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NO.
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DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS  
REPUBLIC OF THE PHILIPPINES

**THE STUDY ON ROAD NETWORK IMPROVEMENT  
FOR  
DEVELOPMENT OF REGIONAL GROWTH CENTERS  
IN  
THE REPUBLIC OF THE PHILIPPINES**

**FINAL REPORT  
MAIN TEXT**

**Volume-3**

**PART D: METRO CAGAYAN DE ORO ROAD  
NETWORK DEVELOPMENT PLAN**

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### **METRO ILOILO AND METRO BACOLOD**

January 2004

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1 Pesos = 1.930 Yen

### **METRO CAGAYAN DE ORO**

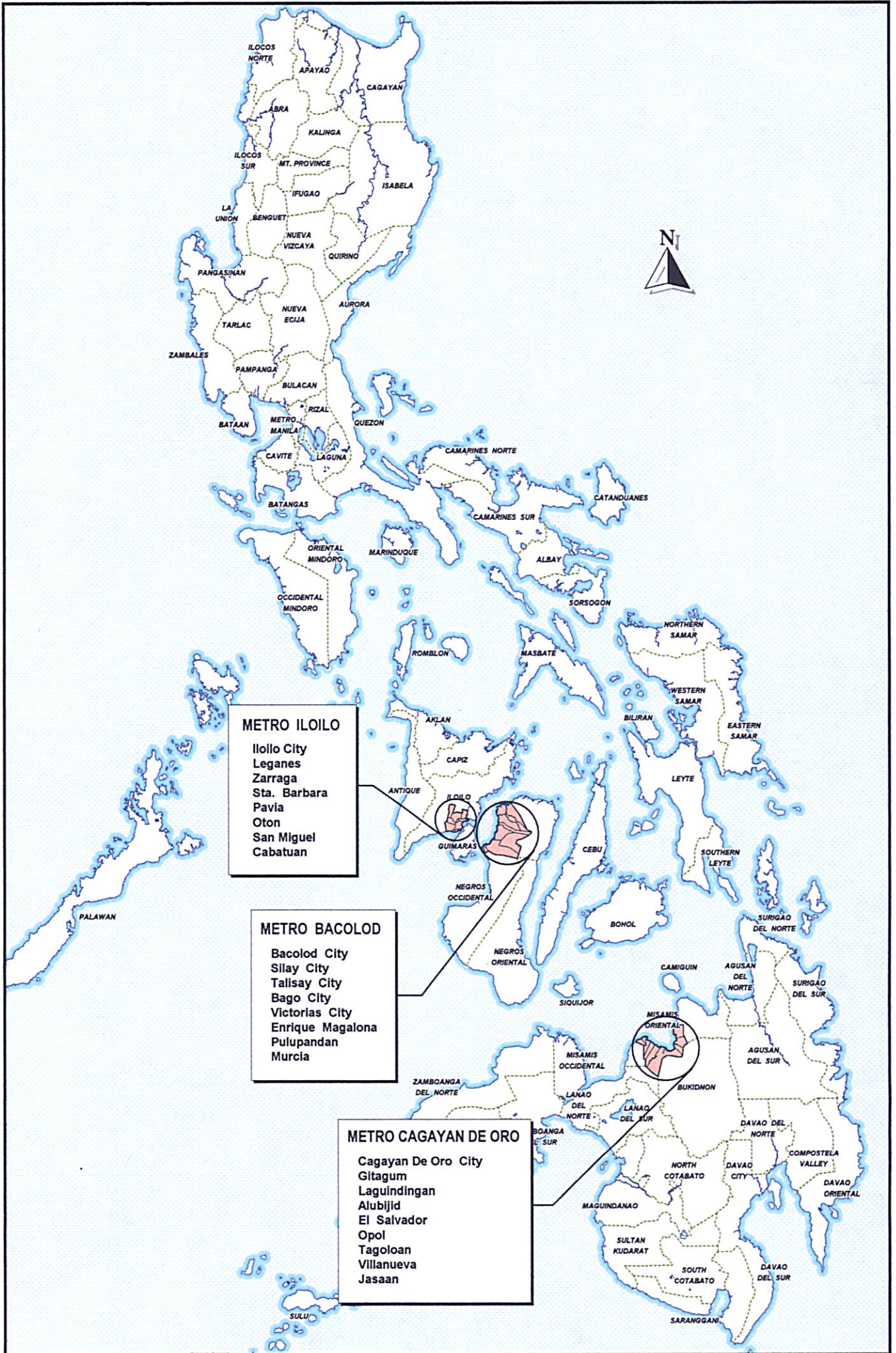
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**LOCATION MAP OF THE STUDY AREA**



