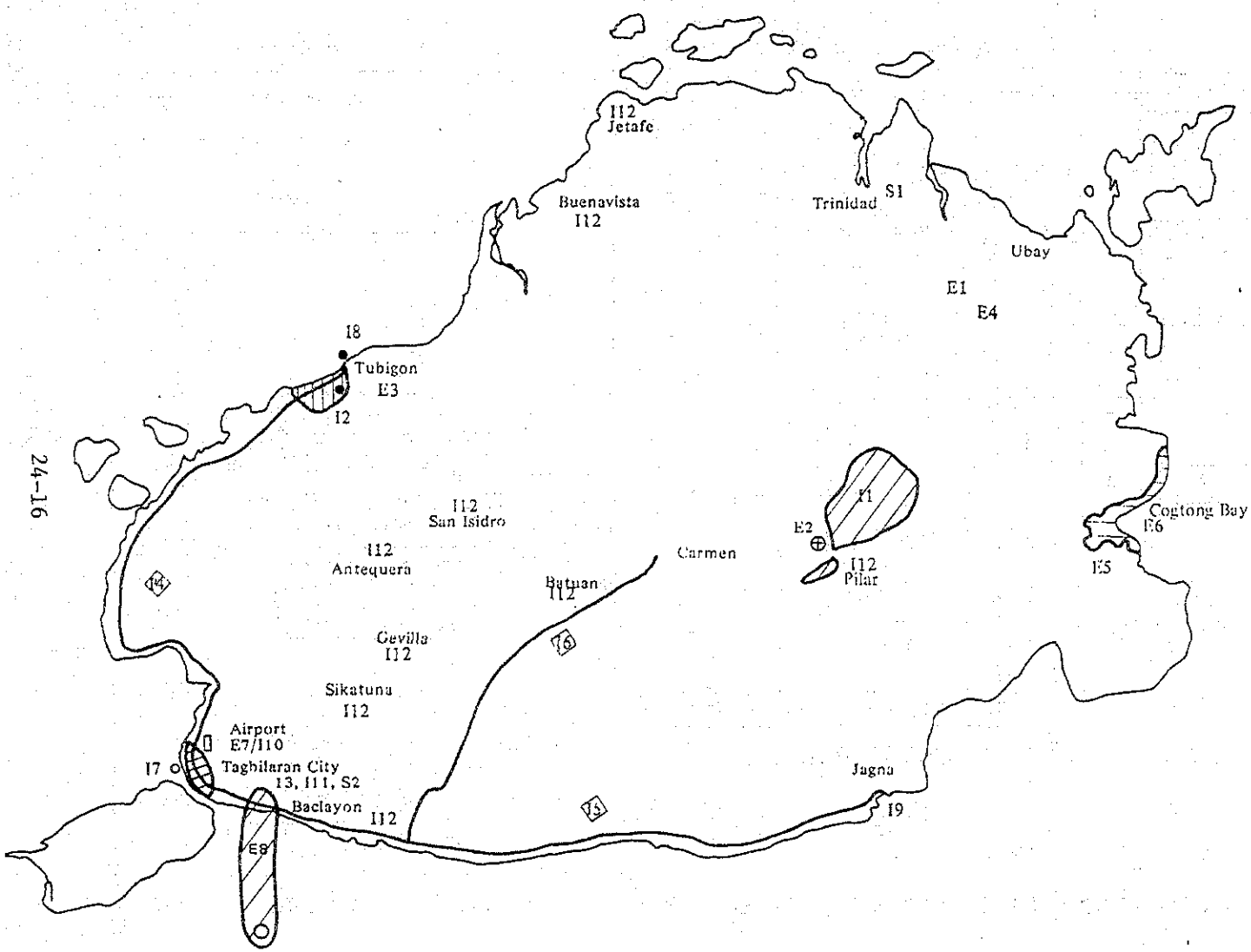


Fig. 24-4 HIGH IMPACT PROJECTS LOCATIONS



ECONOMIC SECTOR*

- E1 Exploitation of Soil Technology and Establishment of President Marcos Agricultural Promotion Center
- E2 Wahig-Pamacsalan Irr. Pilot Farm
- E3 Vegetable Promotion Center
- E4 Beef Cattle Development
- E5 Cogtong Bay Fishery Processing Complex
- E6 Cogtong Bay Fishing Port
- E7 Tourism Market Survey/Promotion
- E8 Sea Resort Hotel Development Planning

INFRASTRUCTURE SECTOR*

- I1 Wahig-Pamacsalan Irrigation
- I2 Cahayag Communal Irrigation
- I3 Tagbilaran Water Works
- I4 Tagbilaran-Tubigon Road Improvement
- I5 Tagbilaran-Jagna Road Improvement
- I6 Loay-Carmen Road Improvement
- I7 Tagbilaran Port Improvement
- I8 Tubigon Port Improvement and Terminal
- I9 Jagna Port Improvement
- I10 Airport Improvement
- I11 Alcogas Refinery Plant
- I12 Telecommunications Expansion (10 cities)

SOCIAL SERVICES SECTOR*

- S1 Strengthening Schistosomiasis Program
- S2 Bohol Integrated Manpower Dev. Center at Tagbilaran

*Note: The following projects are not shown since their locations are either too numerous or indeterminate:

Economic Sector
- Promotion of Basic Research on Land Characteristics (initially Tagbilaran, later E1)
- F/S on Watershed Rehabilitation
- New Technology Development for Small Scale Industries

Infrastructure Sector
- Rural Water Supply Systems (in every municipality)
- Study on Water Resource Management
- Replacement of Bridges on other National Roads

Social Services Sector
- Mobile Medical Service

24.3.3 Economic Effects of High Impact Projects

As already explained in Chapter 1: Strategy and Methods of Program and Project Planning, the high impact programs/projects were selected and evaluated from a set of criteria such as income-generation, employment creation, and others which were considered to be the major challenges facing Bohol's economy. However, the following strategic recommendations are made concerning the economic roles and effects of the high impact programs/projects.

1) Given the conditions of the scarcity of resources available in Bohol, public investment must be made on sectors or problem areas of strategic or critical importance; viz., concentrated investment policy.

2) Investment should be made in such a way that the agglomeration economy can be effectively generated.

3) The so-called "growth pole" approach should be used in view of the inefficiently dispersed economic activity areas in Bohol.

4) Different sectors should be closely linked with each other so as to create cumulative effects upon industrial activities in Bohol.

5) In the light of the primary industry based economic structure of Bohol, manufacturing industry should be developed particularly in consideration of "backward linkage effects". In this respect, agro-based industries are regarded as high priorities.

