

UNITED NATIONS DEVELOPMENT PROGRAMME

Project of the Government of

THE PHILIPPINES

Title : Expanded Assistance for Central Map Production
Number : PHI/75/002/A/01/01 Duration: Three years
Sector : 20 General Economic and Social Policy and Planning
Sub-sector : 2010 General Economic and Social Planning
Government Executing Agency: United Nations
Cooperating Agency : Bureau of Coast and Geodetic Survey (BCGS)
Date of submission : 16 September 1977 Starting date: November 1977
Government contribution: P11,667,472 UNDP contribution : US\$1,044,890

Approved:

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(Director-General)

on behalf of the Government

16 September 1977

Date

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on behalf of the Executing Agency

31 August 1977

Date

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on behalf of the UNDP

16 September 1977

Date

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16 September 1977

Date

I. THE PROJECT

1. The project is basically intended to build up effective facilities for coordinated central map production in support of planned national development in the Philippines. For this purpose the UNDP is requested to provide technical advice, training and equipment for the Bureau of Coast and Geodetic Survey, which is the Government agency directly concerned.

A. Background and Justification

2. Under modern conditions, effective national administration and development project planning are heavily dependent upon the availability of up-to-date topographical maps of various scales, and for this reason all developed countries possess strong and effective national cartographic agencies to produce the required maps. In the Philippines the framework of such an agency exists in the Bureau of Coast and Geodetic Survey, but much must be done to strengthen this organization and to enable it to play its intended central role in overcoming the present deficiency of maps required for development planning and other purposes.

3. Following World War II, the United States Army produced a medium-scale (1:50,000) map series covering the entire Philippines. This was published in the early 1950's and has subsequently served a wide variety of purposes. However, the series has never been revised and up-dated, due to the inadequacy of the Government's facilities for central map production, and its usefulness has therefore steadily diminished. For the same reason, it has not been possible to meet rapidly-growing demands for large-scale (1:25,000 down to 1:4,000) topographical maps essential to effective project planning in agriculture, agrarian reform, economic and social infrastructure and other key sectors, as well as in area and regional development.

4. Confronted by this problem various functional agencies with important operational responsibilities have been impelled to prepare ad hoc base maps and special project maps to meet their specific needs thus giving

rise to a multiplicity of mapping activities, proceeding almost entirely in isolation from one another. Due to the lack of central facilities, moreover, these ad hoc efforts have not been based on any common standards, so that the maps produced have seldom been of use for any other purpose; there has accordingly been a strong tendency to duplicate, even the limited ad hoc output, when needs have arisen for maps to support subsequent or allied projects in the same locations.

5. The problem has become increasingly serious since the accelerating pace of planned development has steadily intensified the demand for topographical maps. Apart from sectoral requirements, there has recently been a noticeable rise in demand for maps to support the Government's regional development program and a variety of area development projects; and this has escalated with the considerable expansion of regional planning activities which are taking place with UNDP support under project PHI/74/018 Assistance in Regional Planning. It is therefore urgently necessary to develop an effective national mapping agency capable of carrying out a long-range topographical mapping programme and meeting specific project needs either "in-house" or in cooperation with commercial firms in the Philippines. The BCGS has developed a National Mapping Programme which consists of a medium-range plan (up to 1985) and a long-range plan (up to 2000). The most immediate requirements under this programme are to: (a) produce provisional maps and map substitutes at 1:25,000 scale, pending the production of regular line base maps on the same scale; about 1300 line base maps are expected to be produced in the next 10-15 years; (b) produce a new 1:20,000 series covering cities, regional capitals and urban areas; 600 maps will be produced for this purpose in the next five years; (c) revise the existing 1:50,000 topographical map series; approximately 325 maps will be revised in the next five years; (d) produce 1:4,000 base maps on a project basis, initially for the areas planned for area integrated development and land reform; an annual need for about 120 maps can be expected for this purpose.

6. UNDP assistance is requested to enable the Bureau of Coast and Geodetic Survey to increase its mapping capability in order that it could

initiate a rational and realistic mapping program that would ensure the supply of base maps required by all sectors of Government and the public in general.

B. Institutional Framework

7. The Government Cooperating Agency for the project will be the Bureau of Coast and Geodetic Survey (BCGS). The Bureau, which is a civilian agency under the Department of National Defense, was originally established in 1901 as a field station of the United States Coast and Geodetic Survey, with responsibility for primary geodetic survey and hydrographic charting. These responsibilities remained virtually unchanged until the Government's Integrated Reorganization Plan was put into effect by Presidential Decree No. 1 in 1972. Under Presidential Letter of Implementation (No. 19 of 31 December 1972) the former Board of Technical Surveys and Maps was abolished and responsibility for coordinating all cartographic activities, along with the new responsibility for base map production, was transferred to the BCGS.

