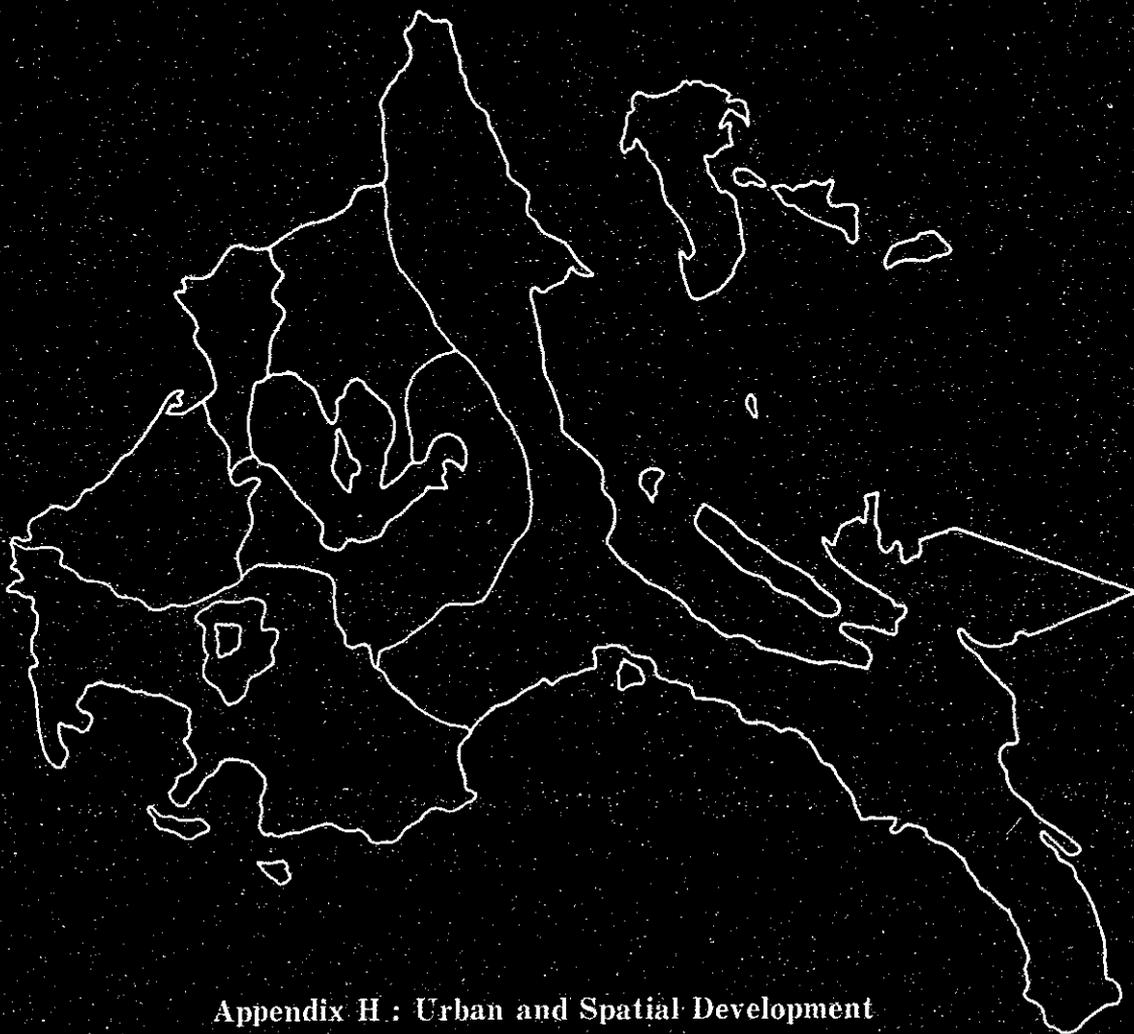


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DEPARTMENT OF TRADE AND INDUSTRY

THE MASTER PLAN STUDY  
ON  
THE PROJECT CALABARZON

FINAL REPORT



Appendix H : Urban and Spatial Development

October, 1991

JAPAN INTERNATIONAL COOPERATION AGENCY

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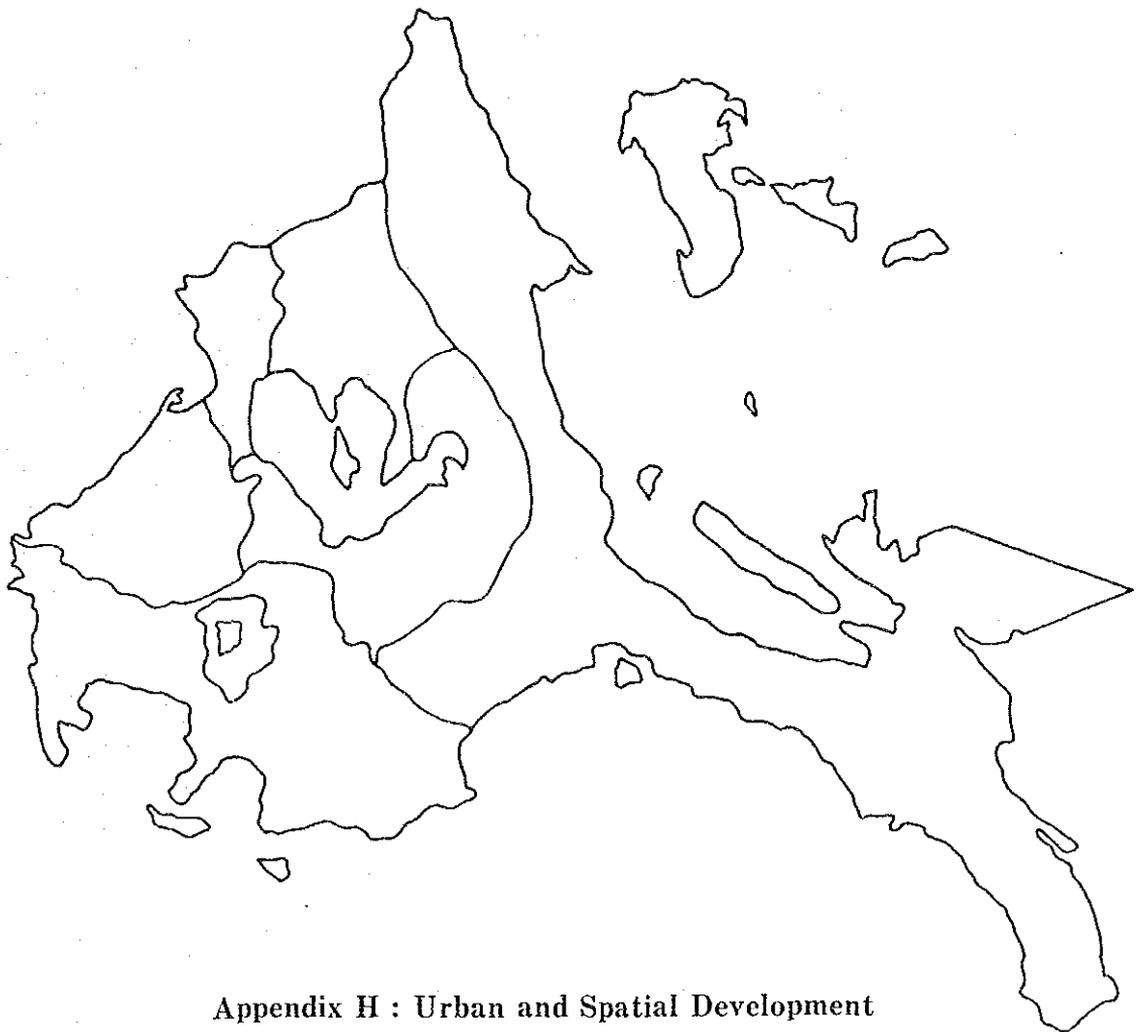
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## Appendix H URBAN AND SPATIAL DEVELOPMENT

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## Appendix H: URBAN AND SPATIAL DEVELOPMENT

### H.1 Present Conditions of National Spatial Development

#### H.1.1 National spatial structure

The Republic of the Philippines is composed of about 7,100 islands, spreading 1,100 km long in the east-west direction, and 1,800 km long in the north-south direction. The land area is around 300,000 km<sup>2</sup>, of which the largest island is Luzon island (104,700 km<sup>2</sup>), where Metro Manila is located. The second largest is Mindanao island (94,600 km<sup>2</sup>), followed by Samar island (13,100 km<sup>2</sup>), Negros (12,700 km<sup>2</sup>), Palawan (11,800 km<sup>2</sup>), Panay (11,500 km<sup>2</sup>), Mindoro (9,700 km<sup>2</sup>), Leyte (7,200 km<sup>2</sup>), Cebu (4,400 km<sup>2</sup>), and Bohol (4,100 km<sup>2</sup>). The land area of these ten largest islands amounts to 91% of the total land area of the Country.

The Country is divided into 13 regions, each consisting of four to ten provinces (Figure H.1 and Table H.1). Region IV has the largest population, closely followed by National Capital Region (NCR; Metro Manila). They accommodate respectively 14% of the national population. Population densities by region range from 74 to 12,314 per km<sup>2</sup> in 1990. Following NCR, Regions III and IV are the most densely populated regions, being adjacent to Metro Manila and have absorbed over-spill population and industries from Metro Manila. The most sparsely populated is Region II (Cagayan Valley). Other low population density areas are located in Mindanao island (Regions IX through XII) and Northern Luzon (Region I).

Each region has a regional center, where regional offices of sectoral line agencies are located. These regional centers have developed as central places of the regions in terms of economies, social services, and government administration. Many of the regional offices of Region IV are still located in Metro Manila rather than in any urban center within the Region.

Region		Regional Center (Province)	Population of Regional Center (x1,000 in 1980)
National Capital Region		Metro Manila	5,926
I.	Ilocos	San Fernando, La Union	68
II.	Cagayan Valley	Tuguegarao, Cagayan	74
III.	Central Luzon	San Fernando, Pampanga	111
IV.	Souther Tagalog	(Metro Manila)	(5,926)
V.	Bicol	Legazpi City, Albay	100
VI.	Western Visayas	Iloilo City, Iloilo	245
VII.	Central Visayas	Cebu City, Cebu	490
VIII.	Eastern Visayas	Tacloban City, Leyte	103
IX.	Western Mindanao	Jolo, Sulu	52
X.	Northern Mindanao	Cagayan de Oro City, Misamis Oriental	227
XI.	Southern Mindanao	Davao City, Davao del Sur	610
XII.	Central Mindanao	Cotabato City, Maguindanao	84

The national spatial structure is characterized first by concentration of population and economic activities in Metro Manila. Metro Manila, consisting of four cities and 13 municipalities, accommodates 8 million population in 63,600 ha (about 0.2% of the Country's land area), including over 30% of the national urban population. Metro Manila plays dominant roles in providing administrative services, opportunities for industrial production and commercial activities and various social and urban services. Metro Manila produces 40% of the Philippines' total non-agricultural output and its ports handle more than half of the Country's exports (Table H.1).

The second largest metropolitan area is Metropolitan Cebu, with the urban population at 800,000 in 1980 (Table H.2). The urban populations of other large cities are smaller than 500,000. Despite decentralization and regionalization policies, Metro Manila's population increased at high annual growth rates: 4.6% and 3.6% respectively in 1970-1975 and in 1975-1980. Metropolitan Cebu and most other large cities have shown relatively high rates of population increase. However, the concentration of urban population and accumulated investment in Metro Manila is the predominant factor in the present spatial distribution of urban population and economic activities in the Country.

## H.1.2 National policy for spatial development

### (1) Macro policy framework

Industrial dispersal has been adopted as a national development strategy by the governments since the early 1980's. In NEDA's policies, the term "industrial dispersal" means the promotion of new industries or the expansion of existing industries in areas other than Metro Manila, but not the relocation of industries out of Metro Manila.