6) Inter-sectoral linkage effects of the Bohol economy should primarily be considered in view of its orientation to Metro Cebu as the major market.

7) The coastline area should be of primary consideration in terms of its access to the easily expandable transportation infrastructure provided by the seas.

The points enumerated above are some of the strategic consideration which must be made upon the evaluation of the high impact programs/projects.

Because of the limited time alloted to the present study, economic impact effects of the proposed programs/projects could not be made at this stage. However, it is purposed that the following problems will be examined at the stage of pre-feasibility or full feasibility study.

1) Economic Sector Programs/Projects

- Income-generation effects, i.e., contribution to NPP
- Employment decision effects
- Demand creation effects

2) Infrastructure

- Demand and supply of services by economic sectors
- Incremental contribution to production

3) Social Services

- Per Capita services demand and supply capacity
- Lifting up the level of social amenity
- Reduction of disparities among areas, particularly alleviation of the conditions of depressed areas

In order to estimate the economic effects generated by the high impact projects, the following calculation is made on the assumptions indicated below:

1) Income multiplier equation of Tiebount model

$$\Delta Yt = \frac{1}{1 - (Pcr)(Pcr \rightarrow Yb)} \cdot \Delta(E + Ib)$$

where
- ΔYt : Incremental total income
- Pcr : Proportion of total income that is spent on consumption in Bohol
- $(Pcr \rightarrow Yb)$: Proportion of consumption expenditures that becomes income in Bohol
- E : Income from Bohol's export
- Ib : Income from investment in Bohol

2) Since all investments have not yet been selected by the Philippine government for implementation, only the Wahig-Pamacsalan Irrigation Project was used as a basis for culculating economic effects. ₱65.7 million or 20% of the ₱328.5 million cost of this project was estimated as the amount that will be spent in Bohol.

3) Wahig-Pamacsalan irrigation project was completed and surplus rice of 30 thousand tons was exported at the total price of ₱75 million of FOB price (based on polished rice standard price of ₱2.5/kg.).

4) Income multiplier effects were made before 1990.

5) Three different rates of marginal propensity to consume and consumption of Bohol produced goods were assumed.

6) The results of the economic effects estimated for the three cases are shown in Table 24.3.

As indicated in the Table, the income generation effects of the Bohol economy from the implementation of the selected high impact projects are estimated ranging from the lowest ₱219 million to the highest ₱380 million.

The calculation made here is rather conservative, but it can be easily understood that the economic effects generated by the high impact projects are by no means small.

Table 24.3 Estimated Economic Effects of High Impact Projects

	Case 1	Case 2	Case 3
Marginal Propensity to Consume	.95	.90	.90
Consumption Ratio within Bohol	.50	.40	.70
Multiplier	1.905	1.563	2.703
Incremental Income of Bohol (million pesos)	₱268	₱219	₱380
Remarks	Assumptions: 1) Low saving 2) High dependency on imported goods 3) Low tax revenue	Assumptions: 1) Relatively high saving 2) Extremely high dependency upon imported goods	Assumptions: 1) Relatively high saving 2) Increase in consumption of goods produced and manufactured in Bohol

CHAPTER 25
FINANCIAL RESOURCES OF BOHOL PROVINCE AND INVESTMENT

CHAPTER 25 FINANCIAL RESOURCES OF BOHOL PROVINCE AND INVESTMENT

25.1 Introduction

In order to carry out the development projects, the capacity of public finance of national and local governments must be examined as follows:

- To review the present situation of public finance in the Bohol province (Tagbilaran City and 46 municipalities).
- To discuss the capability of these local governments to finance their administrative and development needs.

As a conclusion, some financial measures are recommended as to how to resolve financial resource constraints.

25.2 System of Public Finance of the Philippine National Government

Owing to the recent positive attitute of the national government towards the nation's economic and social development, the scale of the national government budget (both revenue and expenditures) has shown a rapid growth. Budget expenditures for CY 1979(1) are estimated at ₱32.7 billion. (see Table 25.1) This figure is an 18.1% increase compared with that of the previous year. Revenues excluding net borrowings are estimated at ₱26.7 billion and also show an 18.1% increase compared with that of the previous year. Compared with expenditures, revenues showed a deficit of ₱5.0 billion on a cash basis which was balanced by borrowings. About 85% of total cash revenue comes from tax revenue. The share of tax revenue to the total revenue has been almost constant in recent years. Although the amount of net borrowings has increased, its share to total ex penditures is expected to be 15.3% in the budget for CY 1979. This figure is considered a rather conservative one.

In the budget for CY 1979 (see Table 25.2), 41.3% of total expenditures was allocated to economic development, 25.1% to social services, 14.6% to national security and 19% to the general government including debt services.

25.2.1 Local Government

Compared with the rapid growth of national governmental expenditutes and revenues, the increase in the scale of local governmental budgets has been moderate. In the period 1973 to 1976 (see Table 25.3), local government receipts excluding the allotment from the national governmental revenue increased from ₱0.8 billion to ₱1.5 billion, or increased by 1.9 times. In the same period, national governmental receipts increased 2.3 times. Local governmental expenditures increased in the same period from ₱1.4 billion to ₱2.4 billion or 1.7 times. That of the national government increased by 2.4 times. As for the scale of the budgets, national government revenues and expenditures were 12.6 times and 9.4 times larger than those of the local government in CY 1976 respectively.

Table 25.1 Fiscal Position of the National Government, Cash Basis[1/]
(CY 1977-1979)

(unit: ₱ billion)

	1977 Actual	1978 Estimates	1979 Estimates
A. Current Operations			
Revenues	19.9	22.6	26.7
Expenses	17.7	18.6	21.1
Surplus on current operations	2.2	4.0	5.6
B. Capital Outlays	5.0	7.9	10.6
C. Financing account			
Gross Borrowings	3.5	5.1	6.0
Debt amortization payments	1.1	1.2	1.0
Net borrowings	2.4	3.9	5.0
D. Total Expenditures	23.8	27.7	32.7

Table 25.2 Functional Allocation of National Expenditures[1/]
(CY 1977-1979)

(unit: ₱ billion (%))

	1977 Actual		1978 Estimate		1979 Estimate	
Economic Development	7.0	(31.0)	12.1	(40.1)	14.2	(41.3)
Social Services	5.5	(24.3)	7.3	(24.1)	8.6	(25.1)
National Security	5.1	(22.6)	4.8	(15.9)	5.0	(14.6)
General Government (including debt service)	5.0	(22.1)	6.0	(19.9)	6.5	(19.0)
Total	22.6	(100.0)	30.2	(100.0)	34.3	(100.0)

1/ Source: Republic of the Philippines. The President's Budget Message for 1979, A Budget for National Solidarity.