8. The BCGS has a staff of nearly 700, including a group of about 170 professional hydrographers and geodesists. In view of the very recent enlargement of its responsibilities, however, the BCGS finds itself with very few staff trained in the fields of photogrammetry and map production, it has taken steps to restructure its organization to provide for the establishment of a topographical mapping division. Administrative and budgetary approval for this restructuring, which included a professional and technical staff increase of some 25 per cent, has now been secured. The greater part of the UNDP assistance requested under this project, in the form of advisory services, equipment and training, is required to support the development of this new division.

9. As noted in Section A above, cartographic work has been carried on for some time by units in a number of other Government agencies with operational responsibilities. Because these units perform certain useful specialized functions, which it would be uneconomical to transfer entirely to the BCGS, they have not been disbanded. Coordination of their activities will be achieved primarily through the National Committee to Coordinate and Standardize Surveying and Mapping Activities in the National Government, which is chaired by the BCGS and includes representatives of all Government agencies with major cartographic interests. The BCGS provides secretariat support for the Committee, and UNDP assistance will serve to strengthen the substantive aspects of this activity. As an essential adjunct to effective action by the Committee it is proposed to establish, with UNDP technical advice under this project, a cartographic information office and a national map and aerial photographic library.

10. Construction of a new building to accommodate the equipment to be provided under this project has been completed at a cost of about 74.6 million. Additional funds are also available for the extension and renovation of the main building in order to improve the accommodation for the photographic and lithographic facilities of the Bureau.

C. Provision for Government Follow-up

11. The Government recognizes that the increased level of expenditures entailed by this project will be required for an indefinite period beyond its formal completion and therefore undertakes to provide the necessary replacement of obsolete equipment.

D. Other Related Activities

12. The proposed project is a direct follow-up to the UNDP/United Nations-assisted project entitled "Project Mapping" (PHI/73/008) which was included as part of the Rehabilitation and Development (RAD) package presented for emergency assistance after the 1972 flood disaster.

13. An agreement has been entered into between the BCGS and the United States Defense Mapping Agency for assistance in (a) upgrading the existing primary geodetic network with information from earth satellite observation, and (b) carrying out new small-scale (i.e. from 1:60,000 upwards), aerial photography of certain parts of the country. This assistance is of considerable help to BCGS by generally improving the quality of available data for both new and revised topographical base maps.

14. As indicated in Section A above, the project will have important relationships with a very wide spectrum of planned development activities (for some of which the BCGS has already received requests for mapping assistance). Many of these other activities are receiving external assistance, or are scheduled to receive such assistance in the relatively near future.

15. Some of the ongoing/approved projects under the Country Programme which may indirectly benefit from this proposed project are:

- (a) Expanded Assistance to the Agrarian Reform Programme (PHI/74/012)
- (b) Soil and Land Resources Appraisal and Training (PHI/74/003)
- (c) Training in Multiple-Use Forest Management (PHI/72/006)
- (d) Assistance for Comprehensive Water Quality Management of Laguna de Bay (PHI/74/009)
- (e) Assistance in Regional Planning (PHI/74/018)

16. The project does not have direct investment potential, but it will provide essential information for a wide variety of pre-investment studies and plans, many of which have been seriously hampered in the past because of the inadequacy or lack of topographical maps.

II. OBJECTIVES OF THE PROJECT

A. Long-Range Objectives

- (1) To strengthen the Bureau of Coast and Geodetic Survey (BCGS) and build up its capability as the Central Mapping Facility which should eventually provide all the base map requirements of the Government. Agencies which have the capability to produce base maps at present would carry on until such time that the BCGS is in a position to service all their requirements.
- (2) To enable the BCGS to produce special or thematic maps required by agencies which do not have the capability to do so.
- (3) To provide the map reproduction services required by Government agencies in connection with thematic or special mapping.

B. Immediate Objectives

- (1) To strengthen the technical staff and supplement the map production facilities of the Bureau of Coast and Geodetic Survey through the provision of technical advice, training and equipment in order to meet its enlarged responsibilities.

- (2) To provide map substitutes and a provisional map series to meet the more urgent requirement of the planning community. To produce the initial requirements for topographical base maps on scales 1:25,000, 1:10,000 and 1:4,000.