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## ABBREVIATIONS

AADT	:	Annual Average Daily Traffic
AAGR	:	Annual Average Growth Rate
AASHTO	:	American Association of State Highway and Transportation Officials
AC	:	Asphalt Concrete
ADT	:	Average Daily Traffic
ATO	:	Air Transportation Office
B/C	:	Benefit / Cost Ratio
BLGF	:	Bureau of Local Government Finance
BSP	:	Bangko Sentral ng Pilipinas
CBD	:	Central Business District
CC	:	Component City (CC)
CDO	:	Cagayan de Oro
CEO	:	City Engineering Office
CLUP	:	Comprehensive Land Use Plan
CPA	:	Cebu Pacific Air
DA	:	Department of Agriculture
DAR	:	Department of Agrarian Reform
DBM	:	Department of Budget and Maintenance
DBP	:	Development Bank of the Philippines
DENR	:	Department of Environment and Natural Resources
DEO	:	District Engineering Office
DILG	:	Department of Interior and Local Government
DOF	:	Department of Finance
DOTC	:	Department of Transportation and Communication
DPWH	:	Department of Public Works and Highways
DTI	:	Department of Trade and Industry
ECA	:	Environmentally Critical Area
ECC	:	Environmental Compliance Certificate
EDCF	:	Economic Development Cooperation Fund
EIA	:	Environmental Impact Assessment
EIRC	:	Environmental Impact Assessment Review Committee
EIRR	:	Economic Internal Rate of Return
EIS	:	Environmental Impact Statement
EMK	:	Equivalent Maintenance Kilometer
EO	:	Executive Order
FS	:	Feasibility Study
GDP	:	Gross Domestic Product
GFI	:	Government Financial Institutions
GNP	:	Gross National Product
GOJ	:	Government of Japan
GOP	:	Government of the Philippines
GRDP	:	Gross Regional Domestic Product
GVA	:	Gross Value Added
HCM	:	Highway Capacity Manual
HLURB	:	Housing and Land Use Regulatory Board
HUC	:	Highly Urbanized City
IC	:	Independent Component City
ICAO	:	International Civil Aviation Organization
ICC	:	Investment Coordinating Committee
IEE	:	Initial Environmental Examination
IRA	:	Internal Revenue Appropriation
IRF	:	Immediate Response Fund
JBIC	:	Japan Bank for International Cooperation
JICA	:	Japan International Cooperation Agency
LBP	:	Land Bank of the Philippines
LGUs	:	Local Government Units
LOGOFINDP	:	Local Government Finance and Development Project
LOS	:	Level of Service