Table 25.3 Fiscal Position, 1973-76[2/]

(unit: ₱ billion)

	1973	1974	1975	1976
1. National Government				
Receipts	8.2	12.2	17.6	19.2
Expenditures	9.3	14.3	20.1	22.5
Current operating expenditures	7.0	9.0	13.3	17.3
Capital surplus	1.2	3.2	4.3	1.9
Financial gap	(1.1)	(2.1)	(2.5)	(3.3)
2. Local Government				
Receipts	0.8	1.1	1.3	1.5
Expenditures	1.4	1.6	2.1	2.4
Current operating expenditures	1.2	1.4	1.8	2.0
Capital outlays	0.2	0.2	0.3	0.4
Current surplus	(0.4)	(0.3)	(0.5)	(0.5)
Financial gap	(0.6)	(0.5)	(0.8)	(0.9)

2/ Source: BC and DF. Five-Yr. Philippine Development Plan

Thus, the financial position of the national government is far more decisive than that of local government.

25.2.2 Structure of Local Public Finance

The budgets of the provinces and cities are divided into three funds as follows:

1 - General Fund

Ordinary revenue and general service expenses

2 - Infrastructure Fund

Operating expenses of the Office of the Engineer and expenses for infrastructure

3 - Special Education Fund

Special educational fund and expenses for sundry education

The revenue sources of the provinces and cities are tax revenue, non-tax revenue, miscellaneous income, sales of assets and borrowings. The most important revenue source is the tax revenue including the allotment from the national internal revenues.

In the case of the budget for CY 1978 of Bohol tax revenue was 51.9% of the total revenue. As the allotment of internal revenue reached 45.7% of the total revenue, only 6.2% came from local tax.

Accordingly, the public finance of Bohol province depends heavily on the national government allotment. The provincial expenditure of the three Funds are classified into two categories: current operating expenses and capital outlay. Most of the current operating expenses belong to the General Fund. Capital outlay includes the purchase of real property and equipment.

In the case of the municipalities, the structure of public finance is simpler. They have revenue from real property tax, residence tax, business taxes, and other sundry taxes, miscellaneous fees and charges. Municipalities also depend deeply on the national government allotment because their own tax and other revenue resources are small, and they need more governmental aid in order to conduct their services. It seems that about 30% - 60% of their total revenue comes from the national government.

Municipal expenditures are also divided into current operational expenditures and capital outlay. However, their capital outlay includes only maintenance cost and purchase of some equipment and exclude the construction cost of roads, bridges and other infrastructural facilities.

25.3 Financial Resources of Local Governments: Allotment of National Internal Revenues

The method of allotment of national internal revenues to local governments is as follows:

- Twenty per cent of all national internal tax revenue, except those accuring to special funds, is distributed (PD 144).
- The share[(2)] of each type of local government units is as follows:

Provinces	30%
Municipalities	45%
Cities	25%

- The distribution within each type of units is determined on the following basis:

70%	by population
20%	by area
10%	equal sharing

25.3.1 Special Tax Allotment

For the purpose of financing the maintenance and repair of existing roads and bridges as well as their construction and improvement, a special tax on certain petroleum products is alloted to local governments. At first, 25% of the total is set aside for Barangays and the remaining amount is distributed[(3)] as follows:

20% to provinces
30% to municipalities
50% to cities

The distribution among each unit is the same as in the general allotment.

25.3.2 Major Local Tax

1. Real Property Tax

1) General

Real property tax is the most important local tax. All real property, which has a value of over ₱500, is assessed on the basis of its current market value, type of property and classification of value. The ratios of assessed valuation to the market value are as follows:

- Land--Commercial, industrial and mineral	50%
Agricultural	40%
Residential	30%
- Buildings, machinery, improvement, etc.	40-80% depending on its classification and value.

- Residential Buildings — 15-80% depending on its value.

- Tax rates to the assessed valueation are:

Provinces and municipalities	0.25%-0.5%
Cities	0.5%-2.0%

- A general revision of assissment rates takes place every 3 years.

2) Additional Tax on Real Property

An additional 1% tax is imposed on all real property with assessed valuation exceeding ₱5,000. The proceeds accrue to the Special Education Fund.

3) Idle Land

Local governments impose an additional real property tax on idle lands at the rate of 5% of the assessed value.(4)

2. Other Local Taxes

Although local governments are empowered to collect a variety of taxes, fees and charges, most of them are of a very minor nature. Among them, the tax on gross sales or receipts of business, which reflects the local economic activities, is a very important revenue source for the local governments.

25.4 Present Situation of Public Finance in the Bohol Province

The Bohol province in CY 1978, received consolidated revenues amounting to ₱17,302,000, of which 67% came from taxation (see Table 25.4) The biggest revenue from taxation came from the allotment of national internal revenues amounting to ₱10,568,000 or 61.7% of the total revenue. The revenue share from the business and occupation tax was only 0.4%, and the largest local tax was the real property tax totalling ₱749,000,000, 4.3% of the total income. Other receipts including a variety of fees and government business operations amounted to ₱4,573,000, or 26.4% of the total income.

Thus, the gross funds balance at the end of 1978 amounted to ₱4,504,000 Compared with the balance at the beginning of the year, an increase of ₱308,000 or a growth rate of 7.3% was recorded.

Generally speaking, the provincial government has kept its expenses within its financial resources. However, considering the large portion of national government allotment, the room left for its autonomous development is very limited.

The public finances of Tagbilaran City and the 46 municipalities are nearly in the same situation. About 40% of their revenue comes from the allotment of national tax revenues. They are also operating within their financial resources and have a small surplus every year. However, there is little room for their providing new services.

Table 25.4 Bohol Provincial Statement for CY 1978[1/]

(Unit: ₱1,000 (%))

	Amount	Total	Percentage
Gross Fund balance at the beginning of CY		4,196	
Revenues			
A. Revenue from taxation			
1. Business and occupations tax	68		(0.4)
2. Other taxes and duties[2/]	914		(5.3)
3. Internal revenue allotment	10,668		(61.7)
Total revenue from taxation		11,650	
B. Non-tax revenue		4,572	(26.4)
C. Other receipts		1,080	(6.2)
Total income		17,302	(100.0)
Total funds available for expenditures		21,498	
Expenditures			
A. Current operating expenses	16,435		(96.7)
B. Capital outlays	559		(3.3)
C. Loans, advances & transfers	(951)[3/]		
Total expenditures		16,994	(100.0)
Gross Fund balance at the end of the year		4,504	

Notes: 1/ All Funds consolidated.
2/ Real property taxes and others.
3/ Transfer from General Fund to Infrastructure Fund.