In order to effect the dispersal policy, the following are considered important:

- 1) to transform selected cities into attractive and viable industrial locations which can counteract the dominance of Metro Manila,
- 2) to create physical, financial and institutional environments conducive to manufacturing industry promotion, and
- 3) to strengthen coordinative mechanism among different government agencies.

### (2) Designation of urban centers

There is a consensus among relevant government agencies that selected urban centers having superior industrial potential and/or better infrastructure should be selected for accelerated industrial development. NEDA and DTI have respectively designated regional centers as the focal points in industrial dispersal efforts.

The regional industrial centers designated by DTI are listed below.

#### DTI's Regional Industrial Centers

---

Region I	San Fernando, La Union
CAR	Baguio EPZ
Region II	Cauayan, Isabela
Region III	Bataan EPZ
Region IV	Cavite EPZ, and Batangas City
Region V	Legaspi City
Region VI	Pavia, Iloilo
Region VII	Mactan EPZ
Region VIII	Tacloban City
Region IX	Zamboanga City
Region X	Phividec Industrial Estate, and Tagoloan, Misamis Oriental
Region XI	Davao City, and General Santos City
Region XII	Iligan City and Parang, Maguindanao

---

For the designated regional industrial centers, DTI has formulated an "infrastructure support program". For most centers, the program offers just a few infrastructure projects. Among the exceptions are the CALABARZON region, General Santos and the PHIVIDEC industrial estate.

NEDA has established a regional hierarchical classification of urban centers, and categorized 13 regions into four groups as shown.

NEDA's Dispersal Policy based on Regional Tired Classification

Tier	Regions	NEDA's Dispersal Measures
1st Tier	The National Capital Region (NCR), where there is extreme industrial concentration.	Disincentives
2nd Tier	Regions III and IV, where some spill-over of the NCR's industrial activities have, to some extent, taken place.	Neutral Treatment
3rd Tier	Regions I, VI, VII, X, and XI, where the largest cities outside of the NCR with the greatest potential for serving as strong industrial centers are found.	Incentives
4th Tier	Regions II, V, VIII and XII, where the development of strong industrial centers is unlikely in the short- to medium-term owing to their present level of development.	Incentives

At present, under the Philippine Assistance Program (PAP), DTI takes the lead in promoting industrial development in CALABARZON and General Santos. DTI gives high priority to Region IV as a whole, including CALABARZON, and also to Region III. These regions, however, are treated differently by NEDA as shown above.

## H.2 Existing Regional Spatial Structure

### H.2.1 Existing spatial structure

#### (1) Spatial structure of the Southern Luzon

The regional spatial structure of CALABARZON is influenced by the presence of Metro Manila and major roads radiating from Metro Manila as well as natural conditions. Among other important elements of the regional spatial structure are locations of provincial capitals and cities. A macro spatial framework within the 100 km radius of Metro Manila is illustrated in Figure H.2. Most parts of CALABARZON are within this radius except peripheral areas of Batangas and the Bondoc peninsula and the Polillo islands in Quezón.

#### (2) Locational characteristics of CALABARZON

The CALABARZON region is coterminous with Metro Manila and the most part of it is within the 100 km radius from Metro Manila, served well by major roads radiating from Metro Manila. These locational characteristics make CALABARZON a very special region in the national spatial development. Areas in CALABARZON adjacent to Metro Manila have increased their attractiveness due to good accessibility to the large market of Metro Manila and relatively well provided infrastructure as compared to the rest of the Country. Thus, CALABARZON is expected to become another production and service center to support the development of the national economy.

The CALABARZON region is a part of the Southern Tagalog (Region IV) consisting of five CALABARZON provinces and six others. Regional transportation connecting these provinces outside CALABARZON to Metro Manila passes through the Region. Therefore, CALABARZON has an important role to support the development of these six provinces as well.

### H.2.2 Spatial structure proposed by NEDA

The NEDA's ten-year regional development plan for the Southern Tagalog Region (1978-1982) was one of a few plans which put the spatial and physical dimensions in the central part of development policies. This plan employs the concept of urban growth corridors. According to the plan, "the growth corridor refers to the semiurbanized area along the major transportation axis". The major concerns behind this policy are as follows:

- to prepare for Metro Manila's natural expansion,
- to avoid disordered development, or so called "strip development" along major highways, and

- to attract private enterprises to the corridor, by taking full advantage of the area's accessibility.

This idea was formulated on the basis of the situations in the 1970's, where there were not so many large-scale manufacturing industries operating outside Metro Manila, and when the suburbanization pressure stimulated by opening of the South Super Highway was not so large.

The same policy is proposed by NEDA in current regional development framework. However, the present situations after opening of South Super Highway are different from 10 years ago. Manufacturing establishments in the suburbanization areas in Cavite and Laguna have increased substantially. Several industrial estates are in operation, and more industrial estates are planned. The most acute concern must be how to accommodate them in planned/orderly manners as well as in environmentally less harmful way rather than how to attract more private enterprises. It is not clear how the urban corridor development can approach this idea.

According to NEDA Region IV, a more detailed physical plan was supposed to be made based on the general concept of spatial framework (the urban growth corridor), and the urban growth corridor was originally an area-development concept around selected growth centers. It seems that the spatial concept of "urban growth corridor" must be interpreted as a growth center concept.

### H.3 Present Conditions of CALABARZON Urbanization

#### H.3.1 Urban and rural settlements

##### (1) Population growth

Because of its vicinity to Metro Manila, the development of the CALABARZON region has been influenced by the growth of Metro Manila in socio-economic and physical terms. Especially, the urbanization in the provinces adjacent to Metro Manila has been mainly caused by over spill of the population economically linked to Metro Manila. Metro Manila and its suburban areas form a huge conurbation.

Metro Manila's population has increased at high annual rates of more than 3.5 % since the 1950's. Among the surrounding provinces (Rizal, Laguna, and Cavite), first, Rizal has increased its population at the high rates since the 1950's; second, Laguna followed Rizal since the 1960's; finally, Cavite's population has been accelerating since the early 1970's. Batangas' population has grown at lower rates comparable to the average rates of the national population increase. Quezon's population growth has been lower than the national average since 1970.

Population Change: 1948 - 1990

	Population (*1,000)						Annual Growth Rate (%)					
	1948	1960	1970	1975	1980	1990	'48-'60	'60-'70	'70-'75	'75-'80	'80-'90	
Philippines	19,234	27,088	36,684	42,071	48,098	60,477	2.89	3.08	2.78	2.71	2.32	
Metro Manila	1,569	2,462	3,967	4,970	5,926	7,832	3.83	4.89	4.61	3.58	2.83	
CALABARZON	1,593	2,316	3,356	3,904	4,603	6,351	3.17	3.78	3.07	3.35	3.27	
Cavite	263	378	520	628	771	1,153	3.07	3.24	3.85	4.19	4.10	
Laguna	321	472	700	804	973	1,370	3.26	4.02	2.81	3.89	3.48	
Batangas	510	681	926	1,032	1,174	1,480	2.44	3.12	2.19	2.61	2.34	
Rizal	105	174	307	414	556	977	4.30	5.84	6.16	6.08	5.80	
Quezon	394	611	903	1,026	1,129	1,372	3.72	3.98	2.59	1.93	1.97	

The rapid population increase in CALABARZON was due mainly to increase in urban population. The annual growth rates of urban population in Cavite, Laguna and Rizal range from 5% to 10% in the 1970's, while those of total population range from 3% to 6% (Table H.3).

##### (2) Suburbanization

The suburbanization in the areas around Metro Manila has taken forms of private subdivision of lands, government sponsored low cost housing and site and services programs, and spontaneous development of residential areas in existing towns. The

suburbanization has taken place along the roads radiating from Metro Manila. Five main directions are identified.

- Along the road from Metro Manila to Bacoor and Rosario in Cavite,
- Along the Aguinaldo highway toward Dasmarinas in Cavite,
- Along the Manila south road and the South Super Highway to the south in Laguna,
- Along the road from Marikina to Montalban to the north in Rizal, and
- Along the road from Cainta to Taytay/Angono to the east in Rizal.

Currently, the suburban housing for the commuters to Metro Manila can be found up to Dasmarinas along the Aguinaldo highway, up to Calamba along the Manila south road, up to Montalban to the north, and up to Binangonan to the east in Rizal province.

Since Rizal province is closer to Metro Manila's central places, it had absorbed more immigrants than Cavite and Laguna in the 1970's. Since the 1980's, however, the following factors have directed and accelerated suburbanization to the south in Cavite and Laguna provinces:

- opening of the South Super Highway,
- the partial opening of the Cavite coastal road and the upgrading of the Aguinaldo highway,
- increased congestion of the roads to Rizal, and
- drainage problem in the Marikina valley.

### (3) Location of industries

According to the 1983 census of establishments, the number of large manufacturing enterprises with more than 10 workers in the four CALABARZON provinces except Quezon is about one fifth of those of Metro Manila (Table H.4). On the other hand, that of small manufacturing enterprises with fewer than 10 workers is about 80% of Metro Manila's.

More than 40% of these large manufacturing enterprises are located in Laguna relying on the South Super Highway and the Manila south road. About 27% of those are found in Rizal along the Ortigas avenue. Large scale industries in Batangas are mostly located in the coastal area of Batangas Bay in order to have their own private ports. In general, more small manufacturing enterprises are found in municipalities or cities with more urban population, especially in suburbanization areas. For example, the town with the largest number of small manufacturing enterprises (more than 1,000 in 1983) is Binan, whose

urban population is one of the largest among the urban centers in the CALABARZON region.

Between 1983 and 1988, the number of large-scale manufacturing enterprises almost doubled (Table H.4). Rizal and Laguna enjoyed dominant shares (accounting for about 70%) in the increase number of large-scale manufacturing establishments. About 37% of the increased large manufacturing enterprises are located in Rizal, 34% in Laguna, and 20% in Batangas.

#### (4) Rural settlements

Different agricultural practices form different rural settlements. In paddy growing areas, clustered settlements are found near paddy fields. In sugarcane areas, few rural settlements are found near sugarcane fields, but better houses are found along roads, and a few shanty cottages are found near the fields. In upland areas, such as coconut growing areas, rural settlements are scattered or in cluster along roads. Distribution of rural population is illustrated in Figure H.3.

### H.3.2 Existing policies for land use, housing and urban development

#### (1) Land use plans and regulations

Land use planning for municipality or city is conducted by each municipal government with technical assistance of the Housing and Land Use Regulatory Board (HLRB). Plans are discussed by municipal councils to make zoning ordinances. Furthermore, the plans adopted by municipal councils need to be approved by HLRB.

The objectives of land use planning are as follows:

- to manage land resources properly,
- to guide land use by various regulatory and development measures, and
- to follow universally accepted environmental management principles.

The municipal land use planning has two different levels of planning:

- urban land use planning for poblacion, and
- general land use planning for municipal wide area.

Many of these plans deal only with sub-categories of residential, commercial and industrial land uses. Neither different types of residential areas nor industrial areas are designated in any land use plan. Moreover, the process of the land use planning does not necessarily

allows coordination at the provincial or regional level, although sectoral plans made by national line agencies are taken into consideration.

Only a half of the municipalities/cities in CALABARZON have established their land use plans and zoning ordinances. In Laguna, only a quarter of the total municipalities/cities have plans approved. Moreover, many of the existing plans were prepared and approved in the early 1980's, when there was not so much pressure of industrialization in the Region.