III. WORK PLAN

<u>A. Preparatory Activities (completed)</u>	<u>Location</u>	<u>Starting Date</u>	<u>Duration</u>
(a) Provision of advice on technical and organizational matters, with particular attention to photogrammetry and map production. ^{1/}	Manila	Oct. 1974	6 mos.
(b) Identification of equipment requirements and procurement of basic photo-mapping items. ^{1/}	Manila	Oct. 1974	6 mos.
(c) Study tour (national Project Director). ^{1/}	Canada, Guyana, Jamaica, United States, Australia	May 1975	3 mos.
(d) Completion of photo-mapping laboratory to house items specified in (b) above. ^{1/}	Manila	June 1975	Completed
(e) Initiate construction of new BCGS building required to house expanded staff and equipment.	Manila	Aug. 1975	Expected to be completed in Oct. 1977

^{1/} Assisted by PHI/73/008 "Project Mapping", funded from the UNDP Programme Reserve in support of the Government's Rehabilitation and Development (RAD) Program.

B. <u>Peak Action Activities</u>	<u>Location</u>	<u>Starting Date</u>	<u>Duration</u>
(1) Related immediate objective: to strengthen the BCGS through the provision of technical advice, equipment and training.			
(a) Provision of technical advice on all aspects of mapping with particular attention to photogrammetry and cartography.	Manila and the field, as required	Feb. 1978	Continuous
(b) Procurement and installation of photogrammetric and map production equipment.	Manila	Feb. 1978	Continuous
(c) First basic training course in photogrammetry and cartography (technician level).	Manila	Feb. 1978	6 mos.
(d) Preparation of syllabi for in-service training in photogrammetry and cartography (technician level)	Manila	June 1978	2 mos.
(e) Provision of assistance in establishing and managing the national cartographic information office and air photo library	Manila	June 1978	Continuous
(f) In-service training in photogrammetry and cartography (technician level).	Manila and the field, as required	August 1978	Continuous
(g) Second-basic training course in photogrammetry and cartography.	Manila	August 1978	6 mos.
(h) Third basic training course in photogrammetry and cartography	Manila	Feb. 1979	6 mos.
(i) Fourth basic training course in photogrammetry and cartography	Manila	August 1979	6 mos.
(j) Fifth basic training course in photogrammetry and cartography	Manila	Feb. 1980	6 mos.

	<u>Location</u>	<u>Starting Date</u>	<u>Duration</u>
(k) Provision of assistance in establishing and managing the national map library	Manila	Feb. 1980	Continuous
(l) Sixth basic training course in photogrammetry and cartography	Manila	Aug. 1980	6 mos.
2. Related immediate objective: to produce the initial requirements for topographical maps and map substitutes to meet the needs of the planning community.			
(a) Production of 1:25,000 scale topographical maps (provisional edition) to meet immediate requirements for preparatory planning activities.	Manila	Feb. 1978	24 mos.
(b) Revision of the 1:50,000 scale map series of the entire country.	Manila	Feb. 1978	24 mos.
(c) Production of initial 1:10,000 scale topographical maps for regional capitals and urban centers, either "in-house" or by commercial contract.	Manila	Sept. 1978	Continuous
(d) Aerial photography by commercial contractor, in accordance with mapping priorities.	Priority areas	December to February	3 mos. (Annual)
(e) Production of topographical maps scale 1:4,000 in accordance with priority requirements.	Manila	Nov. 1978	Intermittent
(3) Reporting and review schedule			
(a) First tripartite review	Manila	Aug. 1978	
(b) Second tripartite review combined with mid-term review	Manila	Aug. 1979	

	<u>Location</u>	<u>Starting Date</u>	<u>Duration</u>
(c) Semi-annual report	Manila	July 1978 Jan. 1979 July 1979 Jan. 1980 July 1980	
(d) Draft terminal report	Manila	Sept. 1980	

Description of UNDP Inputs

1. Assignment of International Staff

- (a) Project Manager: in close cooperation with the national project director the expert will be responsible for the overall management of the project, for the coordination of the activities of the experts who will be assigned to this project by the UNDP and to direct the activities of the whole team. The expert is to provide advice as required to the director in the field of priority project in surveying and mapping. Should possess extensive professional experience in the technical and administrative aspects of large mapping projects; thorough familiarity with the applications of modern surveying techniques and recently developed map substitute production methods, including orthophotomaps.
- | | | | |
|--|--------|-----------|---------|
| | Manila | Nov. 1977 | 36 mos. |
|--|--------|-----------|---------|
- (b) Cartographer: in close co-operation with his national counterpart and under the direction of the project manager the expert will provide advice as required on all aspects of thematic cartography and will be responsible for developing appropriate cartographic production systems and related training activities. Should possess high professional competence in cartographic drafting and reproduction techniques in organisation and supervision; ability to conduct personally the training of national personnel; wide knowledge in the latest techniques of map preparation and production.
- | | | | |
|--|--------|-----------|---------|
| | Manila | Nov. 1977 | 12 mos. |
|--|--------|-----------|---------|