Source: Treasurer's office, Bohol Province

According to the classification of financial revenue, Bohol falls under the 1st (B) class and Tagbilaran City under the 3rd class. However, among 46 municipalities, only Loon belongs to the 4th class, 29 belong to the 5th class and 16 to the 6th class. Compared with Cebu, the financial position of Bohol is retarded.

By comparing the national internal tax collection of Bohol with that of Cebu, the difference in economic development of the two provinces will become apparent. In the past 3 years, the internal tax collection of Bohol was only 1.0% to 1.6% of that of Cebu (see Table 25.5).

Table 25.5 Collection of Internal Revenue in Bohol and Cebu Provinces 1/

(unit: ₱1,000 (%))

	1976	1977	1978
Grand Total 2/			
Cebu	270,663 (99.0)	263,856 (98.8)	297,607 (98.5)
Bohol	2,712 (1.0)	3,180 (1.2)	4,678 (1.6)
Income taxes			
Cebu	104,320 (98.6)	94,962 (98.1)	95,423 (97.7)
Bohol	1,472 (1.4)	1,752 (1.9)	2,251 (2.3)
Business taxes			
Cebu	46,470 (97.9)	50,257 (97.6)	67,805 (97.0)
Bohol	1,015 (2.1)	1,220 (2.4)	2,103 (3.0)

1/ Source: Bureau of Internal Revenue
2/ including other taxes besides income and business mentioned here.

25.5 Public Investment for Capital Outlay in Bohol Province in 1976–1978

The Bohol provincial government in the period from 1976 to 1978, disbursed ₱9.0 million in capital outlay.

However, 83.5% of the total capital outlay went for the purchase of various equipment including office equipment.

Expenditures for maintenance, repair and construction of infrastructure were only ₱1,634,000 for the same period. The annual average disbursement for such infrastructure is only ₱545,000. (see Table 25.6).

The Office of the Provincial Engineer formulated a 5-year program for capital inprovement for 1979-1983. (see Table 25.7). This program includes 16 road constructions and 1 bridge construction with a total cost of ₱11,195,000. In compliance with these constructions ₱592,000 will be needed for purchasing equipment. Funds needed for this program will be mainly provided by the Development Bank of the Philippines. The expenditure planned for each year varies from year to year. The highest is the figure for 1980 of ₱2,536,000, which is about 5 times the actual average annual expenditure of the last 3 years. However, it should be considered that the national government expenditure will cover 50% of the expenses for maintenance and repair of existing roads and bridges. The realization of such an ambitious increase in construction work will necessitate more financial assistance from outside.

Tagbilaran city has also a 5-year construction program for the period 1980-1984, which includes roads and 1 drainage system. The total cost for the period is estimated to be ₱10,692,000. (see Table 25.8). The highest figure is expected for 1981 and 1982, each amounting to ₱4,098,000.

Table 25.6 Capital Outlays of Bohol Province for 1976-1978[1/]

	Development projects[2/] (₱1,000)	Improvement and Purchase of equipment (₱1,000)
1976		7,127
1977	1,634	125
1978		98

Table 25.7 Project Estimates for 5-year Program of Capital Improvements, Bohol Province (1979-1983) [3/]

	Capital Projects (₱1,000)	Capital Improvement and Capital Purchases (₱1,000)
1979 CY	1,836	0
1980 CY	2,536	448
1981 CY	2,086	100
1982 CY	2,086	97
1983 CY	2,086	48
Total	11,195	793

Table 25.8 Project Estimates for 5-year Program of Capital Improvement, City of Tagbilaran [4/]

	Cost of Projects[5/] (₱1,000)
1980 CY	1,998
1981 CY	4,098
1982 CY	4,098
1983 CY	498
1984 CY	-
Total	10,692

1/ Source: Office of the Provincial Engineer
2/ Roads, waterworks system, public building, parks
3/ Source: Office of the Provincial Engineer
4/ Source: Capital Improvement Program CY 80 to CY 84, City of Tagbilaran.
5/ Total of Bureau of Public Works and Office of the City Engineer

According to the city's planning, local funds available for the period amount to ₱3,723,000 and the expected national funds is ₱2,433,000. The remaining deficit will be ₱4,536,000. Therefore, in order to realize these projects, the city must seek other financial sources.

In CY 1978, the National Government and its agencies had allocated ₱36,878,000 for major national government projects in Bohol. The biggest item was the repair of roads and bridges amounting to ₱18,374,000, of which ₱12,600,000 was alloted to the province, ₱467,000 to Tagbilaran City and the remaining amount to other municipalities. Such amounts are insufficient to cover the proposed capital improvement programs for Bohol and Tagbilaran City.

25.6 Financial Resources of Bohol Province: Recent Developments in Local Revenue

The analysis of the financial situation of local governments in the Bohol province showed the importance of financial aid from the national government for development projects. However, financial improvement efforts by local governments themselves are also essential to the development of Bohol.

According to the interviews conducted with several staff of the treasurer, local tax revenue collection in recent years has been increasing at the rate of about 30% over the previous years excluding tax rate increases.

This tremendous increase in tax collection is mainly attributed to the following:

- Recent development of the region.
- Improvement of tax collection administration.

  In the case of real property tax, the assessor's office has initiated tax mapping and appraisal and record work. Education of treasurer's staff and tax collectors has also been implemented.
- Education and persuasion of taxpayers through pamphlets and mass media.

Prospect of Local Tax Revenue in Coming Years

Most of the treasurers and their staff are anticipating a growth rate of 20-30% in tax revenue in the coming 2 or 3 years. They think there is room to improve tax bases and tax collection procedures. However, they are aware that the development of the regional economy is the most important factor in realizing a rapid growth of local tax revenue and improving the local government services for the public.

25.7 Investment Requirements and Financial Resources Needs for Development Investment

The Bohol province has a need for developmental investment in many infrastructural sectors and high impact development projects which are essential for further economic and social development of the Bohol province.

The local financial resources in Bohol are very limited and insufficient to cover the necessary funds required for developmental investment. Although the local tax revenue is increasing, the share of local tax revenue to the total revenue of the province is only 5.6%. The increase in local tax revenue will be sufficient to support the increase in current operating expenses of the local governments. Developmental investment will accelerate the economic activities of the region, resulting in an increase in the local tax collection. However, there will be some time-lag before it takes effect.

Therefore, it may be impossible for the Bohol province to finance the development investment of large scale by itself alone.