LTO	:	Land Transport Office
MAO	:	Municipal Agricultural Office
MBA	:	Maintenance By Administration
MBC	:	Maintenance By Contract
MCTP	:	Mindanao Container Terminal Project
MDF	:	Municipal Development Fund
MDFO	:	Municipal Development Fund Office
MEO	:	Municipal Engineer's Office
MRPO	:	Mindanao Railway Project Office
MPDO	:	Municipal Planning and Development Office
MVUC	:	Motor Vehicle Users Charges Act
NEDA	:	National Economic and Development Authority
NFA	:	National Food Authority
NGA	:	National Government Agency
NIA	:	National Irrigation Administration
NRR	:	Net Reproduction Rate
NSDP	:	National Statistic Coordination Board
NSO	:	National Statistics Office
OD	:	Origin-Destination
PAFs	:	Project Affected Families
PAL	:	Philippine Airlines
PANRO	:	Provincial Agricultural & Natural Resources Office
PAPs	:	Project Affected Persons
PCC	:	Portland Cement Concrete
PCM	:	Project Cycle Management
PCU	:	Passenger Car unit
PDAF	:	Priority Development Assistance Fund
PEO	:	Provincial Engineer's Office
PGA	:	Proponent Government Agency
PHIVIDEC	:	Philippine Veterans Investment Development Corporation
PHMMS	:	Philippine Highway Maintenance Management System
PIA	:	Phividec Industrial Authority
PIE-MO	:	Phividec Industrial Estate in Misamis Oriental
PITC	:	Philippine International Trading Corporation
PMO	:	Project Management Office
PNB	:	Philippine National Bank

# CHAPTER 1

## PROFILE OF THE STUDY AREA

### 1.1 PHYSICAL PROFILE

#### 1.1.1 Topography and Geomorphology

The topography of **Cagayan de Oro City**, Regional Capital of Region X can be described as a narrow coastal plain along the Macalajar Bay and by highland areas separated by steeply inclined escarpments (see Figure 1.1-1). It is bound on the south by the plateaus and mountains of Bukidnon and Lanao del Norte. The City is relatively flat with an elevation of not more than 10 meters above the mean sea level. The highlands that bound the City in the south from east to west consist of plateaus, terraces, hills, mountains, canyons, and gorges.

Seven rivers traverse, and bound the City, all draining to the Macajalar Bay. These are the Cagayan River, Iponan River, Bigaan River, Cugman River, Umalag River, Agusan River, and Ala-e River. Other prominent creeks include the Bitan-ag Creek, Gusa Creek, Kolambog Creek, and Puerto Creek.

On the east side of Cagayan de Oro City are the Municipalities of Tagoloan, Villanueva, and Jasaan. On the west side are Opol, El Salvador, Alubijid, Laguindingan, and Gitagum.

**Tagoloan** is composed of a series of plateaus, hilly terrains, river deltas, and valleys. More than 50% of the Municipality has 0 to 3% slope level. **Villanueva** consists of broad alluvial plains that are within 0 to 3% slopes. Its terrain gently rises until it reaches the highest peak locate at the center of the municipality with a slope ranging from 18 to 30%. **Jasaan** is characterized by a rugged surface cut by two (2) deep gullies running towards the sea. Its coastal area is flat but the terrain suddenly rises irregularly towards the west and south forming plateaus and hill ranges.

The topography of **Opol** is characterized by rugged terrain with approximately 25% consisting of flood plains, starting from the coast of Macajalar Bay, extending inwards to a southerly direction. The terrain rises after around three (3) kilometres, forming into mountain ranges which then suddenly drops into a small level area and then again rises higher towards the south, in its boundary with Lanao del Norte.

At the northern extreme of the Municipality of **El Salvador** are the narrow coastal lowlands with an elevation of 0 to 100 meters, crossed by creeks, and swampy areas. About 60% of its total land area is composed of rolling hills. At the central portion of the Municipality, rolling lands rise from 100 to 300 meters towards its eastern boundary with Opol, and western boundary with Alubijid.

**Alubijid's** landforms vary from level and gently sloping in the northern portion of the Municipality to gradually rolling to undulating and hilly to mountainous in the southern part. The Municipality of **Laguindingan** is located near the elevated part of the Province. Its land forms can be characterized as gently sloping, to undulating and rolling terrain. A strip of generally flat land is situated along the coastal areas, whereas the southern portions are punctuated by hills and concave slopes. Almost 60% of the total land area of Laguindingan have slopes ranging from 4 to 8%. Only around 30% are level to gently sloping with slopes ranging from 0 to 3%.