Availability of Approved Land Use Plans

	Number of Cities and Municipalities	
	Those which have approved Land Use Plans	Those which do not have approved Land Use Plans
Cavite	15	7
Laguna	8	22
Batangas	10	24
Rizal	10	4
Quezon	22	19
CALABARZON	65	76

After zoning ordinances are made effective, monitoring and enforcement are supposed to be conducted by offices of municipal mayors. However, actual monitoring and enforcement based on the zoning ordinances approved seem to be limited due to shortage of personnel. Any developer must submit project plans to HLRB to secure development permits or licence to sell. HLRB is supposed to examine conformity of proposed projects with a relevant land use plan. This system of locational clearings is not working properly, as most municipalities lack land use plans.

Land conversion

If municipality/city land use plans had been approved by June 15, 1988, land transactions in conformity with the land use plans are not subjected to the Comprehensive Agrarian Reform Program (CARP). If municipalities/cities do not have land use plans, land conversion from agricultural land to other uses must follow the Administrative Order No. 1 and No.2.

LLDA regulation on industrial location

The Laguna Lake Development Authority (LLDA) also has a regulation on location and wastewater disposal of manufacturing facilities. However, it does not have any zone

ordinances on industrial location. That is, the procedure of locational clearance is to be conducted for each factory when a proposal is submitted.

## (2) Policy for housing

The major objective of the National Shelter Program is to provide the people, especially of the lowest 30% with adequate housing facilities through affordable financing packages. Government efforts for housing provision are toward projects of sites and services, low cost housing, and provision of housing loans. Since the early 1980's, a new emphasis has been put on low cost housing projects.

The government projects of housing development in the CALABARZON region are oriented toward housing problems in Metro Manila. That is, government assistances in housing provision has targeted mainly at those who have difficulties in getting access to decent housing units in Metro Manila. Especially, resettlement projects have been implemented for squatters in Metro Manila. There are two resettlement project areas near San Pedro, Laguna, and two areas near Dasmarinas, Cavite. However, none of these resettlement project areas have successfully provided with sufficient job opportunities to residents.

The involvement of the private sector is encouraged in housing development by the National Housing Authority (NHA). Under its scheme, private land owners become partners of the housing project with NHA. In exchange of their land, the land owners get shares from the project. Even in this case, however, the public provision of urban infrastructure is essential. A bottleneck to increased public housing provision is the recovery of infrastructure costs .

## (3) Urban development policy

In the Philippines, there are neither explicit urban development policies nor organization special for urban development. There used to be a national department for urban development under the previous administration. The department was divided into a number of institutions for housing development. As a result, no strong governmental body coordinating urban development policies for the Country or regions survived. Recently, the importance of urban development for economic development has been recognized, and a physical framework for Luzon has been established by NEDA. However, the physical framework is nothing more than indicative at best.

### H.3.3 Urban centers

Although the present urbanization/suburbanization trend is influenced mainly by the urban growth of Metro Manila, the development of urban areas has a long history. The urban center, so called poblacion or town proper has developed since the Spanish colonial era. At present, each municipality has a urban center composed typically of an old church, a town hall, and a market, around which built-up areas are found. Although it is predominantly rural in land use and economy, the CALABARZON region has a substantial amount of urban areas and urban population. In fact, there are 142 urban centers with 2 million urban population, which account for about 43% of the total population in the Region.

Number of City/Municipal Urban Centers

Province	Cities	Municipalities	Urban Population in 1980 (000)
Cavite	3	20	461
Laguna	1	29	594
Batangas	2	32	199
Rizal	0	14	417
Quezon	1	40	329
CALABARZON	7	135	2,000

#### Classification of urban centers

By using selected data on present attributes of urban centers, an analysis has been conducted to examine the extent of development of urban centers. Based on the analysis of urban centers, higher levels of centers are identified. Since the objective of this analysis is not to determine either exact ranking of existing urban centers or precise grouping of existing centers, an integrated criterion was not adopted by combining different criteria. Rather different pictures which can be obtained by using different data are evaluated. The selected attributes are as follows:

- urban population in city or municipality, which represents the extent of urban development and physical size of centers,
- number of wholesale/retail establishments and employment, which represents the extent of economic activities and relative amounts of urban job opportunities,
- number of manufacturing establishments, which represents the degree of concentration of small manufacturers,
- number of banks, which represents the extent of available higher urban services at the regional/sub-regional levels, and
- secondary school enrollment and number of hospital beds, which represent the extent of development of social services.

Existing large urban centers in terms of urban population and number of wholesale/retail establishments are divided into two types. One is the type of old and large towns which have developed since the Spanish era, and at present play important roles in regional economies. The other type of urban centers are rather suburbanized areas, which have rapidly absorbed urban population in the vicinity of Metro Manila. However, sometimes it is difficult to decide to which type any urban center belongs. The former type of urban centers can be identified by the extent of availability of higher/regional services, such as banking and government services. The latter type of urban centers tend to have larger urban population than the former. However, the latter tend not to have developed higher service functions, due to their vicinity to Metro Manila. Urban centers with larger urban population tend to have larger numbers of wholesale/retail establishments as well as of enrollment in secondary schools, whether they are the old town type or the suburban type. This is an important criterion to judge whether or not they are at higher levels of urban centers.

Typical old town type urban centers are Batangas City, San Pablo City, Lipa City, and Cavite City. Batangas City and San Pablo City have more than 20 bank branches; and Lipa City and Cavite City have more than 10 bank branches. Since Cavite City is within the suburbanized area, it has about 90,000 urban population. On the other hand, Batangas City and Lipa City have fewer than 30,000 urban population, and San Pablo City has about 70,000 urban population. Typical suburban type large urban centers or areas are Binangonan, Taytay, San Pedro, Carmona, Santa Rosa and Antipolo. Although these urban centers have only fewer than five bank branches, their urban population is over 50,000, respectively.

Based on the analysis, the following urban centers are identified as candidates of higher level urban centers.

Cavite City in Cavite

Binan, Calamba, San Pablo City, Sta. Cruz, and Los Banos in Laguna

Batangas City and Lipa City in Batangas

Tanay in Rizal

Lucena/Sariaya/Tayabas/Pagbilao in Quezon

Although the analysis reveals that higher degrees of development of urban services are found also in Bacoor, Cainta and Taytay, they are too close to Metro Manila and too much involved in Metro Manila's economy to function as relatively independent urban centers.

These suburban areas have gradually accumulated higher urban services oriented to housing subdivision areas, although they started their development as dormitory towns.

Besides large urban centers, some medium-sized urban centers also have potentials to be developed further for serving their hinterlands. These urban centers are not so large but have substantial amount of urban population. They are located relatively far either from Metro Manila or from large urban centers. Among these are:

Silang and Tagaytay City in Cavite,

Nagcarlan and Siniloan in Laguna,

Taal, Balayan, and Nasugbu in Batangas,

Morong in Rizal, and

Atimonan, Calauag, Catanauan, Gumaca, Lucban, Mauban, and Unisan in Quezon

#### H.3.4 Institutional system for urban and spatial development

##### (1) Institutions for spatial development

National spatial development is a relatively new idea in the Philippines. The National Economic and Development Authority (NEDA) is a government institution which coordinates efforts of various government agencies for national economic development. At the same time, NEDA deals with matters of regional development. Although both national economic development and regional development need to be pursued not only from economic perspective but also from physical and spatial perspectives, less attention has been paid to the physical and spatial sides. In fact, the organization of NEDA does not have any explicit division for physical development except one for conventional infrastructure provision (Figure H.4). Moreover, NEDA regional offices, which are supposed to play the important function for regional development, just have a coordinating function among various public and private agencies with different interests in regional development. They have neither executing nor financial power in regional development.

The coordination for regional development is regulated by two executive orders: No. 308 and No. 319. According to these orders, the administration is organized by different levels of development councils as shown in Figure H.5. In this structure, projects and programs for regional development are coordinated and requested to the upper strata of the planning system. However, since budgets are inevitably limited for substantial development efforts, local and regional decisions on development are less meaningful. Only the projects and programs selected by the national government tend to be implemented in this system.

(2) Institutions for urban development

As described in the previous section, at present there are no special governmental agencies for policy making related to urban development. The Housing and Urban Development Coordinating Council (HUDCC) is supposed to be responsible for the national policy of urban development. However, it is too much oriented to housing as its main function is to coordinate various housing agencies such as HLURB, HDMF, NHA, HIGC, and NHFC under the National Shelter Program.

Urban infrastructure provision is another matter in urban development. In regional cities and small urban municipalities, programs to provide urban infrastructure have been implemented with assistance of the World Bank. The implementing agency of these programs has been the Department of Public Works and Highways (DPWH). However, the policy mandate was just given to DPWH. In this case, the World Bank and NEDA acted as coordinating agencies. No special government agency has been involved in the actual decision-making process on this policy.

The Metro Manila Commission (MMC) has become an urban planning agency for its territory. However, the actual power which is given to MMC is limited to garbage collection and disposal. In the course of urbanization, Metro Manila and other regional cities have developed their own power to control urban development, but no special national department nor agency has been established.

## H.4 Spatial Development Framework

### H.4.1 Overall framework for CALABARZON spatial development

#### (1) Two key factors prescribing the spatial framework

In planning the development of a region, a spatial development framework is set to guide the distribution of population and various economic activities. In CALABARZON, two factors are particularly important in prescribing its spatial development: viz. water and related land environment and the relationship with Metro Manila.

The water and related land environment is an important factor, as the CALABARZON region is fragmented into small river basins with a variety of topography, the Region is under a monsoon climate with a clear division of dry and wet seasons, and the Region contains environmentally vulnerable areas represented by the Laguna Lake, the Marikina watershed and other upland areas covered by volcanic ash (Appendix J: Environment). The distance from Metro Manila is a critical factor to determine the effects of this capital on the development of different areas in the Region.

#### (2) Two regional systems

Spatial development of CALABARZON, just like its economic development, is strongly affected by the presence of Metro Manila. The area within some 50 km radius of Metro Manila is considered as a coherent region where various activities are inter-related by way of the economy of Metro Manila. Taking account of further suburbanization around Metro Manila and expansion of its influence areas, the provinces of Cavite, Laguna and Rizal should be taken as a planning unit together with Metro Manila. This may be called the Greater Capital Region.

The position of Batangas and Quezon is different from the other provinces. It is relatively independent of direct influence of Metro Manila, and has strong links with Mindoro and other provinces of Region IV. This may be called here the Southern Tagalog Region.

Within CALABARZON, the industrial location in the Greater Capital Region has occurred in areas contiguous to Metro Manila without a corresponding development in housing, services and other urban functions. This pattern is likely to continue without major interventions.

One possible intervention is to lead the industrial growth into major locations not adjacent to Metro Manila. These locations, in turn, will be converted into full urban communities by

supporting the development of small industrial districts, housing, urban infrastructure, and services in health and education.

In the case of Southern Tagalog region, the issue is whether Batangas can be developed as a regional center at the same level as Cebu and Davao in the national hierarchy. The alternative is to develop it into a second-tier center together with two to five other urban centers in CALABARZON.

Major thrusts of the CALABARZON spatial development may also have different implications for the two regional systems. These are discussed below under the headings of 1) improvement of access to rural areas, 2) strengthening of artery network, and 3) establishment of clearer hierarchical structure of urban centers.

#### Rural access

Improvement of the access to rural areas is an effective measure for increasing the production of high value-added products for urban markets envisioned above. It will facilitate marketing of agro-products, improve input distribution and also serve rural industries. Another important effect of rural access improvement is its contribution to the welfare of the rural population by better delivery of social services. This is equally important for the two regional systems.

#### Artery network

The artery network in CALABARZON can be strengthened in such a way as to direct industrial location, to serve the new kinds of service activities as mentioned above, and to dissolve network deficiencies and inter-connect different parts of the Region. Main emphasis for the Greater Capital Region is how to strengthen the interactions with Metro Manila. For the Southern Tagalog Region, interactions between Batangas and other outer provinces, and links with other urban areas in the Region should be emphasized.

#### Urban hierarchy

Intermediate size urban centers are not well developed in the Region largely due to polarization effects of Metro Manila. Several urban centers should be selected and built into second-tier centers.