As to the allotment of national tax revenue, the present amount is insufficient. It can only support current operating expenses and maintenance and repair expenses of existing infrastructure.

25.8 Conclusions and Recommendations

In order to fill up this gap between developmental investment needs and financial resources, the following recommendations are given:

(a) *Strategic Investment in National Resources:*

To revise the allotment method of national financial resources. As mentioned before, the allotment of internal revenue is decided according to population, area and equal sharing. This is an objective and fair method. However, this method cannot mitigate the financial gap existing between prosperous regions and less-developed regions. Generally speaking, the prosperous regions have larger population than less-developed regions. Thus, with the present allotment criteria, prosperous regions will become more and more richer.

In order to accelerate the development of less-developed areas, more national financial resources should be appropriated to them strategically.

(b) Improvement of Local Tax Collection

To promote the tax mapping exercise and the cadastral survey program simultaneously. It is estimated that the production of efficient tax maps would broaden the property tax base by 30% to 50%.[5]

In this way, the local governments can do their best to increase their own revenue to meet the increasing expenses for maintenance and repair of infrastructure and improvement of general services for the public.

(c) Securing External Loans

To consider the possibility of securing external loans to supplement the national governments limited budget and multiplicity of priorities. According to the Five-Year Philippine Development Plan, 35% of the financial requirement for the period 1978 to 1982 (₱33.2 billion) is planned to be funded from abroad.

Most of the development projects to be proposed for the development of Bohol are related to basic infrastructure. No high return can be expected from this type of project to materialize in the near future. Thus, funds raised from abroad should be either in the form of long term loans with low interest rates or grants-in-aid.

Footnotes

(1) The Fiscal period of the Philippines has been changed to a calendar year beginning in CY 1977. Before 1977, the budget period was July 1 to June 30 of the subsequent year.

(2) Starting on January 1, 1981 the allotment for each local government share will be changed as follows:

25% to provinces
40% to municipalities
25% to cities
10% to barangays

(3) PD 436 and PD 558

(4) PD 1446, effective date: June 11, 1978

(5) The World Bank Report on Region VII, Chapter IX, 1061

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B. Articles

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2. Updating real property assessments, National Tax Research Center, Tax Monthly, October, 1978.

3. Tax Reform of 1978, Part III, National Tax Research Center, Tax Monthly, February, 1979.

C. Statistics

1. Budget Commission, Region VII Major National Governments Projects CY 1978 Manila.

2. Office of Provincial Treasurer, Bohol, Budget Operation Statement, CY 1975, 1976, 1977 and 1978.

3. City of Tagbilaran, Capital Improvement Program CY 80 to CY 84.

CHAPTER 26
IMPLEMENTATION PLANNING AND SCHEDULE

CHAPTER 26 IMPLEMENTATION PLANNING AND SCHEDULE

26.1 General Implementation Considerations

In the present chapter the following are briefly described.

- A summary compilation of the investment requirements for all of the high impact projects proposed in Part Two for respective sectors.
- Guidelines of how their implementations should be scheduled.
- Suggestions as to how the project implementations are managed and controlled.

As briefly mentioned in Chapter 24, the economic effects generated even by selective implementation of the high impact projects are estimated to be considerable. In light of this, it is strongly urged that the Philippine government will take immediate actions necessary for their implementation.

However, the present work has its limitations. Some of the programs/projects are roughly formulated so as to make it difficult to consider them as "investable programs/projects". Because of the lack of time necessary for preparation, no uniform format of "project identification" is used. As a result, technical explanations may vary a great deal depending upon the type of sector taken up and also upon the individual idiosyncrasy of the persons who are in charge of the specific problems. This defect will be rectified when a feasibility study will be made in the future.

As will be explained later, the high impact programs/projects identified in Part Two are in a large part small scale programs/projects which entail relatively small amounts of investment when they are considered individually. Consequently, it is highly advisable from the point of view of economic efficiency that a set of programs/projects should be taken up as a package one for the necessary feasibility study or implementation planning and scheduling.

26.2 Investment Requirements

The cost estimates of programs/projects were made using the standard unit costs which were provided to us by local authorities. Some of them might be considered already unrealiable due to the high inflation rate in the Philippines. Although, further examination might be required for some of the cost estimates, as a rule of thumb, the contingency allowance included in most of the cost estimates should be adequate.

A summary of the project costs by sector is listed below with details by Project summarized in Table 26.1.

Table 26.1 Cost Summary for High Impact Projects

(Unit: 000's pesos)

SECTOR / Sub-Sector	Project	Amount	SUB-SECTOR Total
ECONOMIC SECTOR			
Agriculture	1. Exploitation of Soil Technology and Establishment of Agro Promotion Center	5,000	
	2. Wahig-Pamacsalan Irr. Pilot Farm	3,000	
	3. Vegetable Promotion Center	3,300	
	4. Promotion of Basic Research on Land Characteristics	500	
	5. Promotion of Beef Cattle Production	2,000	13,800
Forestry	6. F/S on Watershed Rehabilitation	900	900
Fisheries	7. Cogtong Bay Fishery Processing Complex	25,500	
	8. Cogtong Bay Fishing Port	17,900	43,400
Mining and Manufacturing	9. New Technology Development for Small Scale Industries	500	500
Tourism	10. Market Survey/Promotion Project	800	
	11. Sea Resort Hotel Dev. Planning	5,000	5,800
INFRASTRUCTURE SECTOR			
Water Management	1. Wahig-Pamacasalan Irrigation	328,500	
	2. Cahayag Communal Irrigation	11,000	
	3. Tagbilaran Waterworks	12,000	
	4. Rural Water Supply	3,700	
	5. Study on Water Resource Management	6,700	361,900
Transportation	6. Tagbilaran-Tubigon Road Improvement	9,800	
	7. Tagbilaran-Jagna Road Improvement	8,900	
	8. Loay-Carmen Road Improvement	7,500	
	9. Replacement of Bridges on other National Roads	6,200	
	10. Tagbilaran Port Improvement	27,300	
	11. Tubigon Port Improvement and Terminal	50,500	
	12. Jagna Port Improvement	1,800	
	13. Airport Improvement	4,400	116,500
Energy	14. F/S on Alcogas Refinery Plant	800	800
Communication	15. Telecommunication Expansion	700	700
SOCIAL SERVICES SECTOR			
Public Health	1. Strengthening Schistosomiasis Program	300	
	2. Mobile Medical Service	700	1,000
Human Resources Dev.	3. Bohol Integrated Manpower Development Center of Tagbilaran	4,000	4,000
TOTAL	(29) Bohol Integrated Area Development Plan		542,281.7

Economic Sector	₱ 64.4 million
Infrastructure Sector	₱479.9 "
Social Services Sector	₱ 5.0 "
Total Bohol Integrated Area Development Plan	₱549.3 million

The cost estimates were based upon the standard unit costs of capital outlays. In principle, operational expenses are not included, but depending upon the type of project, the costs for necessary training of the personnel are included. However, it must be noted that the reliability of cost estimate must become higher as the study progresses from the stage of planning to feasibility study and detailed design stage. It is commonly believed by UNIDO and other international organizations that the reliability variation of the cost estimate at the planning stage is about 30%. In comparison with this range of reliability, inflation factor may be regarded as a less significant factor. Nonetheless, if one wishes to include an inflation factor, the cost items can easily be adjusted by taking the inflation rate into account.