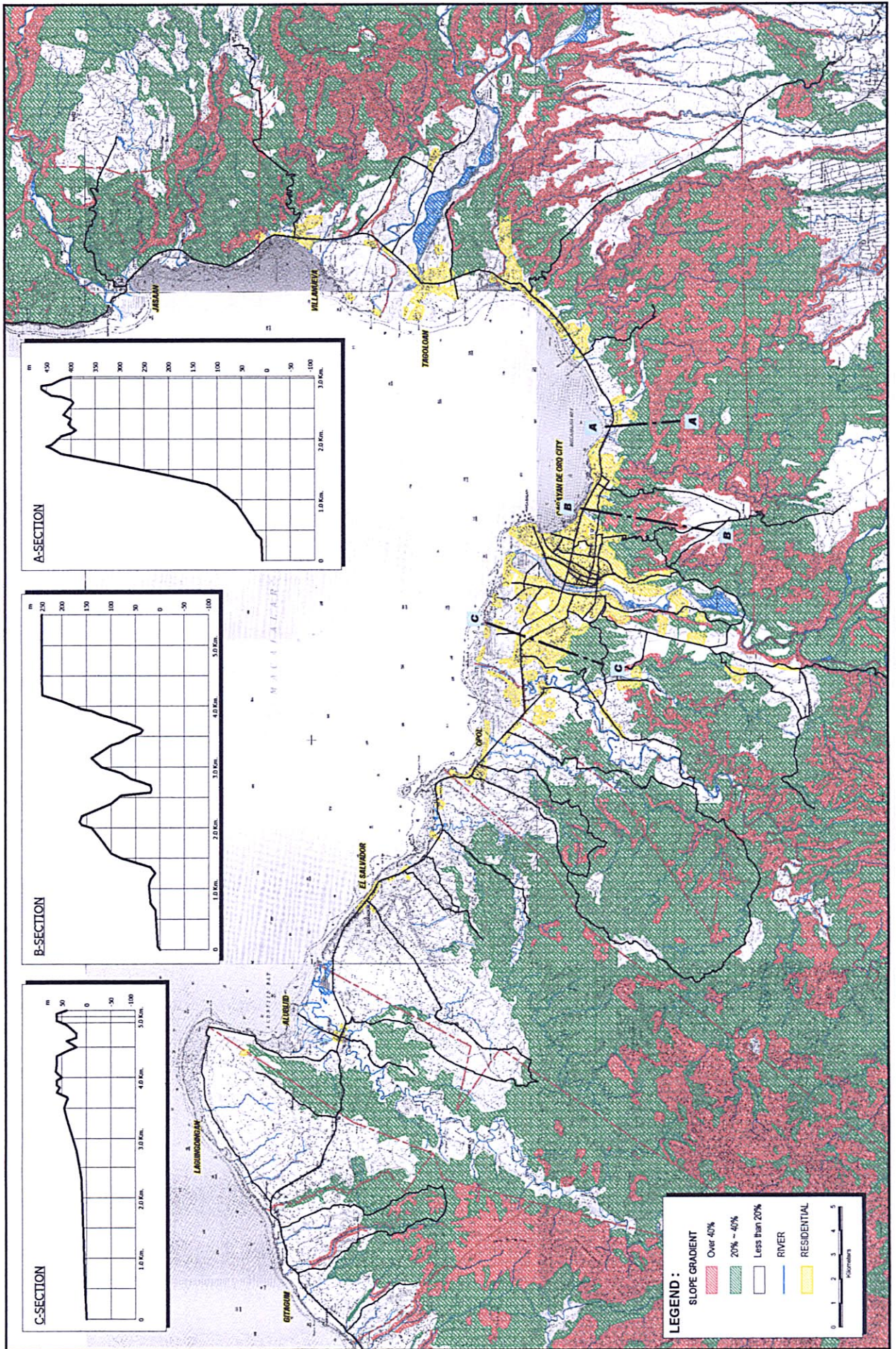


FIGURE 1.1-1 SLOPE MAP OF THE STUDY AREA



**Gitagum** can be described as a broad limestone plain with 0 to 100 meters elevation from Iligan bay towards the eastern part. It narrows down to rise 100 to 300 meters above sea level forming low and high relief shales and sandstone hills. More than 75% of the Municipality are within 0 to 3% slope.