Within the Greater Capital Region, possibilities for establishing such second-tier centers are limited. Most large centers in the vicinity of Metro Manila would depend on it for specialized services rather than develop a full range of services. Other centers in the

peripheries of the Greater Capital Region are small, although a few of them may have potential to develop into second-tier centers.

Second-tier centers will have a better chance to develop in the Southern Tagalog Region, especially in Batangas. This may be a mid- to long-term possibility, but the location of administrative facilities at provincial, regional and national levels would help to accelerate such development.

#### H.4.2 Framework for urban and industrial development

##### (1) Hierarchy of urban centers

###### Urban hierarchy for two regional systems

It is an important issue in the CALABARZON regional development to encourage urban centers to develop further to serve local people in various ways. Depending on the size, location, existing infrastructure, available services, and potential in its hinterland, expected functions of urban centers are different.

Based on the "two regional systems" presented above, a hierarchy of urban centers with different functions is proposed. Each of the two regional system should have one regional urban center, which is a large, multi-functional center with agglomerated urban economies. At the second level, major urban centers are defined also as multi-functional ones. At the third level, there are service urban centers, and further rural centers exist in rural hinterlands.

In the Greater Capital Region, Metro Manila exists with dominant urban functions higher than those of expected regional urban centers. It provides the highest level services such as national administration, advanced education, financial center and center of information exchanges. At the same time, it is the regional center for the Greater Capital Region.

The hierarchical functions of the centers are summarized below.

Proposed Hierarchical Functions of Urban/Rural Centers

National Capital Center	Highly specialized service functions including not only national administrative functions but also high-ordered functions of finances, information, higher education, research and development, and headquarters of companies.
Regional Urban Center	Large multi-functional urban center with relatively high-ordered functions serving the whole region, including regional administration, regional financial center, higher educational center, regional medical service center, regional commercial center, and manufacturing industrial center.
Major Urban Center	Medium-sized multi-functional urban center with sub-regional business service functions, sub-regional commercial center functions, sub-regional educational functions, housing areas, and manufacturing industrial areas.
Service Urban Center	Urban center serving rural hinterlands with distribution functions of agricultural inputs, commercial functions dealing in agricultural produce, agricultural supporting facilities, agro-processing center functions, and social services.
Rural Center	Rural center with basic urban services such as a town hall, schools, and markets for neighboring rural communities.

Functional division of urban centers

Major changes expected to take place to strengthen the urban hierarchical structure in CALABARZON are the following:

- Upgrading of a major urban center in the Southern Tagalog Region to its regional urban center,
- Upgrading of Metro Manila's functions specializing in higher-order services, and
- Upgrading of selective service urban centers to major urban centers.

The proposed hierarchy of urban centers in CALABARZON is summarized below and illustrated in Figure H.6.

Proposed Hierarchy of Urban Centers in CALABAR

Level of Urban Centers	Center
<u>National Capital Region</u> <u>Greater Capital Region</u>	Metro Manila
Regional Urban Center	Metro Manila
Major Urban Centers	Binan, Calamba, Santa Cruz,
Service Urban Centers	Trece Martires, Cavite Lowland, Tanay/Morong, Siniloan, Los Banos, Nagcarlan, Tanauan, Silang, Tagaytay
<u>Southern Tagalog Region</u>	
Regional Urban Center	Batangas
Major Urban Centers	Lucena, San Pablo, Lipa,
Service Urban Centers	Nasugbu, San Juan, Taal/Lemery, Balayan, Rosario, Luchan, Mauban, Atimonan, Gumaca, Unisan, Catanauan, Calauag, Infanta, Polillo

(2) Potential areas for urban development

Two types of potential areas of urban development are identified in CALABARZON. One is the areas under the direct influence of suburbanization from Metro Manila. The other are the regional urban centers and major urban centers outside the suburbanization areas, especially within the Southern Tagalog regional system.

Suburbanization areas from Metro Manila

At present, within 30 km radius from Manila, suburbanization is proceeding along the existing major roads. The suburbanization takes forms of spontaneous development of individual housing units, housing subdivisions, individual factories and industrial estates along major roads or in inland areas with easy access to major roads.

The pressure of land development for housing and manufacturing facilities will continue to be very high along the major transportation axes. The highest potentials are in the areas with good accessibility to the South Super Highway. The second highest potential of suburbanization both for industry and housing is found in Metro Manila's neighboring areas in Rizal, especially along the three existing roads spreading out from Metro Manila. The third and least potential among the three neighboring provinces is in the Cavite lowland area, connected to Metro Manila by the Cavite coastal road and its prospective extension. At present, two bottlenecks in traffic to Metro Manila hinder rapid suburbanization. After solving the bottlenecks, the suburbanization to the south along the Aguinaldo highway would be accelerated. However, the urban development potential for the coastal area will still be limited due to limited land area.

Potential Areas of Urban Development in Suburbanization Areas

Ranking of Urban Development Potential	Potential Area
Highest	Laguna Lake west shore area
Second Highest	Metro Manila's neighboring area in Rizal
Third Highest	Area along the Aguinaldo highway, and Cavite coastal lowland area

Southern Tagalog regional system

While the high pressure of urban development is derived from Metro Manila's growing economies, the urban development pressure in the Southern Tagalog region is at its infant stage and needs to be nurtured by planned actions. The regional urban centers and major urban centers in Southern Tagalog will be transformed in a more fundamental way,

although the urban development pressure in these centers is much smaller than that of suburbanization areas.

The Batangas regional urban center has the highest priority in the CALABARZON urban development strategy as an igniter of development in the Southern Tagalog region. However, in order to accumulate economic activities and urban population in this regional urban center, it is necessary to promote concomitantly the development of other major urban centers so that strong urban axes could be formulated.

### (3) Alternative urban development patterns in suburbanization areas

Alternative patterns of urban development in the suburbanization areas are compared as summarized in Table H.5. Each alternative is described below.

#### Ribbon development (trend growth)

Urban growth in this form of development is mainly associated with outward expansion from Metro Manila of housing and factories into the countryside. It is physically characterized by sprawl of housing development along major transportation routes, haphazard land conversion from agriculture to urban and industrial uses, and undesirable mix of land uses.

The population increase by this development pattern is followed by retail and services shops for neighborhood communities. Social services such as clinics and schools gradually follow the spread of housing areas. However, the service levels of these retail and social services are relatively low compared to the services available in Metro Manila. High-ordered urban services such as large hospitals, shopping centers, supermarkets, and other recreational facilities are lacking in ribbon development areas. This is so because ribbon development forms dispersed residential areas, where accumulated population is not large enough to make high-order urban service facilities profitable.

As the suburbanization proceeds, the traffic capacity of a major road on which ribbon development relies becomes chronically insufficient. Even if the road is widened, the increased traffic capacity by the road widening will be soon occupied by additional development along the road. In case that an expressway is available like in the Laguna Lake west shore area, the ribbon type development will take place unless urban infrastructure is well prepared to induce and support the area development.

As for manufacturing factories, its locational propensity is similar to that of residential areas. The business services and information for industrial operation are acquired in Metro Manila rather than in local urban centers. Linkages between the industrial development and local economies are small. Effects of the industrial development on employment creation in the urban sector are relatively small.

Many of suburban residents have to commute over a long distance to Metro Manila, as job creation by housing and factories is limited. Wealthier classes who can afford to commute by their private cars are beneficiaries of the ribbon development pattern. Public transportation means such as jeepneys and busses are inconvenient for long-distance commuting to Metro Manila. Jeepneys go into every town to pick up as many passengers as possible; as a result, by-pass roads are not effective in relieving traffic congestion of jeepneys in towns.

#### Corridor development

This pattern of urban development is characterized by a belt form of continuously developed urban areas. This pattern of development requires strong transportation axes composed of several major roads and other transport modes in one direction, and intensive investments in infrastructure to enable the area development rather than the ribbon development. NEDA's growth corridor development is based on a single strong road or on the combination of a major road and an expressway. Land use regulation is expected to limit urban pattern into a belt form along the major transportation. This concept of growth corridor proposed by NEDA is considered to be a ribbon type, even though the urban areas take a belt or corridor form. It has essential features similar to those of the ribbon development as explained above.

The mass of people accumulated in the belt form of land is larger than that of ribbon development. At the maturing stage of development, it is easy for higher-order urban service facilities to start their operation in the corridor pattern of urban areas. That is, it is possible to promote the urban center development as population and economic activities increase.

The transportation capacity in the main direction is usually much larger than that of the ribbon development. However, as population and economic activities continue to expand and intensify in the corridor, some form of mass rapid transit will become necessary in order to allow the additional inflow of population and economic activities. In fact, the concentrated people in the corridor is large enough to afford huge investments in mass rapid transit. To achieve this urban pattern, the government intervention will have to be

very effective in limiting urban land uses within the designated areas as well as in provision of urban infrastructure.

Since the pattern of urban development is continuous and dense in land uses, the accumulated mass of people could be very large. When strict wastewater treatment is necessary to sustain the ecological/environmental conditions as is the case in the Laguna Lake shore areas, the corridor pattern development would raise serious concern. In the case of Laguna Lake west shore areas, not only industrial wastewater but also domestic wastewater from urbanized areas need to be considered.

#### Center development

The center development pattern is spatially characterized by compact development around a core rather than by a spreading pattern with no core. In a suburbanization area, a major road runs through the core area of an urban center. In many cases, by-pass roads are provided for through traffic. In an urban center, housing areas, industrial areas, business districts, and commercial centers are arranged with urban streets.

At present, in CALABARZON there are 142 town proper, equipped with basic urban functions such as town halls, churches, schools, and market places. These may become nuclei for the urban center development. Some of them have largely developed. For example, Batangas City, Lucena City, San Pablo City, Lipa City, Binan, and Calamba are among these. However, the suburbanization pressures from Metro Manila tends to hinder the planned efforts to locate a set of functions including housing, industrial, commercial, business, and administrative functions within an urban center. In many cases, public investments in infrastructure required for inducing desired land uses and urban functions cannot catch up with the speed of spontaneous development.

When plots of land with infrastructure are available for core districts, and housing and industrial areas are arranged around the core districts, it is easier to encourage the private sector to provide higher-order urban services in the urban center. It is because the mass of residents and economic activities, providing the markets for the urban service industry, is large enough to make their business profitable. The same point is applicable to the affordability of mass rapid transits. Development of urban areas and core districts, and provision of mass rapid transit can help each other to accelerate the combined development.

The substantial extent of urbanized areas and upgraded urban service functions in an concentrated area are critical initiating factors for urban growth in terms of both agglomerated economies and urban population. However, in order to realize the urban

growth, governments have to intervene in the provision of infrastructure and promotion of private investments in higher-order urban service functions. Although cost-effectiveness of government interventions for the center development is similar to that of the corridor development, the amount of public investments and other resources of the public sector required are much lower for the center development than those for the corridor development.

Center development is more desirable for achieving compact development in suburbanization areas, especially in the case of Laguna Lake west shore area. It is because the treatment of wastewater from housing and industry would be more manageable.

#### H.4.3 Artery network in regional spatial structure

##### (1) Classification of arteries

Artery roads are classified by ranking of urban/rural centers connected by each road.