The implementation schedules are indicated in Fig. 26-1 by subsector and by project. The priority order of projects (ranked as AA, A, B, C and D) has been decided in terms of their strategic importance to the Bohol economy as follows:

Table 26.2 Priority of High Impact Projects

Priority	Sub-Sector	Project
AA - Highest Priority	Water Management	·Wahig Pamacsalan Irrigation
A - Top Priority	Agriculture	·Exploitation of Soil Technology and Establishment of Agro Promotion Center ·Wahig Pamacsalan Pilot Form ·Research on Land Characteristics ·Promotion of Beef Cattle Production
	Fishery	·Cogtong Bay Fishery Processing Complex
	Mining and Manufacturing	·Technology Dev. for Small-scale Industries
	Water Management	·Cohayag Communal Irrigation ·Tagbilaran Waterworks ·Rural Water Supply ·Study on Water Sources Management
	Transportation	·Tagbilaran Port Improvement ·Tubigon Port Imprv. and Terminal ·Jagna Port Improvement
	Energy	·F/S on Alcogas Refinery Plant
	Public Health	·Strengthen Shistosomiasis Program ·Mobile Medical Service
B - Second Priority	Agriculture	·Vegetable Promotion Center
	Forestry	·F/S on Watershed Rehabilitation
	Fishery	·Cogtong Bay Fishing Port
	Transportation	·Tagbilaran-Tubigon Road Improvement ·Tagbilaran-Jagna Road Improvement ·Loay-Carmen Road Improvement ·Replacement of Bridges on other National Roads
	Communication	·Telecommunication Expansion
	Human Resources Development	·Bohol Integrated Manpower Dev. Center at Tagbilaran
C - Third Priority	Tourism	·Tourism Market Survey/Promotion
	Transportation	·Airport Improvement
D - Fourth Priority	Tourism	·Sea Resort Hotel Dev. Planning

26.3 Implementation Schedule

Development of any project is in general divided into three main phases which in turn will be divided into different stages as required. A typical schedule of the project development is indicated below:

SCHEDULE OF PROJECT DEVELOPMENT

Phase I : Pre-investment Phase

- Stage 1 Identification of investment opportunities; formulation of project ideas
- Stage 2 Preliminary selection stage; Pre-feasibility study
- Stage 3 Project formulation stage; Techno-economic feasibility study
- Stage 4 Evaluation and decision stage; Appraisal or evaluation report

Phase II : Investment Phase

- Stage 1 Negotiation and contracting stage
- Stage 2 Project design stage
- Stage 3 Construction stage
- Stage 4 Start-up stage

Phase III: Operational Phase

- Stage 1 Operation at less than full capacity
- Stage 2 Operation at full capacity

The duration required for going through all these phases and steps may greatly vary due to many factors: size, complexity, availability and/or source of funds, institutional framework, needs for personnel training, local availability of supplies, existence or absence of supporting facilities and infrastructure, etc. In the case of Cagayan Integrated Agricultural Development Project it took about five years from the formulation of project ideas to reach the actual construction stage of project components. It must be remembered, however, that the local people in Bohol have experienced a long period of frustration due to the lack of immediate development activity. In the light of this, it is highly advisable that the progress through the required steps should be expedited as much as possible in order to provide tangible results and benefits to the Boholanos within the shortest possible time.

The following is the strategy recommended for the Bohol Integrated Area Development Plan.

1) Early Establishment of the Project Organization

It is often the case that the lack or insufficient development of project organization is one of the major causes of delay of the project implementation. It is strongly urged that a necessary organization will be quickly established for the BIADP.

2) A Strategic Choice of a Project of High Implementability

The set of projects proposed in any kind of regional development plan cannot be implemented simultaneously. There are many reasons for this; e.g., 1) there will be lack of sufficient financial and manpower resources, 2) there will be event and activity sequence, and a network of the work and task that must be followed in order to implement any project or program, 3) priority order of the projects necessarily varies among projects judged from the criteria of economic benefit, urgency in need or demand, time span required, etc.

It is apparent that without a project, the project organization cannot be established. It is strongly recommended that a strategic choice must be made on the type of project which can be easily carried out as the initial step of implementation of the BIADP.

3) Project Package

With exception of Wahig-Pamacsalan Irrigation Project, the investment costs estimated for the projects identified for the BIADP are relatively small.

Consequently, it is strongly advised that a project package method is better to be used not only for the cost effectiveness of feasibility study but also for the requirement of work and task network of the implementation of a set of projects.

4) Project Implentation Network

It is theoretically possible and practically necessary to indicate how a set of high impact projects should be carried out in accordance with the master implementation schedule and network of projects. It is our judgement that this must be most fruitfully made only after a definite strategic decision is reached as to which projects should be selected as the candidates for feasibility study or other step of the implementation.

5) Need for Follow-Up Studies

Any development plan cannot be regarded completely finished when it is drawn up. The plan has to be formulated on the basis of a set of assumptions, data available on a subject under study, time allocated for the study, and given environmental conditions, etc. It is therefore necessary that every plan should be reviewed periodically and that whenever changes are found necessary the plan must be reformulated by taking into account the effects