### 1.1.2 General Geology

The study area in particular is underlain by the following rock formations which are somehow consistent along the coastal area, from the Municipality of Gitagum in the west to Cagayan de Oro City up to Villanueva in the east.

#### *Upper Miocene-Pliocene Rocks*

This formation includes sedimentary and pyroclastic rocks. Rock members of the formation consist of interbeds of conglomerate, pebbly sandstone, agglomerate, tuffaceous sandstone and tuff. These are well bedded and slightly folded.

The formation is widespread on the western half of the region and patches southeast of Cagayan de Oro City. It covers most of the low hills fringing the high ridges underlain by older formations.

#### *Plio-Pleistocene Rocks*

Members of this rock formation is composed of limestone, intercalated pyroclastic and clastic rocks and pure clastics such as conglomerate, shale, sandstone and tuffaceous sandstone, agglomerate, and conglomerate. The limestone member known as the *Indahag Limestone* fringes the coastline of the western part of the study area while scattered exposures capped the older formations. The intercalated pyroclastic and clastic members which is part of the Bukidnon Formation occupies the eastern side of the area. It covers the whole area east of Cagayan River except those underlain by older rocks. The clastics stratigraphically underlie the recent deposits.

#### *Recent*

Recent alluvial deposits are made up of aggregates of volcanic rocks, tuffaceous sand and other materials carried or washed down by streams/rivers from higher elevations. These deposits are limited along the mouth of major drainage or outwash plains near the coastline. Also included are those beach deposits fringing the coastline of the area.

### 1.1.3 Meteorology

#### **Climate Type**

The nearest synoptic meteorological station in the study area is located in Cagayan de Oro City, Misamis Oriental. Based on the Modified Corona's Classification, the climate in the project area belongs to Type IV, which is characterized by rainfall more or less evenly distributed throughout the year. As illustrated in the Climatological Normals presented in **Table 1.1-1**, the project area experiences a relatively dry period from February to May. Wet months on the other hand are from June to October.

#### **Rainfall**

The rainy season in the area is usually experienced from June to October. The amount of annual rainfall recorded is close to **1568.0 mm**. The highest amount of precipitation of approximately **212.1 mm** was recorded in the month of July. The months of June and July has the most number of rainy days with **17**. The

onset of dry season is felt in February and continues up to May. April registered the minimum amount of rainfall of **45.8 mm**.

### **Temperature**

The coolest month is January, with a temperature of **26.4°C**. It could rise to a warm **29.1°C** during the month of May. The average annual mean temperature is **27.9°C**. From December to February, the maximum humidity of **81%** is felt in project area. A low of **74%** on the other hand is experienced in April. The warm months are from April to June.

### **Air Streams**

The principal air stream that significantly affects the study area is the Northeast Wind, which predominates throughout the year. The Northern Monsoon prevails during the dry season, while the Southwest Monsoon is experienced during the rainy season. The North Pacific Trades is the southern portion of the North Pacific anti-cyclone. Having passed over a vast expanse of the North Pacific Ocean, this air stream is classified as a maritime tropical air mass. This air stream, which is extremely warm, is generally dominant over the entire Philippines in April and early May. It commonly arrives in the country from an easterly direction but may come from any direction from northeast to southeast.

#### **1.1.4 Natural Calamities**

In terms of natural calamities, there are no major events that were reported in Cagaayan de Oro City as well in the Municipalities east of the City---Tagaloan, Villanueva, Jasaan, and west of it---Opol, El Salvador, Alubijid, Laguindingan, and Gitagum. However, there were several mentions of risks in terms of **slope stability**, particularly in areas with steep slopes. These areas are considered highly susceptible to heavy erosion, land slides, and high run-off which may lead to flooding of the lower areas.