#### Proposed Classification of Artery Roads in Regional Spatial Structure

Connected Urban/Rural Centers	Classification of Road	
<u>Inter-Regional Road</u>		
	<u>Class</u>	
National Capital Center -- Regional Urban Center	Inter-Regional Artery	
Regional Urban Center -- Regional Urban Center	Inter-Regional Artery	
<u>Regional Road</u>		
	<u>Ranking</u>	<u>Class</u>
Regional Urban Center -- Major Urban Center	1	Primary Artery
Regional Urban Center -- Service Urban Center	2	Secondary Artery
Regional Urban Center -- Rural Center	3	Tertiary Artery
Major Urban Center -- Major Urban Center	2	Secondary Artery
Major Urban Center -- Service Urban Center	3	Tertiary Artery
Major Urban Center -- Rural Center	4	Rural Road
Service Urban Center -- Service Urban Center	4	Rural Road
Service Urban Center -- Rural Center	5	Rural Road
Rural Center -- Rural Center	6	Rural Road

##### (2) Integration of arteries

The classification of arterial roads implies the expected levels of road services. The adoption of "two regional systems" makes a significant difference to the levels of roads in the Southern Tagalog Region. As a result, roads connection of Batangas City - Lipa City, Batangas City - Lucena City, and Batangas City - Nasugbu would be primary arteries at the

regional level. A schematic picture of integration between urban centers is shown in Figure H.6.

Within the perceived spatial development framework, the following pairs of towns/areas are more important and need further integration by strengthening arteries connecting them.

#### Greater Capital Region

Metro Manila - Cavite lowland

Metro Manila - Trece Martires City

Metro Manila - Tanay

#### Southern Tagalog Region

Batangas City - Lucena City

Batangas City - Lipa City

Batangas City - San Pablo City

Batangas City - Nasugbu

In the improvement of the proposed arteries in the Greater Capital Region, the most effective way is to strengthen the primary artery between Metro Manila and Cavite lowland. The second priority is given to strengthening of the primary artery between Metro Manila and Tanay. The third priority is given to the primary artery between Metro Manila and Trece Martires City. Since the areas through which these improved arterial roads run are under the pressure of suburbanization, it is necessary to provide additional urban infrastructure to organize well-ordered urban areas.

Among the arteries to be improved in the Southern Tagalog Region, the most effective would be to strengthen the integration between Batangas City and Lipa City, and between Batangas City and Lucena City. Such physical integration will enable agglomeration of urban economies of these urban and industrial centers, whose external economies attract more urban population and economic activities.

## H.5 Strategy for Urban Development and Housing

### H.5.1 Urban development strategy and measures

#### (1) Expected urban development

In order to realize the spatial and economic development in line with the regional development scenario of the Project CALABARZON Master Plan, the formation of multiple urban center pattern should be promoted in both the Greater Capital region and the Southern Tagalog region. At the same time, the suburbanization from Metro Manila will further proceed inevitably in some areas with the pattern similar to the present "ribbon - type" development.

In the Southern Tagalog region, the regional urban center and all major urban centers are to be developed fully to play their assigned roles. However, given the dominance of Metro Manila's agglomeration and external economy, as well as the limited financial resources to be mobilized, it is not realistic to embark on the full development of these urban centers simultaneously. Rather it is recommendable to start with development of a few selected urban centers from the beginning of the first stage development.

#### (2) Strategic patterns of urban development

Following the expected urban development outlined above, patterns of urban development to be strategically pursued are analyzed. The results are summarized in Table H.6. Key points are described below.

During the first stage development, intensive investments in urban infrastructure and promotion of higher-order urban services should be concentrated on the multi-center development in the Laguna Lake west shore area. In the suburbanization areas in Rizal and Cavite, planned actions for urban development will be limited to the improvement of major roads connecting to Metro Manila as well as enforcement of land use regulations. As a result, guided ribbon development would be realized. For the Southern Tagalog region, the Batangas regional urban center is the first and prime target. The multi-functional urban center development is to be promoted by providing urban streets to expand urban areas and acquiring plots of land for future business and commercial center districts.

In the Laguna Lake west shore area, the multi-functional urban center development should be promoted and the problems of unorderly land conversion and wastewater discharge to the Laguna Lake should be taken as an essential part of the urban development strategy. For the Southern Tagalog region, the multi-functional urban center development in the

Batangas regional urban center should be initiated with provision of urban streets, other urban infrastructure and possibly an industrial estate.

Subsequently, the corridor development should be promoted in the Laguna Lake west shore area together with upgrading of the commuter rail system. The center development or the corridor development should be encouraged in the Cavite lowland suburbanization area with the improvement of roads and provision of mass rapid transits. For the Southern Tagalog region, the Batangas regional urban center will be enhanced further by providing a new business district and by upgrading port functions. In order to form urban axes, urban infrastructure provision in Lipa City, San Juan, Lucena City, and Lucban is to be initiated.

### (3) Institutional measures

In order to effectively promote development of multi-functional urban centers, a combination of physical and institutional measures are indispensable. Among physical measures are governments' intervention in physically organizing urban areas by the provision of infrastructure, housing estates, industrial estates, and public buildings. Institutional measures include the provision of incentives to the private sector, enforcement of land use regulations, and financial assistance.

The provision of urban infrastructure is essential for expanding urban areas and attracting higher-order urban functions. Following planning decisions for infrastructure projects, a key step is land acquisition. Provision of roads/streets creates development potential for housing, industry, and other service activities. For well-ordered urban development, acquisition of land is important not only for infrastructure but also for related urban functions. The public sector may purchase extra plots of land along planned roads/streets. For any urban center development, it is important to purchase land in advance for new business and commercial districts, as well as land for low-cost housing and other urban functions such as skill training centers.

With the extra land acquired in advance as well as improved urban infrastructure, the public sector will have additional power to effectively promote private investments in higher-ordered urban functions, such as commercial centers, condominiums, and office buildings. The public sector can specify the location of these urban functions in accordance with urban plans, and give incentives to the private sector by selling land at prices lower than prevailing market prices.

Main actors involved in urban center development are the Department of Public Works and Highways, which is in charge of infrastructure provision especially for roads and urban

streets, and the National Housing Authority, which takes care of land acquisition, construction and promotion for estates of urban functions. Centering around these two agencies, other sector agencies covering water supply, sewerage, power distribution, and telecommunications facilities are to be coordinated for planning and implementation.

In order to take both physical and institutional measures, high abilities are required to manage provision of infrastructure and promotion of private investments. For immediate enhancement of the management ability of the public sector, it is recommendable to establish special management offices for integrated urban development. While the management office is composed of government officials from related agencies, it needs to employ private consultants in the fields of construction management and business management.

#### H.5.2 Housing development strategy and measures

##### (1) Development issues

The provision of adequate shelters for all the people constitutes essential part of the civil minima for basic human needs. In CALABARZON, the satisfaction of this need is already threatened by some phenomena newly developing and may face further difficulties as rapid industrialization proceeds without incorporating housing as an integral part of the Project CALABARZON.

Some phenomena in the Region are particularly related to the housing problem. They include in-migration from outer provinces, spillover from Metro Manila, dislocation due to peace and order situation in some areas, damage by calamities (typhoons), and dislocation due to land conversion and project implementation. Main development issues for housing in CALABARZON resulting from these old and new phenomena are insufficiency in absolute number of housing units especially in rapidly urbanizing areas, development of urban squatters and existence of shanties in rural area, and resettlement needs related to CALABARZON implementation.

##### (2) Strategy for housing

Solution of housing problems generally calls for efforts by both the public and the private sectors. To address multiple housing problems existing and foreseen in CALABARZON as outlined above, the partnership of government agencies and the private sector would be most essential. Therefore, the following should be the basic strategy for housing in the CALABARZON region.

- 1) To establish criteria to provide housing by government agencies for those to be affected by the Project CALABARZON implementation ;
  - 2) To extend existing housing programs by relevant government agencies to address specific housing issues in CALABARZON identified above, covering the less privileged ; and
  - 3) To encourage private sector initiative and participation in the provision of housing affordable by qualified workers.
- (3) Measures for housing

#### Projects/programs

Existing government programs for housing should be extended to enlarge their coverage within CALABARZON. The community mortgage program has been implemented to assist existing slum communities to gain land ownership. Target groups in CALABARZON are squatters in rapidly urbanizing areas and settlers in poverty-stricken rural areas. Efforts of NHA, PCUP and DSWD should be coordinated for this program.

The core shelter project of DSWD should be expanded as presently planned. Target groups in CALABARZON should include victims of calamities and those below "food threshold" who will be adversely affected by the implementation of CALABARZON projects such as those in the Batangas port area, the Cavite coastal area and the Laguna lakeshore. As a matter of principle, project beneficiaries should be limited to CALABARZON residents, screening out "professional" squatters.

A few additional projects/programs should be initiated in CALABARZON. First, projects to expand the supply of low-cost housing need to be implemented by both government agencies and the private sector. Low-cost housing should be an important component of the proposed integrated industrial/urban development program. When an industrial estate is planned by the private sector, provision should be made for land that would be developed for low-cost housing by either the public or the private sector.

Housing for "commuters' communities" should be developed in selected towns/areas along major transportation routes which are relatively easily accessible to places of employment. The objective is to provide better residential areas outside industrial cores which have a higher environmental quality.

A program should be initiated to encourage the low-cost production of construction materials such as inter-locking bricks, cement blocks and coco-lumber. Use of local resources should be maximized.

#### Institutional measures

Proper town planning and strict implementation of land use regulations are prerequisites to successful implementation of some housing projects. Residential areas for future housing development should be designated, and healthy and sound environment protected and enhanced. Regular monitoring should be conducted of public land and unbuildable areas such as creeksides, rights-of-way of railways and power lines to prevent the establishment of new slum communities.

A fundamental solution to the housing problem is to empower people to act by themselves for the betterment of their living environment. For this, community organization will be necessary. This in turn will provide a venue for implementation of various social sector projects (Appendix I: Social Development). At the same time, an inter-agency body may be necessary to oversee housing and related concerns in CALABARZON. A sub-committee may be created within RDC-SDC to coordinate efforts of government agencies and other entities engaged in housing and community development.

## ***Tables***



Table H.1 Regional Comparison

	Region 4												Philippines		
	NCR	CALABAR The Rest of Region 4													
	1	2	3	5	6	7	8	9	10	11	12				
1. Land															
1) Land Area(sq.km)	636	7,528	39,398	21,568	36,403	18,231	17,633	20,223	14,952	21,432	18,730	28,328	31,693	23,293	300,048
	0.21%	2.51%	13.13%	7.19%	12.13%	6.08%	5.88%	6.74%	4.98%	7.14%	6.24%	9.44%	10.56%	7.76%	100.00%
2) Arable Land Area(sq.km)	196	4,941	13,377	9,252	10,233	10,236	12,087	12,673	8,317	9,620	8,688	10,384	11,463	9,427	130,894
	0.15%	3.77%	10.22%	7.07%	7.82%	7.82%	9.23%	9.68%	6.35%	7.35%	6.64%	7.93%	8.76%	7.20%	100.00%
2. Population															
1) 1990 Population('000)	7,832	6,349	1,912	4,335	2,705	6,191	3,911	5,379	4,593	3,048	3,145	3,503	4,453	3,121	60,477
	12.95%	10.50%	3.16%	7.17%	4.47%	10.24%	6.47%	8.89%	7.59%	5.04%	5.20%	5.79%	7.36%	5.16%	100.00%
2) 1980 Population('000)	5,926	4,603	1,515	3,541	2,215	4,803	3,477	4,525	3,787	2,799	2,529	2,759	3,349	2,271	48,099
	12.32%	9.57%	3.15%	7.36%	4.61%	9.99%	7.23%	9.41%	7.87%	5.82%	5.26%	5.74%	6.96%	4.72%	100.00%
3) 1980 Urban Pop('000)	5,926	1,671	598	841	343	2,009	746	1,282	1,209	609	431	733	1,121	427	17,946
	33.02%	9.31%	3.33%	4.69%	1.91%	11.19%	4.16%	7.14%	6.74%	3.39%	2.40%	4.08%	6.25%	2.38%	100.00%
4) 1980 Urban %	100.00%	36.30%	39.47%	23.75%	15.49%	41.83%	21.46%	28.33%	31.93%	21.76%	17.04%	26.57%	33.47%	18.80%	37.31%
5) Pop Density(per sq.km)	12.314	843	49	201	74	340	222	266	307	142	168	124	141	134	202
3. Economy															
1) 1987 GRDP	215,753	Region 4	104,713	30,577	16,152	62,638	22,265	45,805	48,846	18,553	24,106	38,116	51,939	26,002	705,465
(mill. p. at current price)	30.58%	Total	14.84%	4.33%	2.29%	8.88%	3.16%	6.49%	6.92%	2.63%	3.42%	5.40%	7.36%	3.69%	100.00%
2) Gross Value Added in Agricultural Sector(1987)	0	Region 4	25,253	11,315	8,323	13,174	11,570	16,640	9,427	8,649	14,880	15,217	22,942	13,382	170,772
(mill. p. at current price)	0.00%	Total	14.79%	6.63%	4.87%	7.71%	6.78%	9.74%	5.52%	5.06%	8.71%	8.91%	13.43%	7.84%	100.00%
3) Gross Value Added in Non-Agricultural Sector	215,753	Region 4	79,460	19,262	7,829	49,464	10,695	29,165	39,419	9,904	9,226	22,899	28,997	12,620	534,693
(mill. peso at current price)	40.35%	Total	14.86%	3.60%	1.46%	9.25%	2.00%	5.45%	7.37%	1.85%	1.73%	4.28%	5.42%	2.36%	100.00%