Fig. 26.1 IMPLEMENTATION SCHEDULE OF HIGH IMPACT PROGRAMS AND PROJECTS

(1) Economic Sector

SUB-SECTORS	HIGH IMPACT PROGRAMS AND PROJECTS	IMPLEMENTATION SCHEDULE 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990
AGRICULTURE	1. Exploitation of Soil Technology and *Establishment of Agro Promotion Center*	
	1.1 Land, road, ponds, construction	
	1.2 Offices, houses etc. construction	
	1.3 Officers	
	BPI	
	BS	
	BAI	
	BAEx	
	BAEcon	
	1.4 Equipment setting	
	1.5 Research works starting	
	1.6 Extension works starting	
	1.7 Special Budget allocation	
	2. Wahig-Pamacsalan Irrigation Pilot Farm	
	2.1 Land leveling, road, etc. construction	
	2.2 Offices, houses, etc. construction	
	2.3 Officers: NIA	
	BPI	
	2.4 Equipment	
	2.5 Extension, demonstration	
	2.6 Special budget allocation	
	2.7 Officers: BAEx	
	3. Vegetable Promotion Center	
	3.1 Land, roads, etc.	
	3.2 Offices, houses, etc.	
	3.3 Officers: BPI	
	BAEx	
	BAEcon	
	3.4 Training demonstration	
	3.5 Special budget allocation	
	4. Promotion of Basic Research on Land Characteristics and Improvement	
	5. Promotion of Beef Cattle Production	
FORESTRY	*F/S on Watershed Rehabilitation on all* River Catchment Areas in Bohol	
FISHERY	Cogtong Bay Fishery Industrial Complex (CBFIC) Development Program	
	1. Cogtong Bay Fish Processing Plants Development Project	
	2. Cogtong Bay Fishing Port Development Project	
MINING AND MANUFAC.	New Technology Development for Small-Scale Industries	
TOURISM	1. Tourism Market Survey Promotion Project	
	2. *Sea Resort Hotel Development Planning*	

(Cont.)

(2) Infrastructure Sector

SUB-SECTORS	HIGH IMPACT PROGRAM AND PROJECTS	IMPLEMENTATION SCHEDULE										
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Water Resources Management	1. Wahig Pamacsalan Irrigation Project											
	2. Cahayag Communal Irrigation Project											
	3. Rural Water Supply											
	4. Urban Water Supply (Tagbilaran Water-works)											
	5. Study on Water Resources Management											
Transportation	1. Roads Improvement											
	1.1 Tagbilaran - Tubigon road improv.											
	1.2 Tagbilaran - Jagna road improv.											
	1.3 Loay-Carmen road improv.											
	1.4 Replacement of bridges											
	2. Ports Improvement											
	2.1 Tagbilaran port improv.											
	2.2 Jagna port improv.											
	2.3 Tubigon port improv.											
	3. Airport Improvement – Tagbilaran											
Energy	F/S on Alcogas Refinery Plant											
Communications	Telegraph Service Expansion Project											

(3) Social Services Sector

SUB-SECTORS	HIGH IMPACT PROGRAM AND PROJECTS	IMPLEMENTATION SCHEDULE										
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Public Health	1. Strengthening of the Schistsomiasis Controland Research Service.											
	2. Mobile Medical Service											
Human Resources Dev. and Education	Bohol Integrated Manpower Development Center Project at Tagbilaran											

of new factors. For the BIADP it is recommended that the follow-up studies must be undertaken to supplement the present work. They are:

- Generation of primary data
- Demand and supply projections of various items
- Detailed sectoral plans, i. e., economic sector, infrastructure and social services
- Specific area development plans
- Others

In the following section, basic guidelines and principles are given as to how the BIADP should be managed and controlled by the development staff concerned in Bohol.

26.4 Project Planning and Control Method

26.4.1 General Background of Project Management in the Philippines

The Philippine Government has already experienced planning, management and control problems of a large scale regional development planning, and it is to be assured that the technical know-how accumulated in the past through various regional development programs/ projects could be directly applied to the Bohol Integrated Area Development Plan.

Such typical examples are Cagayan Integrated Agricultural Development, Bicol River Basin Development Program, and Samar Integrated Rural Development Project, and others. Most of these programs/ projects are presently at various stages of implementation, and managed and controlled by different types of project organizations which were established for them.

However, it is observed that the organizational structure, and project planning and control methods used by them are not necessarily ideal ones for Bohol. Sone of the project organizations are found too complicated in their organizational set-up, making it extremely difficult to understand who is in charge of what. Confusion of authority has existed because persons of various ranks tend to participate in project organizations recruited from many government offices; e.g., senior officers of national administration, officers of regional and local line agencies, staff members of local governments, etc.

As far as the project implementation is concerned, little information is available to us to understand how it was planned and controlled, what kinds of problems actually came up, and what kind of rectifying actions were taken by the project officers.

It must be granted that the project management problems are purely administrative problems of the Philippine government and neither foreign consultant firms nor any other organization are allowed to interfere with them.

Nonetheless, comments and suggestions of an advisory nature are presented here as to how the implementation of the Bohol Integrated Area Development should be planned and managed. In the following remarks will be briefly made upon: 1) project organization, 2) implementation planning and control methods.

26.4.2 Project Organization for Bohol Integrated Area Development Plan

It must be noted that the effectiveness or efficiency of performance of the project is greatly determined by the type of organizational set-up designed for the BIADP. However, the organizational model used for the Cagayan, Bicol, Samar, and Mindoro projects should not be simply replanted in Bohol without any alteration. The merits and demerits discovered through administrative processes of these projects should be carefully weighed to build an organizational model best suited to the BIADP. The best method for the project organization building is to turn back to the fundamentals, principles and guidelines of the BIADP. Some of them are to be briefly mentioned here for reference.

Firstly, one of the most important premises of project organization building is to aim at the establishment of simplicity in organization as much as possible. In this respect, the organizational structure of Bicol River Basin Development Program can be taken as a prototype of the project management organization to be used for the BIADP. However, the following items should be kept in mind:

1) Roles or functions should be specifically defined so as to avoid overlapping. For this purpose a job description should be prepared for each job.