	<u>Location</u>	<u>Starting Date</u>	<u>Duration</u>
<p>(c) <u>Photogrammetrist</u>: in close co-operation with his national counterpart and under the direction of the project manager the expert will provide advice as required on all aspects of photogrammetry and will be responsible for selecting and developing production techniques suited for the particular conditions and requirements prevailing in the Philippines and in the establishment and implementation of standard operational procedures compatible with the chosen techniques. In particular the expert will be responsible for the introduction of orthophotography, and training activities in photogrammetry. Should possess sound academic technical background; high professional competence with extensive practical experience in a senior position; well acquainted with the organization and operations of a photogrammetry department; experience with the production of orthophotomap indispensable; ability to impart training in the use of modern stereo-photogrammetric equipment.</p>	Manila and the field, as required	Sept. 1978	12 mos.
<p>(d) <u>Consultant</u>: in close co-operation with the national project director and the project manager the expert will be responsible to prepare a general co-ordinated mapping programme for the Philippines. Should be surveying and mapping engineer with sound technical academic background and extensive professional experience in the technical and administrative aspects of large mapping project; experience in national mapping programme essential.</p>	Manila and the field, as required	As required	3 mos.
<p>(e) <u>Associate expert: (cartographer)</u>: will be responsible for training cartographic draftsmen. Should possess sound knowledge of cartographic drafting techniques.</p>	Manila	Feb. 1978	24 mos.

	<u>Location</u>	<u>Starting Date</u>	<u>Duration</u>
(f) <u>Associate expert (photogrammetrist):</u> will be responsible for training photogrammetric technicians. Should possess sound knowledge of photogrammetric techniques.	Manila and the field, as required	Sept. 1978	24 mos.
(g) <u>Associate expert (colour printing):</u> awaiting job description		1978	12 mos.
(h) <u>Associate expert (photo-lab techniques):</u> awaiting job description		1978	12 mos.
2. <u>Administrative support personnel</u>			
Administrative Assistant/Secretary	Manila	Nov. 1977	36 mos.
3. <u>Training provisions (fellowships)</u>			
Cartography (2)	United Kingdom	1978	6 mos. each
Geodesy (1)	U. S. A.	1978-1979	12 mos.
Computer Mapping (1)	U. S. A.	1979	6 mos.
4. <u>UNDP-provided supplies and equipment</u>*		<u>Estimated Cost (US Dollars)</u>	
(a) <u>Expendable equipment</u>			
i) Drafting equipment			1,000.00
ii) Photographic supplies			5,000.00
iii) Lithographic supplies			5,000.00
iv) Miscellaneous supplies			4,000.00
(b) <u>Non-expendable equipment</u>			
i) 20 mirror stereoscopes			8,500.00
ii) 20 head stereoscopes			1,000.00
iii) 20 sets of scribing tools			7,500.00
iv) 2 surveying altimeters			1,000.00
v) 1 punch register device			5,000.00
vi) 1 scanning printer (log-electronic)			12,000.00
vii) 1 zoom transferscope (ZT4 with wide base)			6,000.00
viii) 1 high precision stereoplotter to be used for independent model triangulation and precision restitution.			115,000.00

* All supplies and equipment will be delivered in 1978.

	<u>Estimated Cost</u> <u>(US Dollars)</u>
ix) 2 stereoplotters for large/medium to small-scale mapping and collection of digital height data.	60,000.00
x) 1 High production off-line ortho-photo projector with slope correction (first order).	210,500.00
xi) 1 point transfer PUG4	11,000.00
xii) 1 radial secator	5,000.00
xiii) 1 process cartographic camera	95,000.00
xiv) 1 two-colour offset printing press (area 21 5/8 x 29 1/2 inches)	85,000.00
xv) 2 land cruiser type vehicles with air conditioning and spare parts	<u>12,000.00</u>
TOTAL	US\$649,500.00

5. Miscellaneous

- (a) Operation and maintenance of equipment - \$4,800
- (b) Reporting cost - \$3,050
- (c) Sundry - \$7,150

D. Description of Government Inputs

1. Prerequisites

The Government will ensure: (a) that all necessary budgetary and other provisions are authorized prior to the commencement of UNDP assistance; and (b) that satisfactory accommodation for the UNDP-supplied equipment is made available prior to the delivery of such equipment. The Government further undertakes that all maps produced through the project will be made available to Government user-agencies under minimum security restrictions.