Source: NSO

Table H.2 Population of Metropolitan Areas

City	Region	Land Area (ha)*	Total Population		Population Growth Rate (%)				Population Density (per ha)				Urban Population ^		% of Urban Population to National Urban Population						
			1975*	Rank	1970*	Rank	70-80	Rank	1975	Rank	1970	Rank	1980	Rank	1975	Rank	1980	Rank			
			1980*	Rank	1975*	Rank	70-80	Rank	1975	Rank	1970	Rank	1980	Rank	1975	Rank	1980	Rank			
Metro Manila	NCR	63,600	5,925,884	1	4,970,006	1	3,966,695	1	4.10	93.17	1	78.14	1	62.37	1	5,925,884	4,970,006	3,966,695	32.84	35.12	33.97
Metro Cebu	Region 7	84,020	1,002,225	2	821,420	2	700,901	2	3.64	11.93	5	9.78	5	8.34	5	785,467	623,290	526,719	4.35	4.40	4.51
Davao	Region 1	221,130	610,375	3	484,678	3	392,473	3	4.52	2.76	8	2.19	8	1.77	8	408,775	242,456	178,471	2.27	1.71	1.53
Zamboanga	Region 9	141,470	343,722	4	265,023	4	199,901	5	5.57	2.43	9	1.87	9	1.41	10	82,753	53,678	42,001	0.46	0.38	0.36
Bacolod	Region 6	15,610	262,415	5	223,392	5	187,300	6	3.43	16.81	4	14.31	4	12.00	4	262,415	223,392	187,300	1.45	1.58	1.60
Iloilo	Region 6	5,600	244,827	6	227,027	6	209,738	4	1.56	43.72	2	40.54	2	37.45	2	244,827	227,027	209,738	1.36	1.60	1.80
Cagayan de Oro	Region 1	41,280	227,312	7	165,220	7	128,319	9	5.88	5.51	6	4.00	6	3.11	6	170,447	118,577	26,784	0.94	0.84	0.23
Angeles	Region 3	6,030	188,834	8	151,164	8	134,544	7	3.45	31.52	3	25.07	3	22.31	3	188,834	151,164	134,544	1.05	1.07	1.15
Butuan	Region 1	56,230	172,489	9	132,682	9	131,094	8	2.78	3.07	7	2.36	7	2.33	7	74,921	53,578	53,948	0.42	0.38	0.46
Iligan	Region 1	73,050	167,358	10	118,778	10	104,493	10	4.82	2.29	10	1.63	10	1.43	9	21,424	10,367	8,989	0.12	0.07	0.08
Philippines			48,098,460		42,070,660		36,684,486									18,042,045	14,153,169	11,677,820			

Source: National Statistics Office

\* Special Report No. 3

^ Special Report No. 4

**Table H.3 Urban Population in CALBARZON, Metro Manila and the Philippines**

	Population		Annual	Urban Population		Annual
	1970	1980	Growth Rate	1970	1980	Growth Rate
			1970 - 80			1970 - 80
Philippines	36,684	48,098	2.8%	11,678	18,042	4.4%
Metro Manila	3,967	5,926	4.1%	3,967	5,926	4.1%
CALBARZON (Urban %)	3,356	4,603	3.2%	1,178 (48.0%)	1,500 (32.6%)	2.4%
Cavite (Urban %)	520	771	4.0%	261 (50.2%)	461 (59.8%)	5.9%
Laguna (Urban %)	700	973	3.4%	350 (50.0%)	594 (61.0%)	5.4%
Batangas (Urban %)	926	1,174	2.4%	137 (14.7%)	199 (17.0%)	3.8%
Rizal (Urban %)	307	556	6.1%	161 (52.4%)	416 (75.0%)	10.0%
Quezon (Urban %)	903	1,129	2.3%	269 (29.8%)	329 (29.1%)	2.0%

Source: 1980 Census Special Report No. 3, National Statistical Office

**Table H.4 Number of Manufacturing Establishments and Employment**

		Large Scale 1]		Small Scale 2]	
		Manufacturing Enterprises		Manufacturing Enterprises	
		Establishments	Employment	Establishments	Employment
Philippines	1983	5,733	700,895	50,313	186,733
Metro Manila	1983	2,778	388,657	7,889	34,640
CALABAR	1983 3]	571	77,361	6,534	16,915
	1988 3]	1,173	N.A.	7,097	N.A.
	1983-88 Inceas	602		563	
Cavite	1983	80	7,121	1,169	4,983
	1988 3]	131	N.A.	916	N.A.
	1983-88 Inceas	51		-263	
Laguna	1983	248	36,410	2,935	2,785
	1988 3]	453	N.A.	3,179	N.A.
	1983-88 Inceas	205		244	
Batangas	1983	88	8,989	1,243	4,564
	1988 3]	211	N.A.	1,503	N.A.
	1983-88 Inceas	123		260	
Rizal	1983	155	24,841	1,187	4,583
	1988 3]	378	N.A.	1,499	N.A.
	1983-88 Inceas	223		312	

Source: 1] 1983 Census of Establishments: Manufacturing division

2] The data shown here are also from 1983 Census of Establishments: Manufacturing Division, but the data were unexpanded one based on the sample survey covering only the barangays with more than 10 small establishments.

3] 1988 NCSO Data

Table H.5 Comparison of Urban Development Patterns in Suburbanization Areas

Selected Aspects	Trend Pattern Ribbon Development	Corridor Development	Center Development
<u>Conditions of Forming Development Pattern</u>			
Existing major urban centers	Without any major centers, it is not possible to deter ribbon development.	It is possible to promote corridor development either with or without major urban centers.	Existing major urban centers are essential for promotion of center development.
Ample investments in infrastructure	Without ample investments in infrastructure ribbon development takes place.	Ample investments in infrastructure are essential.	Much investments in infrastructure are required for promotion of center development. However, its cost-effectiveness is higher than that of corridor development.
Ability of public sector	With low ability of public sector, ribbon development takes place.	High ability of public sector is indispensable.	High ability of public sector is essential to encourage the center development pattern.
<u>Results of Development</u>			
Urban amenity	The urban amenity to be created by ribbon development is low. Moreover, there is few possibility to improve urban amenity.	There is a possibility to enhance urban amenity by adequate investments.	There is a possibility to enhance urban amenity by adequate investments. Moreover, its cost-effectiveness is higher than that of corridor development.
Integration between industry and urban sectors	No planned way to achieve this.	If there exist any urban centers, it might be possible to make linkages between industrial and urban sectors.	There are high possibilities to make linkages between industrial and urban sectors, if it is possible to locate the two activities closely each other.
Compactness of urban areas	Not compact, but spreading.	Larger than ribbon development and center development, and spreading.	It is possible to make it compact.
Possibility to combine urban development and mass rapid transit	No, too small mass of people to provide mass rapid transit.	OK. The mass of people is large enough to support provision of mass rapid transit.	It is possible if the urban areas and centers are developed based on the mass rapid transit.

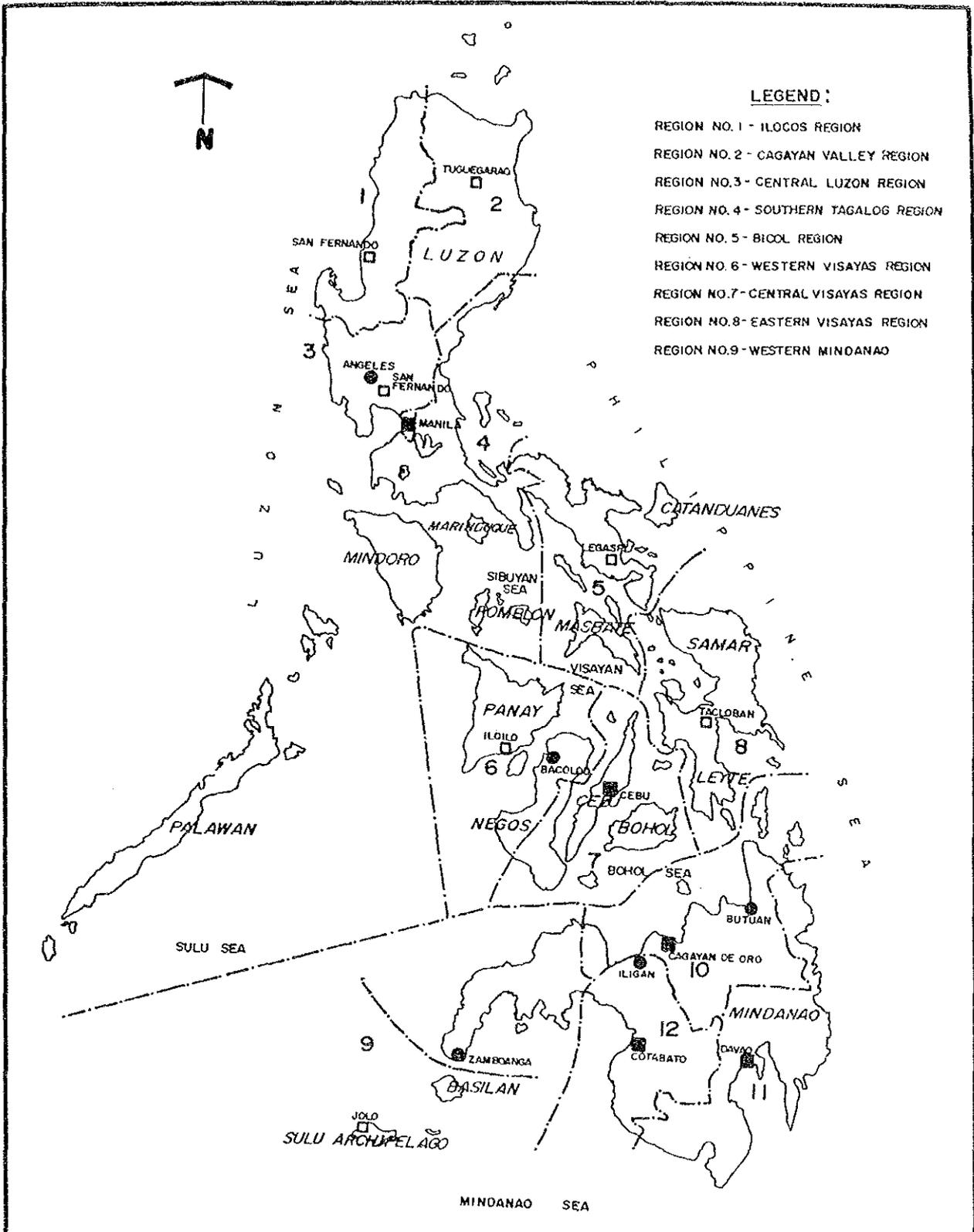
Note: Physical patterns and other characteristics are given in the text.