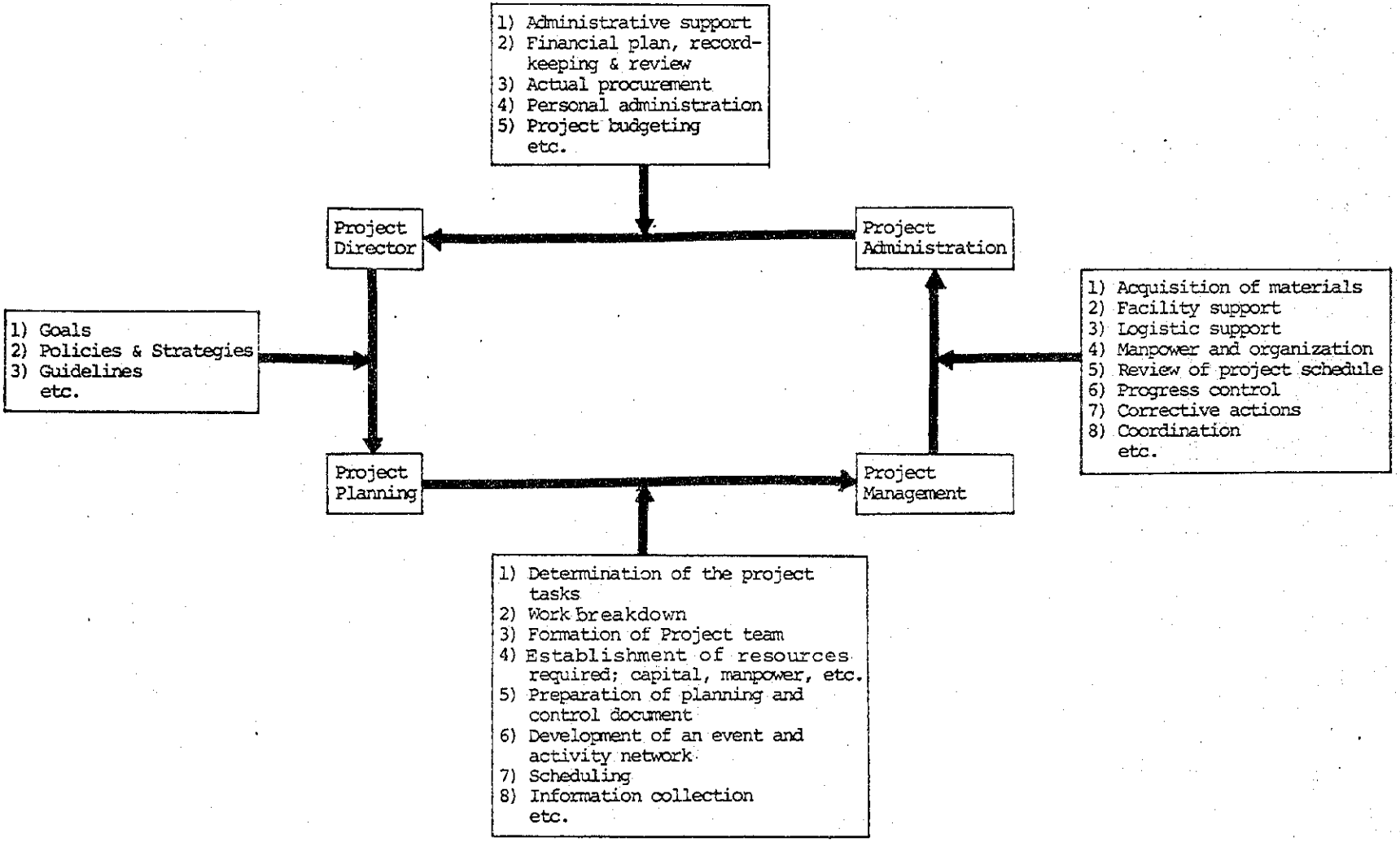
2) Basic processes of project management should be clearly understood; a simple version is indicated in Figure 26.2.

3) The so-called "the linear responsibility chart (LRC)" should be drawn up like other project organizations in the Philippines just to indicate the flow of directives, information and accountability.

4) Effective feedback system should be built into the organization.

Secondly, there is a definite need in the BIADP that the bottom-up approach should be used as much as possible in order to translate local needs into various phases of project implementation. However, the planning and management capability at local government level is generally judged to be low in the Philippines due to the overcentralization of the public administration system. Because of this, the project organizations tended to be centrally controlled in Manila. It must be borne in mind that high-handed intervention on the part of national government agency will discourage development planning staff. In order to improve the administrative capability of local governments, particularly at the provincial level, the project implementation organization must be carefully designed by taking into account the conflicting needs for economic efficiency and for training of local planning staff.

Fig. 26.2 BASIC PROCESSES OF PROJECT MANAGEMENT



Thirdly, the BIADP proposed in this report is centered upon the formulation of a set of high impact projects which are relatively small in total financial scale. It would be better to start with a small scale organization and then gradually expand its size and capabilities as required corresponding to the increase in the task and work load.

Fourthly, the type of organization needed for Bohol is a research-oriented one and not just the type of organization which is intended to implement the pre-established and fully-described task. Under the given circumstances of Bohol, there will be a large number of projects that should be formed within the organization such as "primary data generation", "sectoral development plans" and others. In other words, it must be not only an implementing, but also planning organization.

26.4.3 Project Implementation Planning and Control Methods

A host of techniques useful for the project planning and control have already become readily available to regional development planners, and they have become increasingly sophisticated requiring a high level of mathematical and statistical knowledge. A typical inventory of such methods is as follows:

- Work breakdown structure (WBS)
- Project planning (Gantt) charts
- Network plans
  - Precedence diagrams
  - Critical path method (CPM)
  - Programs evaluation and review technique (PERT)
- Network simulation
- Graphical evaluation and review technique (GERT)
- Line of balance (LOB)

etc.

The staff members of the BIADP do not have to become technically conversant and adept in all of these methods. Knowledge and practical skills in using some of the simple methods such as the Gantt chart would suffice for them to plan, manage and control many of the project components of BIADP. Nevertheless, it is highly desirable that they will gradually acquire more advanced techniques to improve their performance.

This is not the place to explain in technical detail how some of these techniques should be used for planning, managing and controlling the BIADP, for many of these are well explained in standard textbooks of management science.

1. Problem-Awareness

More important than the methods or techniques is the awareness of the problems they have to constantly tackle with. Although it may seem to be too general to be of any practical utility, the following problem list can be used as a reminder:

- What is to be done?
- When will the task be done?
- Why will the task be done?
- How much money is available to do the task?
- How will the task be done?
- Where will the task be done?
- Who will do the task?
- How well has the functional input been integrated into the project?
- What is the implementation priority?

  etc.

2. Project Task Awareness

Next, the development staff of Bohol must develop an attitude of task orientation in order to become effective member of the project organization. The following is a list of various tasks that they have to carry out:

- Establishment of overall strategy of project implementation
- Itemization of the project requirements and specifications of project inputs
- Determination of standard quality, and cost of inputs
- Identifying, selecting and evaluating suppliers of items
- Negotiating and administering contracts
- Developing, coordinating and maintaining the master project and supporting schedule
- Creating and distributing technical manuals
- Provision of logistic support
- Making a cost analysis
- Establishment of standards of the project performance
- Budget planning

  etc.

3. Need for Information Flow

When multiple projects are planned to be carried out such as in the case of the BIADP, project management information system (PMIS)

may play a vitally important role in the project planning and control. The development staff of BIADP should also be aware of the information needs such as:

- Information on the cost-time-performance parameters of a project
- Standardized format
- Decision-oriented information
- Need for prospective rather than retrospective information
- Progress, position and status reports
- Measurement of performance
- Information for critical point, interface

etc.

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