2. Assignment of National Staff

- (a) The Assistant Director or Deputy Director in charge of the Topographic Mapping Division will serve as national counterpart

officer to the Project Manager. Appropriate officers of the BCGS will serve as national counterpart officers to the experts and associate experts.

- (b) The staff of the BCGS will be augmented by an annual intake of fifty (50) recruit/trainees until a total of one hundred and fifty (150) posts are filled.
- (c) Necessary secretarial/clerical staff (other than provided for with UNDP assistance) and drivers will be provided as required.

3. Sub-contracts

The Government will bear the costs of all contracts to be awarded for aerial photography and mapping.

4. Training

The Government will bear the costs of all local training to be provided under the project.

5. Government-provided supplies and equipment

The Government will bear the cost of:

- (a) all accommodation required for the project;
- (b) all expendable equipment and supplies except those specifically provided for as part of the UNDP assistance;
- (c) all maintenance, repair and operational costs for project equipment;
- (d) all computer time required for processing technical data.

The Government will also ensure that aerial photographs, survey data and other information are provided as required by the project.

PROJECT BUDGET COVERING UNDP CONTRIBUTION
(in US Dollars)

Country : PHILIPPINES

Project No. : PHI/75/002/A/01/01

Project Title : Assistance for Central Map Production

	1977		1978		1979		1980	
	m/m	\$	m/m	\$	m/m	\$	m/m	\$
10. <u>PROJECT PERSONNEL</u>								
Experts								
11.01 Project Manager	36	136,310	2	8,960	12	58,100	12	62,750
11.02 Cartographer	12	57,360	2	8,960	10	48,400	-	-
11.03 Photogrammetry	12	61,210	-	-	4	19,360	8	41,850
11.04 Consultants	3	15,000	-	-	-	-	3	15,000
11.99 Sub-total	63	319,880	4	17,920	26	125,860	23	119,600
13. Administrative Support Personnel		13,910		670		4,000		4,400
16. Other Costs		300		300				4,840
19. Component Total		334,090		18,890		129,860		124,000
30. <u>TRAINING</u>								
31. Individual Fellowships		46,300				16,200		27,000
39. Component Total		46,300				16,200		27,000
49. <u>EQUIPMENT</u>		649,500				649,500		
59. <u>MISCELLANEOUS</u>		15,000		1,000		5,000		5,000
99. UNDP TOTAL CONTRIBUTION		1,044,890		19,890		800,560		156,000
								68,440

PROJECT BUDGET COVERING GOVERNMENT CONTRIBUTION IN KIND
(in Philippine Pesos)

Country : PHILIPPINES
 Project No. : PHI/75/002/A/01/01
 Project Title: Expanded Assistance for Central Map Production

		1977	1978	1979	1980				
<u>10. PROJECT PERSONNEL</u>									
Project Director	36	143,765	2	7,986	12	47,922	10	39,936	
Counterpart to experts	27	59,766	-	-	15	33,204	12	26,562	
Clerical (1) and drivers (3)	120	65,597	4	2,027	48	27,099	48	27,099	
Component Total	183	269,929	10,013	108,225	101,583	101,583	20	10,172	
<u>20. SUBCONTRACTS</u>									
Commercial Mapping		900,000	-	-	300,000	300,000		300,000	
Aerial Photography		1,500,000	-	-	500,000	500,000		500,000	
Component Total		2,400,000	-	-	800,000	800,000		800,000	
<u>30. TRAINING</u>									
Trainees - professional	1500	1,602,923	-	360	375,660	480	500,880	660	726,383
- technician	3120	1,917,720	-	840	503,580	1140	707,070	1140	707,070
Training at U.P.		23,400	-	-	7,800	7,800		7,800	
Component Total		3,544,043	-	887,040	1,215,750	1,215,750		1,441,253	
<u>40. EQUIPMENT</u>									
Expendable Equipment		414,000	-	-	138,000	138,000		138,000	
Non-expendable Equipment		195,000	-	-	65,000	65,000		65,000	
Premises		4,600,000	-	4,600,000	-	-		-	
Component Total		5,209,000	-	4,600,000	203,000	203,000		203,000	
<u>50. MISCELLANEOUS</u>									
Operation & Maint. of Equipment		163,000	-	-	57,500	57,500		48,000	
Sundries		81,500	-	-	28,750	28,750		24,000	
Component Total		244,500	-	-	86,250	86,250		72,000	
99. GRAND TOTAL		11,667,472	4,610,013	2,084,515	2,406,583	2,406,583		2,566,361	