Table H.6 Urban Development Patterns in the Recommended Development Scenario

	The Present Stage	The First Stage of Development	The Second Stage of Development
<u>Greater Manila Region within 50 km Radius from Manila</u>			
Laguna Lake west shore	Spontaneous ribbon development. Disorderly and sporadic land conversion. However, there are substantially developed urban centers.	Promotion of center development to secure orderly and compact development by concentrated investments in urban infrastructure in existing urban centers.	Encouragement of corridor development based on the center development pattern by upgrading of the commuter rail system.
Cavite	Spontaneous ribbon development, whose speed is relatively slow due to the present traffic congestion. No substantially developed urban centers.	Guided ribbon development by land use regulation as well as by improvement of roads connecting to Metro Manila.	Alternative (1): Promotion of center development Alternative (2): Promotion of corridor development by provision of a new road and a new rapid public transportation connecting to Metro Manila
Rizal	Spontaneous ribbon development, whose speed is relatively high due to its vicinity to Metro Manila. However, there are substantially developed suburban centers.	Guided ribbon development by land use regulation as well as by improvement of roads connecting to Metro Manila.	Guided ribbon development by land use regulation as well as by improvement of roads connecting to Metro Manila.
<u>Southern Tagalog Region beyond 50 km Radius from Manila</u>			
Batangas	Industrial/urban center developed on the basis of a domestic port and the provincial capital.	Center development Upgrading of industrial center functions firstly by establishment of provincial industrial estate. Physical expansion of industrial/urban center by provision of urban streets and bypass roads.	Center development Further upgrading of industrial center functions. Establishment of a new business district in order to attract higher-ordered urban functions.

## *Figures*





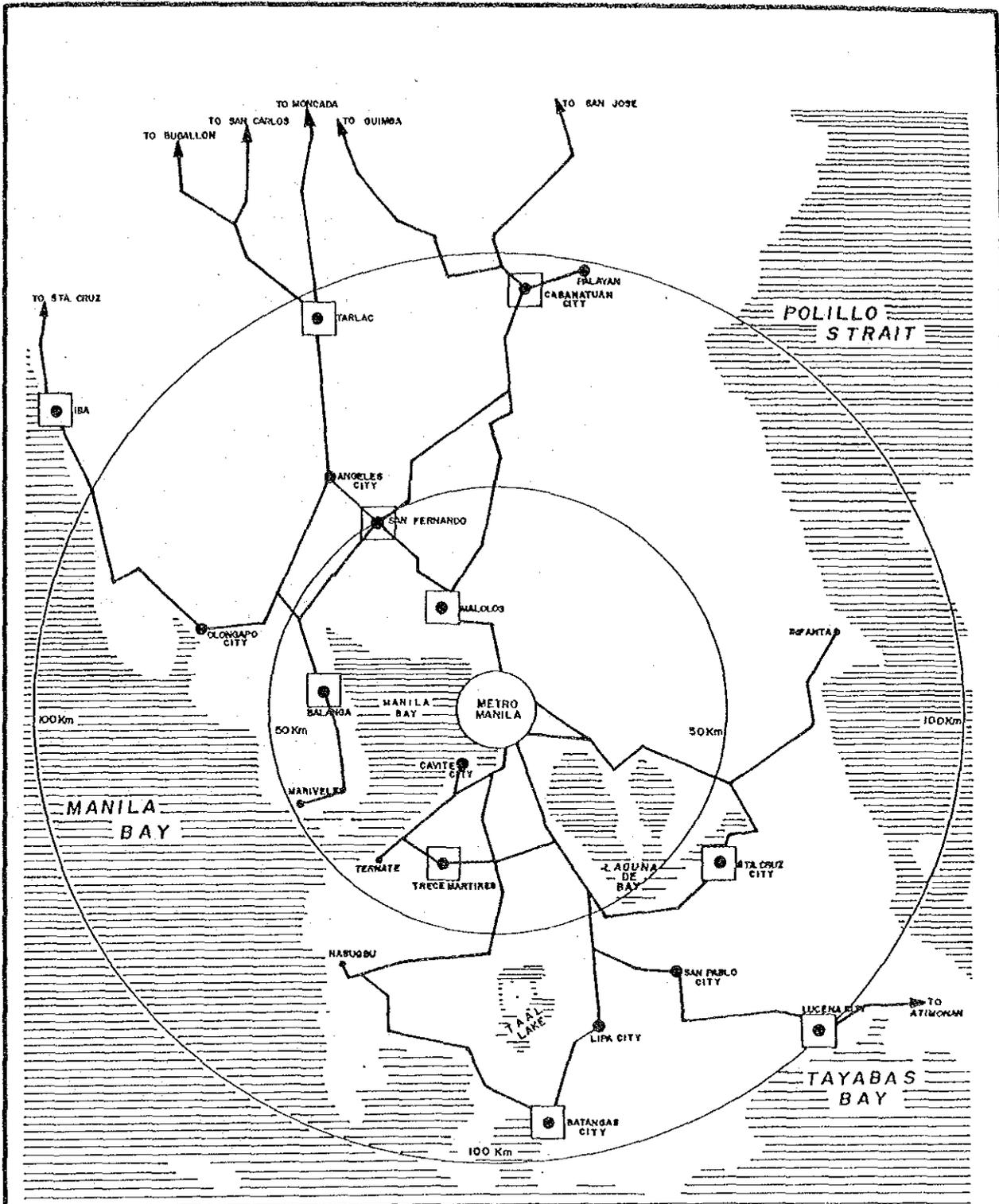
**FIGURE H.1**  
**Regional Map of the Philippines**

REPUBLIC OF THE PHILIPPINES  
 THE MASTER PLAN STUDY OF  
**THE PROJECT CALABARZON**  
 JAPAN INTERNATIONAL COOPERATION AGENCY

**LEGEND :**

- REGION NO. 10 - NORTHERN MINDANAO
- REGION NO. 11 - SOUTHERN MINDANAO
- REGION NO. 12 - CENTRAL MINDANAO
- REGIONAL CENTER □
- METROPOLITAN AREA ●
- REGIONAL CENTER / METRO AREA ■
- REGIONAL SOUNCARY LINE ———





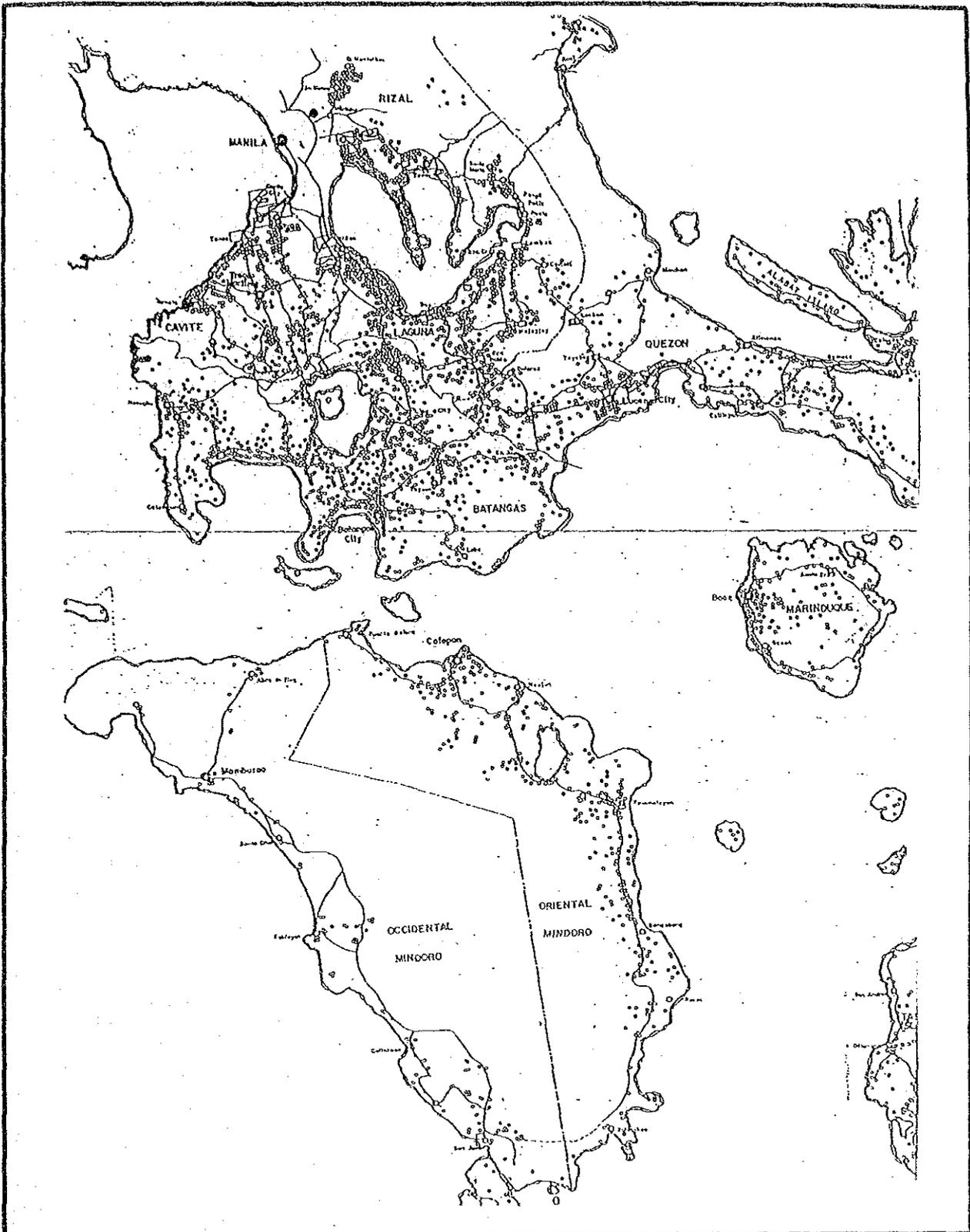
**FIGURE H.2**  
Macro - Spatial Framework in 100 km  
Radius Centering on Metro Manila