**TABLE 1.1-1 CLIMATOLOGICAL NORMALS**

STATION : CAGAYAN DE ORO, MISAMIS ORIENTAL  
 LATITUDE : 08°29'12" N  
 LONGITUDE : 124° 18'00" E  
 ELEVATION : 6.0 m  
 PERIOD : 1971-2000

MONTH	RAINFALL		TEMPERATURE °C					VAPOR PRES. MBS.		REL. HUM. %	MSLP MBS.	WIND		CLOUD AMT. (okta)	NO. DAYS w/	
	AMT. (mm)	No. Of RD	MAX (°C)	MIN (°C)	MEAN (°C)	DRY BULB (°C)	WET BULB (°C)	DEW PT. (°C)	DIR. (16-pt)			SPEED (mps)	THUNDR STORM		LHTNG	
JAN.	93.7	10	31.0	22.4	26.7	26.4	23.9	23.0	27.9	81	1009.6	N	1	5	1	1
FEB.	59.2	8	31.4	22.2	26.8	26.6	23.9	22.9	27.8	80	1009.9	N	1	5	1	1
MAR.	52.1	6	32.3	22.5	27.4	27.3	24.2	23.1	28.1	77	1009.7	N	1	5	1	1
APR.	45.8	5	33.2	23.4	28.3	28.4	24.8	23.5	28.8	74	1008.7	N	1	4	3	3
MAY	84.1	10	33.9	24.2	29.1	28.9	25.4	24.2	30.0	75	1008.2	N	1	5	9	8
JUNE	207.6	17	33.1	23.8	28.4	28.0	25.1	24.1	29.9	79	1008.3	N	1	6	11	9
JULY	212.1	17	32.9	23.4	28.2	27.7	24.9	23.9	29.5	80	1008.3	SW	1	6	10	8
AUG.	192.2	16	33.3	23.4	28.3	27.9	24.8	23.7	29.2	78	1008.4	SW	1	6	9	7
SEPT	200.0	16	32.9	23.4	28.2	27.7	24.8	23.8	29.3	79	1008.7	SW	1	6	11	10
OCT.	189.9	16	32.7	23.3	28.0	27.6	24.8	23.8	29.4	80	1008.5	SW	1	6	11	10
NOV.	131.5	12	32.3	23.1	27.7	27.4	24.7	23.7	29.2	80	1008.4	SW	1	5	6	7
DEC.	99.9	11	31.5	22.8	27.2	26.9	24.4	23.5	28.8	81	1009.1	SW	1	5	2	4
<b>ANNUAL</b>	<b>1568.0</b>	<b>144</b>	<b>32.5</b>	<b>23.2</b>	<b>27.9</b>	<b>27.6</b>	<b>24.6</b>	<b>23.6</b>	<b>29.0</b>	<b>79</b>	<b>1008.8</b>	<b>N</b>	<b>1</b>	<b>5</b>	<b>75</b>	<b>69</b>