REGIONAL OFFICES

- REGION NO. 1 - ILOCOS REGION
REGIONAL CENTER - SAN FERNANDO, LA UNION
- REGION NO. 2 - CALUYAN CALLED REGION
REGIONAL CENTER - TUGUEGARAO, CAGAYAN
- REGION NO. 3 - CENTRAL LULU REGION
REGIONAL CENTER - SAN FERNANDO, PAMPUNGA
- REGION NO. 4 - METROPOLITAN MANILA AREA
REGIONAL CENTER - MANILA OR QUEZON CITY
- REGION NO. 4A - SOUTHERN CALABOG REGION
REGIONAL CENTER - METROPOLITAN MANILA AREA
REGIONAL CENTER - METROPOLITAN MANILA
- REGION NO. 5 - BICOL REGION
REGIONAL CENTER - LEGASPI CITY
- REGION NO. 6 - WESTERN VISAYAS REGION
REGIONAL CENTER - ILOILO CITY
- REGION NO. 7 - CENTRAL VISAYAS REGION
REGIONAL CENTER - CEBU CITY
- REGION NO. 8 - EASTERN VISAYAS REGION
REGIONAL CENTER - TAGLORAN CITY
- REGION NO. 9 - WESTERN MINDANAO
REGIONAL CENTER - DAVAO
- REGION NO. 10 - CENTRAL MINDANAO
REGIONAL CENTER - COTABATO CITY
- SUB-REGION A
SUB-REGION B
SUB-REGIONAL CENTER - ZAMBOANGA CITY
- REGION NO. 10 - NORTHERN MINDANAO
REGIONAL CENTER - CAGAYAN DE ORO CITY
- REGION NO. 11 - SOUTHERN MINDANAO
REGIONAL CENTER - DAVAO CITY
- REGION NO. 12 - CENTRAL MINDANAO
REGIONAL CENTER - COTABATO CITY

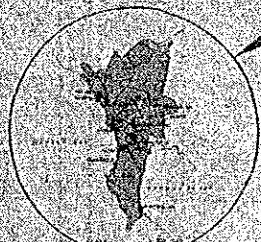
MAP
OF THE
PHILIPPINES

Scale 1:2,000,000

1977

LEGEND

- CAPITAL OF THE PHILIPPINES
- CITY AND PROVINCIAL CAPITAL
- PROVINCIAL CAPITAL
- CITY
- REGIONAL BOUNDARY
- SUB-REGIONAL BOUNDARY
- PROVINCIAL BOUNDARY



REGION NO. 4
METROPOLITAN MANILA AREA

Source: National Census and Statistics Office.

Table 3.1

GROSS VALUE ADDED, BY REGION, BY INDUSTRIAL ORIGIN, 1973 AND 1977

	1973			1977		
	Agriculture	Industry	Services	Agriculture	Industry	Services
PHILIPPINES	17,008	19,576	24,349	23,214	22,783	32,275
LUZON	7,013	14,032	16,613	10,291	16,553	23,217
Ilocos	932	874	1,230	1,245	970	1,312
Cagayan	1,074	211	403	1,342	269	460
Central Luzon	1,561	1,594	1,505	3,023	2,152	1,326
Metro Manila	—	8,583	10,406	—	9,606	16,785
Southern Tagalog	2,203	2,332	2,264	2,992	3,086	2,519
Bicol	1,243	438	805	1,689	470	815
VISAYAS	4,376	3,757	4,296	6,132	4,087	4,527
Western Visayas	2,316	1,973	2,180	3,288	1,952	2,267
Central Visayas	1,021	1,368	1,553	1,367	1,603	1,947
Eastern Visayas	1,039	416	563	1,477	532	313
MINDANAO	5,619	1,787	3,440	6,791	2,143	4,531
Western Mindanao	1,004	251	513	1,135	292	1,004
Northern Mindanao	1,564	461	734	1,837	567	836
Southern Mindanao	2,062	730	1,661	2,508	900	2,216
Central Mindanao	989	345	532	1,311	384	475

Source: NAS-NEDA.