**LEGEND :**

- Provincial Capital
- City Center
- Other Urban Center

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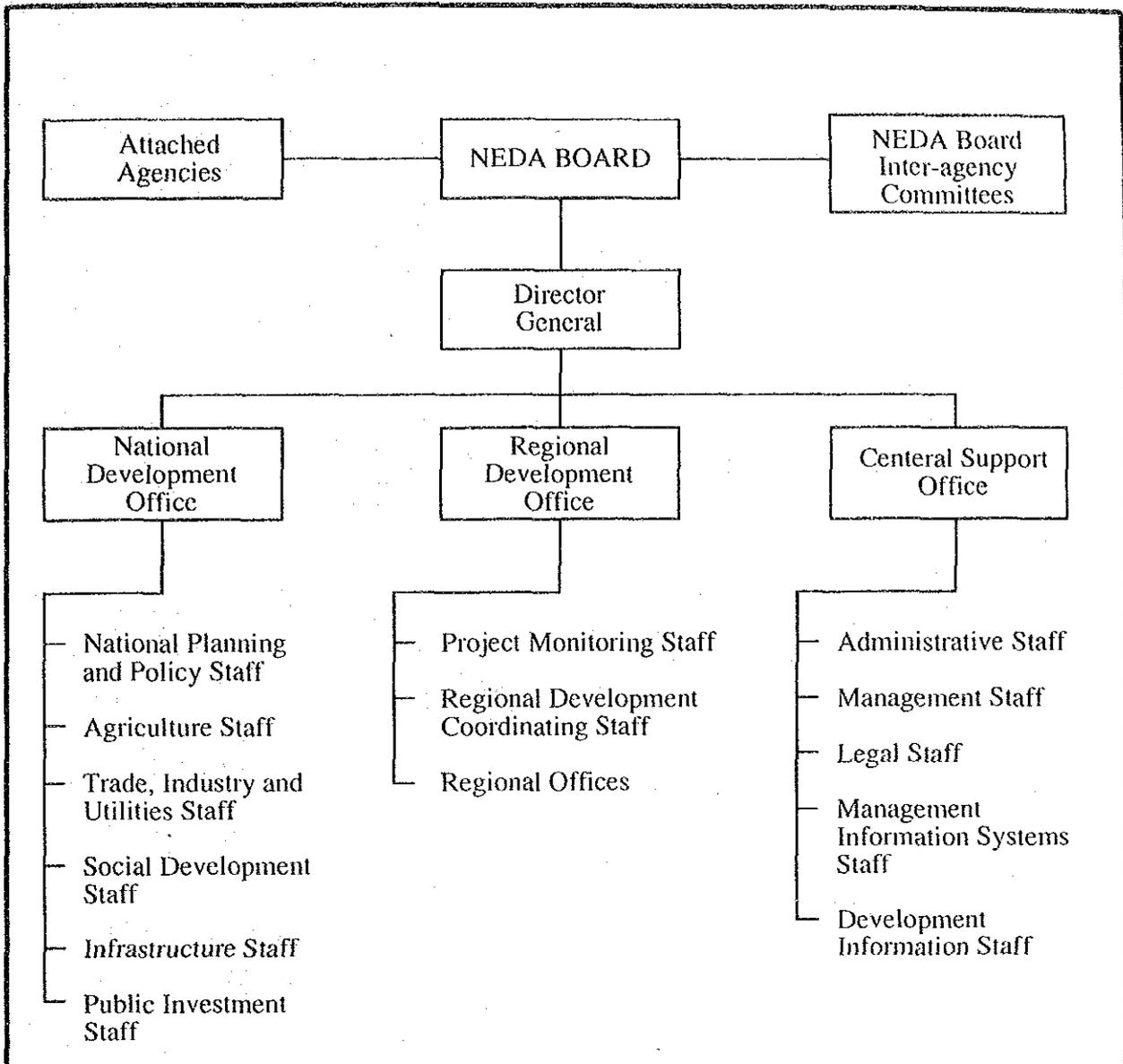
**FIGURE H.3 Rural Population Distribution in the CALABARZON Region**

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**LEGEND :**

- MUNICIPALITY/CITY CENTER
- PROVINCIAL CENTER
- REGIONAL BOUNDARY
- - - PROVINCIAL BOUNDARY
- HIGHWAYS
- PRIMARY ROADS
- OTHER ROADS
- TRAILS
- POPULATION: URBAN CENTER WITH POPULATION ABOVE 8,000 PEOPLE:
  - 8,000
  - 25,000
  - 100,000
- RURAL POPULATION: ONE "DOT" FOR EACH 1,000 PEOPLE
- RAILWAYS: IN OPERATION





Attached Agencies

- Tariff Commission
- Philippine National Volunteer Service Coordinating Agency
- Philippine Institute for Development Studies

Inter-agency Committees

- Development Budget Coordination Comm.
- Infrastructure Committee
- Investment Coordination Committee
- Social Development Committee
- Committee on Tariff and Related Matters
- Committee on Official Development Assistance

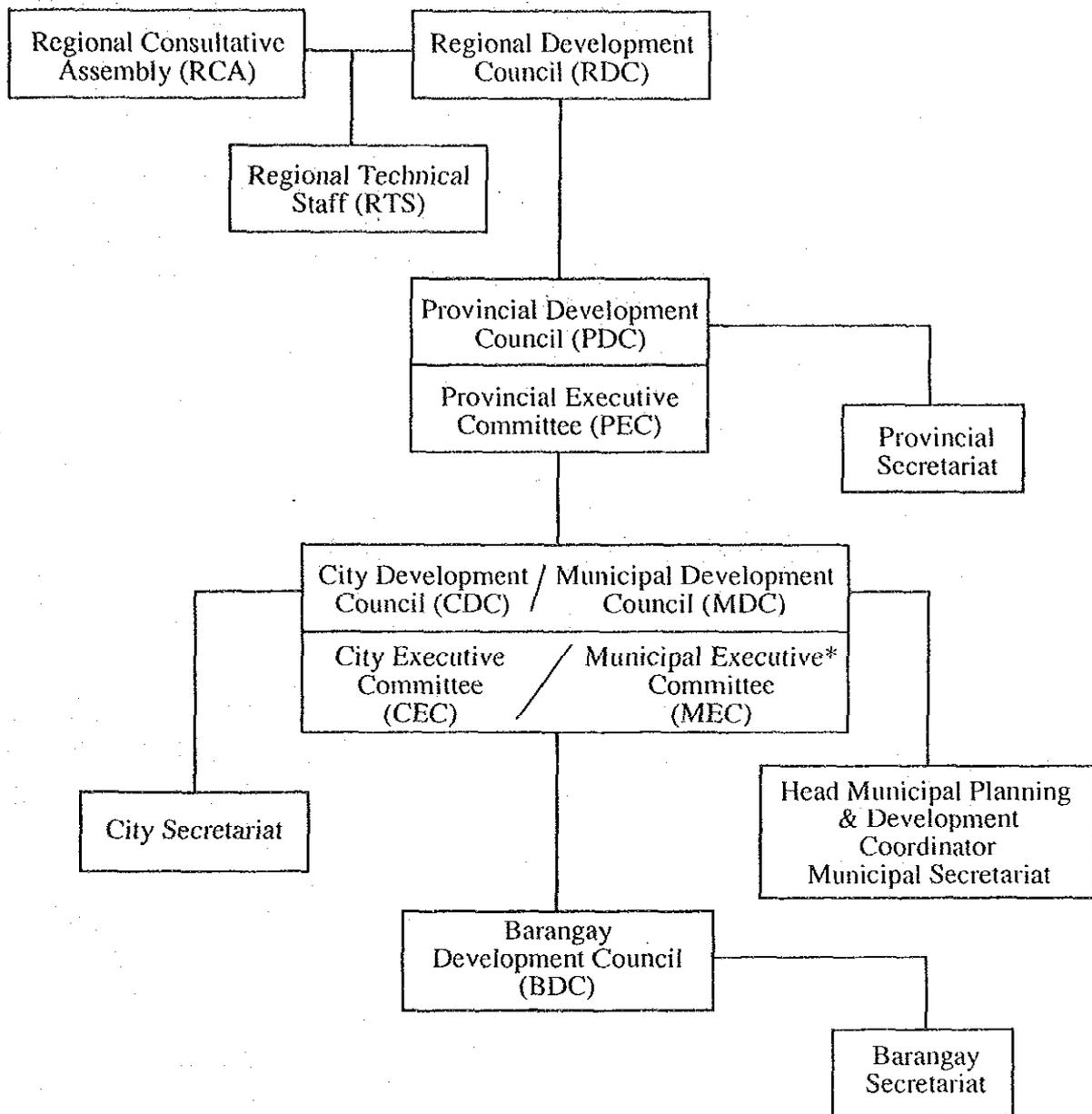
**FIGURE H.4**

**Organization of NEDA**

**LEGEND :**

REPUBLIC OF THE PHILIPPINES  
 THE MASTER PLAN STUDY OF  
**THE PROJECT CALABARZON**  
 JAPAN INTERNATIONAL COOPERATION AGENCY





\* Discretionary

**FIGURE H.5**  
**Regional and Local Development Councils**  
**Organizational Chart (E.O. 308 and 319)**

**LEGEND :**

REPUBLIC OF THE PHILIPPINES  
 THE MASTER PLAN STUDY OF

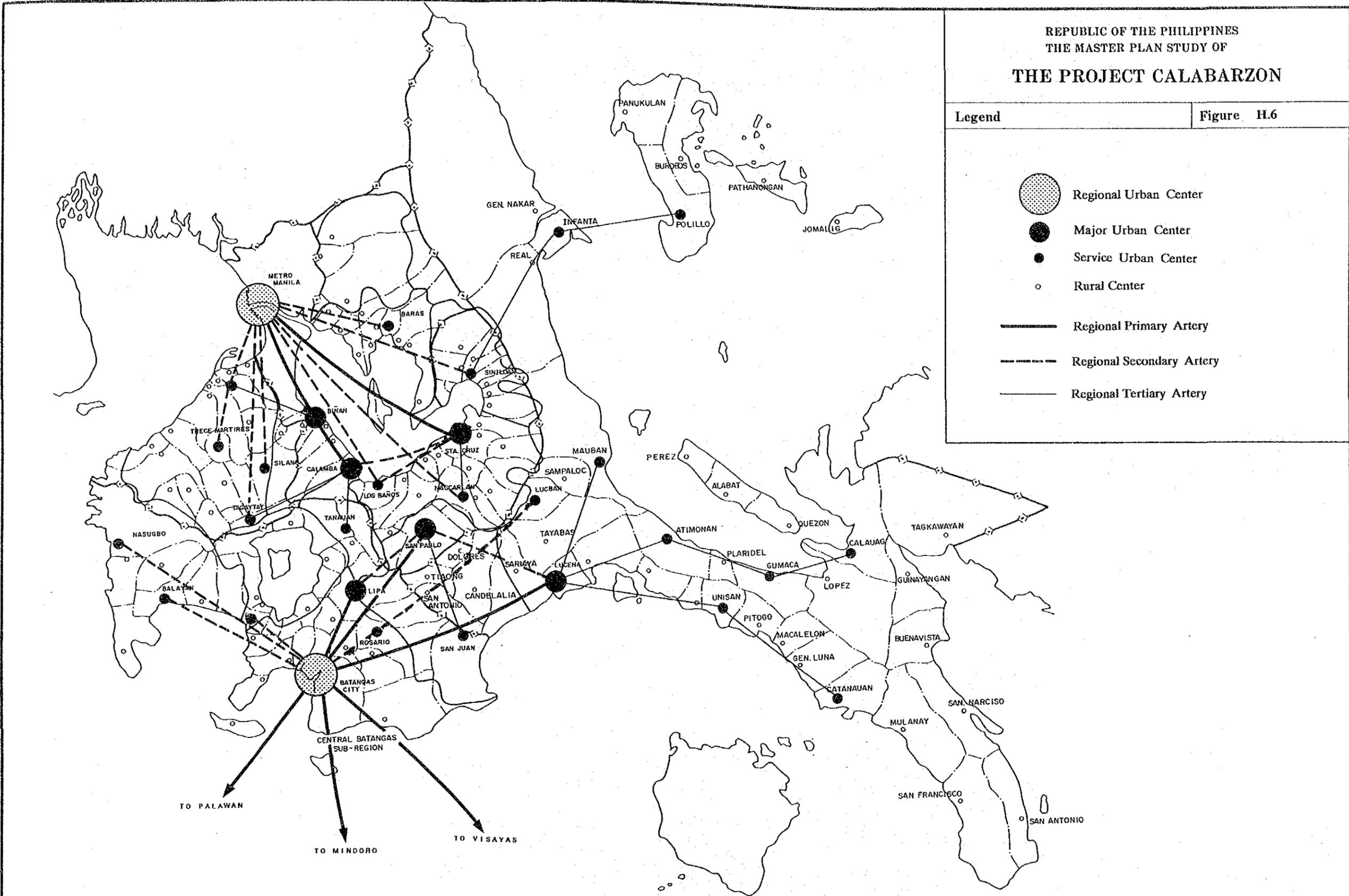
**THE PROJECT CALABARZON**

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Legend

Figure H.6



**Figure H.6**  
**Proposed Hierarchy of Urban Centers in CALABARZON**  
**and Integration between Urban Centers**

Department of Trade and Industry

Japan International Cooperation Agency

JICA