SOURCE: CDS/CAB/PAGASA

## 1.2 SOCIO-ECONOMIC PROFILE

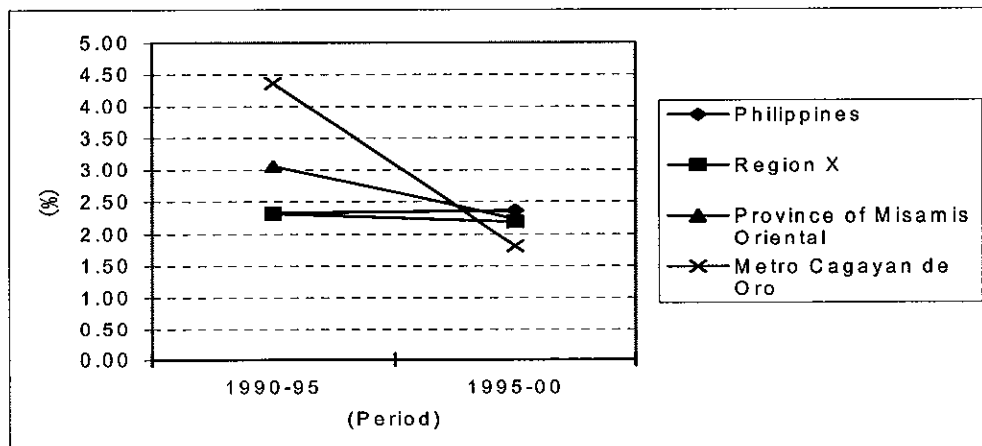
### 1.2.1 Demographic Trend

Population growth trend of the Metro Cagayan de Oro from 1990 to 2000 is shown in Table 1.2-1 and Figure 1.2-1, comparing with those of the Philippines, Region X and Province of Misamis Oriental. The annual average growth rates (AAGRs) of the Region X was the same as the national average of 2.32% during the first half of the 1990s and slowed down to 2.19% during the second half. The AAGR of the Province of Misamis Oriental was higher than the national average from 1990 to 1995 but also changed to a lower level of 2.23% from 1995 to 2000. The Metro Cagayan de Oro registered a high AAGR of 4.36% during the period of 1990-1995. However, its AAGR fell drastically to 1.81% during the next period of 1995-2000. It reflects the trend of Cagayan de Oro City, which occupies 87% of the total population of the Metro Cagayan de Oro.

**TABLE 1.2-1 POPULATION GROWTH TREND, 1990-2000**

	Census Population			Annual Average Growth Rate (%)	
	1990	1995	2000	1990-95	1995-00
	(May 1)	(Sep 1)	(May 1)		
Philippines	60,703,216	68,616,536	76,498,735	2.32	2.36
Region X	2,197,554	2,483,272	2,747,585	2.32	2.19
Province of Misamis Oriental	865,051	1,015,865	1,126,215	3.06	2.23
Metro Cagayan de Oro	390,639	490,553	533,393	4.36	1.81
Cagayan de Oro City	339,598	428,314	461,877	4.45	1.63
Tagoloan	33,919	40,929	46,649	3.59	2.84
Villanueva	17,122	21,310	24,867	4.19	3.36
Jasaan	29,146	33,598	39,969	2.70	3.79
Opol	20,473	23,958	36,389	2.99	9.37
El Salvador	26,721	31,500	34,650	3.13	2.06
Alubijid	19,531	21,765	23,397	2.05	1.56
Laguindingan	15,503	16,521	18,451	1.20	2.40
Citagum	10,994	11,327	13,522	0.56	3.87

Source: National Statistics Office (NSO)



**FIGURE 1.2-1 CHANGING TREND OF AAGR FROM 1990/95 TO 1995/00 NATIONAL TO METRO CAGAYAN DE ORO LEVEL**

The AAGR of the City was 4.45% from 1990 to 1995 but dropped to 1.63% from 1995 to 2000. These facts mean that Cagayan de Oro City was an in-migration city for the people mainly from the other part of Mindanao until 1995 but recently has reversed to an out-migration city towards the neighboring municipalities and the other regions due to its declining attractiveness and the spatial limit. The neighboring municipalities such as Tagoloan, Villanueva, Jasaan and especially Opol marked high AAGRs during the second half of the 1990s.

According to the Medium Series of the "1995 Census-Based National and Regional Population Projections" (NSO, 1999), the national population was expected to increase at an annual average rate of 2.24% during the period of 1995-2000. The Medium Series projection is based on the assumption that the net reproduction rate (NRR) will reach 1 in 2020 at a moderate pace of fertility decline. The 2000 Population Census, however, showed that the national level AAGR from 1995 to 2000 was 2.36%, a little higher than 2.32 % recorded during the previous quinquennium. It means that the fertility decline has not been proceeding at the expected pace.

Although the AAGR of the Region X was a little lower than the national average during the period 1995-2000, its share of population to the country kept 3.6% from 1990 to 2000. The population of the Province of Misamis Oriental had gradually increased the share to the Region from 39.4% in 1990 to 41.0% in 2000. (See Table 1.2-2).

The population of Metro Cagayan de Oro increased from 390.6 thousand in 1990 to 490.6 thousand in 1995 and 533.4 thousand in 2000, with its share to the Province of 45.2% in 1990, 48.3% in 1995 and 47.4% in 2000.