Regional Development Framework

Regional Development Framework

Table 3.2
REGIONAL
PER CAPITA
OUTPUT, 1973
AND 1977
(in thousands
of pesos)

	1973 (In Pesos)	Per Cent to MMA	1977 (In Pesos)	Per Cent to MMA
PHILIPPINES	1,525	38.2	1,733	38.7
LUZON	1,751	43.9	2,034	45.5
Ilocos	961	24.1	1,068	23.9
Cagayan Valley	934	23.4	1,072	24.0
Central Luzon	1,129	28.3	1,379	30.8
Metro Manila	3,988	100.0	4,474	100.0
Southern Tagalog	1,507	37.8	1,694	37.9
Bicol	800	20.1	906	20.3
VISAYAS	1,315	33.0	1,494	33.4
Western Visayas	1,712	42.9	1,933	43.2
Central Visayas	1,229	30.8	1,405	31.4
Eastern Visayas	818	20.5	935	20.9
MINDANAO	1,206	30.2	1,273	28.5
Western Mindanao	852	21.3	1,014	22.7
Northern Mindanao	1,238	31.0	1,275	28.5
Southern Mindanao	1,750	43.9	1,769	39.5
Central Mindanao	874	21.9	905	20.2

Source: NAS-NEDA.

Table 3.3
REGIONAL
POPULATION:
1978-87
(In thousands
of persons)

	1978	1979	1980	1981	1982	1987
PHILIPPINES	46,350	47,719	49,137	50,557	52,026	59,903
LUZON	25,075	25,843	26,639	27,402	28,198	32,408
Ilocos	3,499	3,565	3,631	3,691	3,798	4,193
Cagayan	2,093	2,150	2,208	2,275	2,341	2,696
Central Luzon	4,856	5,017	5,184	5,359	5,515	6,410
Metro Manila	5,943	6,212	6,495	6,724	6,919	8,207
Southern Tagalog	5,268	5,425	5,587	5,763	5,931	6,829
Bicol	3,416	3,474	3,534	3,590	3,694	4,073
VISAYAS	10,235	10,387	10,541	10,768	10,978	12,040
Western Visayas	4,049	4,101	4,154	4,246	4,318	4,732
Central Visayas	3,566	3,634	3,702	3,792	3,851	4,313
Eastern Visayas	2,620	2,652	2,685	2,730	2,809	2,995
MINDANAO	11,040	11,489	11,957	12,387	12,850	15,455
Western Mindanao	2,468	2,551	2,637	2,730	2,809	3,355
Northern Mindanao	2,744	2,861	2,984	3,084	3,226	3,894
Southern Mindanao	3,237	3,393	3,556	3,691	3,850	4,672
Central Mindanao	2,591	2,684	2,780	2,882	2,965	3,534

Source: *Monograph 2*, NCSO.

Table 3.4
REGIONAL EMPLOYMENT, 1978-87
(In thousands of persons)

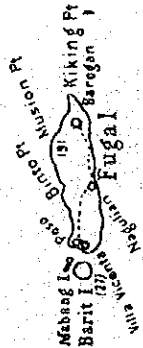
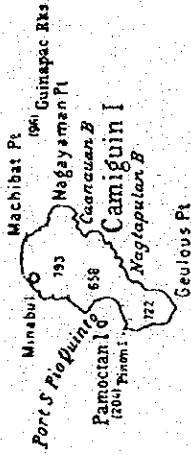
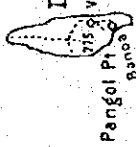
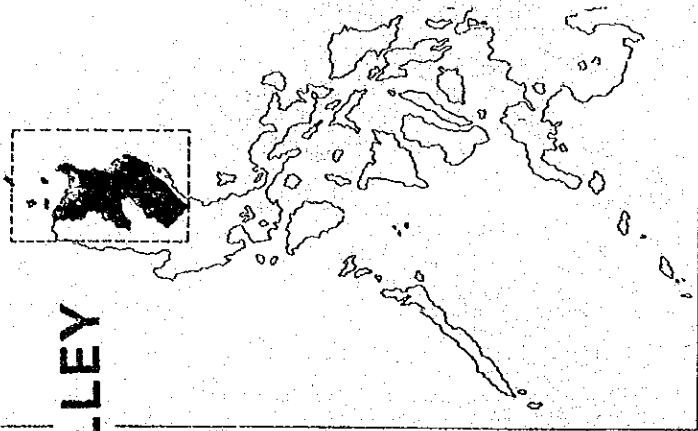
	1978	1979	1980	1981	1982	1987
PHILIPPINES	16922	16521	17138	17720	18330	21595
LUZON	8640	8991	9348	9659	10008	11838
Ilocos	1178	1218	1250	1282	1324	1503
Cagayan Valley	735	764	795	832	856	1019
Central Luzon	1602	1665	1737	1782	1850	2175
Metro Manila	2134	2251	2361	2465	2577	3173
Southern Tagalog	1815	1884	1954	2015	2076	2459
Bicol	1176	1209	1251	1283	1325	1509
VISAYAS	3783	3882	3976	4079	4167	4667
Western Visayas	1433	1475	1508	1552	1594	1774
Central Visayas	1430	1458	1486	1516	1551	1727
Eastern Visayas	920	949	982	1011	1032	1166
MINDANAO	3499	3648	3814	3982	4165	5090
Western Mindanao	723	751	786	830	866	1075
Northern Mindanao	869	904	943	978	1030	1271
Southern Mindanao	1065	1107	1161	1215	1257	1545
Central Mindanao	842	886	924	959	1002	1199

Source: RDS-NEDA.

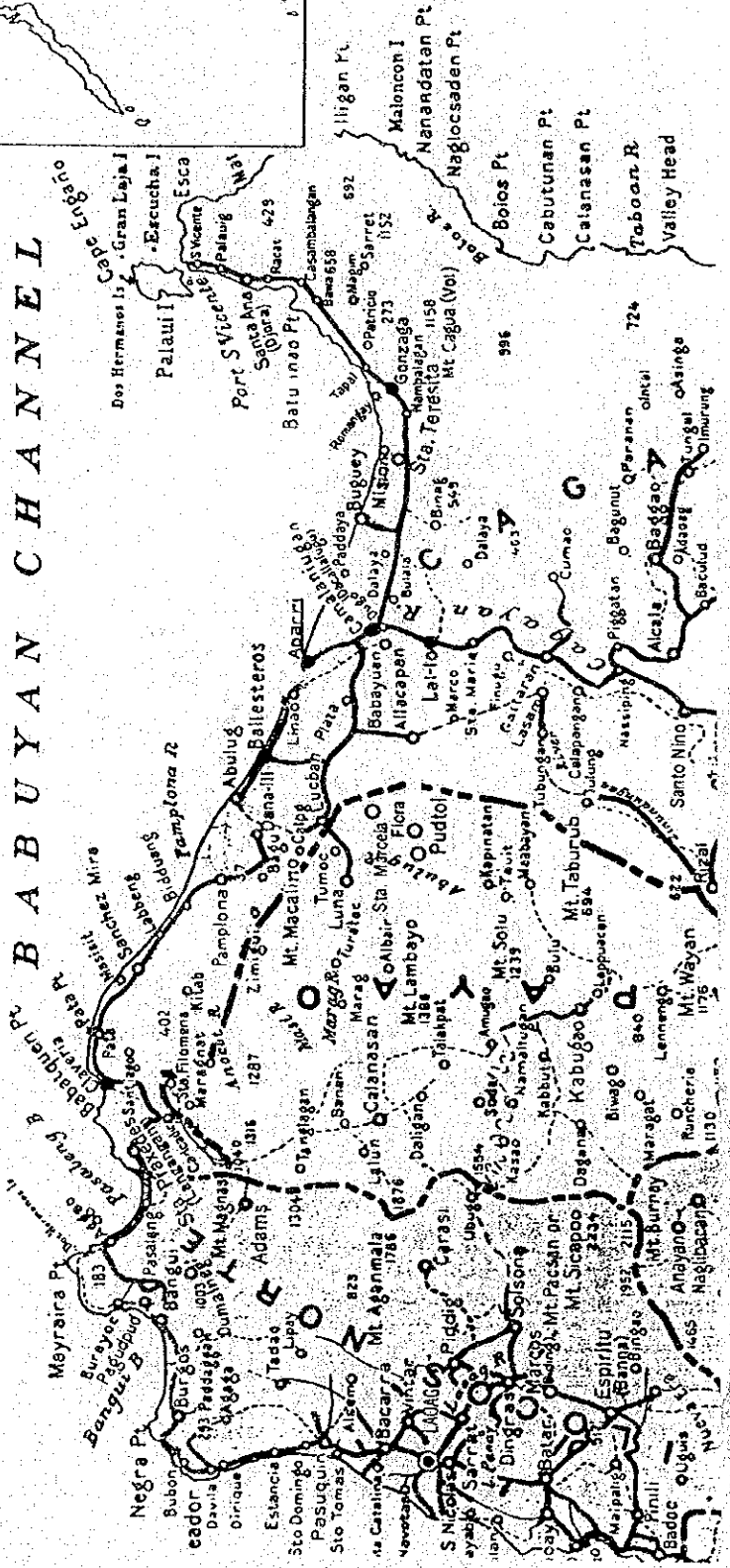
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Dalupiri I Region II: AGAYAN VALLEY

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Table 3.3
REGIONAL
POPULATION:
1978-87
(In thousands
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Source: *Monograph 2, NCSO.*

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