**TABLE 1.2-2 SHARES OF POPULATION TO THE NEXT UPPER LEVEL OF ADMINISTRATION, 1990-2000**

	1990	1995	2000
Region/Nation	3.6	3.6	3.6
Province/Region	39.4	40.9	41.0
Metro/Province	45.2	48.3	47.4

Source: NSO

In the Metro Cagayan de Oro, Cagayan de Oro City, the provincial capital, has a population of 461.9 thousand and occupies 86.6% of the metropolitan total in 2000. However, its AAGR of population during the period from 1995 to 2000 was only 1.63%. The AAGRs of the municipalities comprising the Metro Cagayan de Oro during the same period were higher than that of the City, except Alubijid, resulting in the decrease of the City's share of population from 87.3% in 1995 to 86.6% in 2000. (See Figure 1.2-2 and Table 1.2-3).

Instead, the shares of the other municipalities increased during the same period, especially, Opol had gained 1.9 percentage points rise of its share from 4.9% in 1995 to 6.8% in 2000, with an extremely high AAGR of 9.37%.

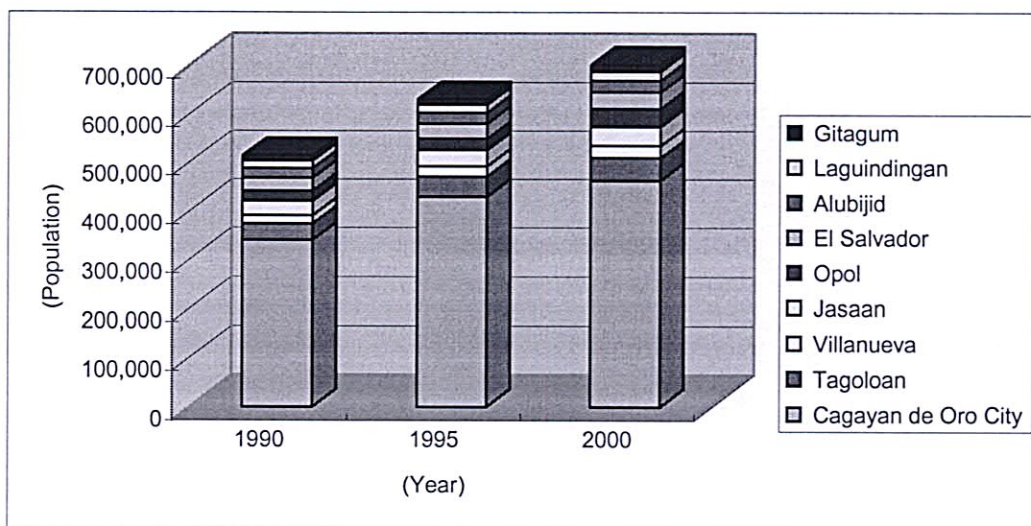


FIGURE 1.2-2 POPULATION GROWTH OF METRO CDO, 1990-

TABLE 1.2-3 SHARES OF POPULATION OF CITY/MUNICIPALITIES  
IN METRO CAGAYAN DE ORO, 1990-2000

	1990	1995	2000
Cagayan de Oro City	86.9	87.3	86.6
Tagoloan	8.7	8.3	8.7
Villanueva	4.4	4.3	4.7
Jasaan	7.5	6.8	7.5
Opol	5.2	4.9	6.8
El Salvador	6.8	6.4	6.5
Alubijid	5.0	4.4	4.4
Laguindingan	4.0	3.4	3.5
Gitagum	2.8	2.3	2.5

Source: NSO

## 1.2.2 Position in the Macro Economy

### 1) Regional Economic Growth

Metro Cagayan de Oro belongs to the Region X, and its economy affects greatly the Region's economic growth. The GRDP of Region X occupies 3.9% of GDP, and grew at an annual average rate of 4.33% from 1998 to 2001. This AAGR was higher than that of GDP of 3.67% during the same period. The annual growth rates in 1999, 2000 and 2001 were 3.97%, 4.04% and 4.97%, respectively, becoming higher year by year.

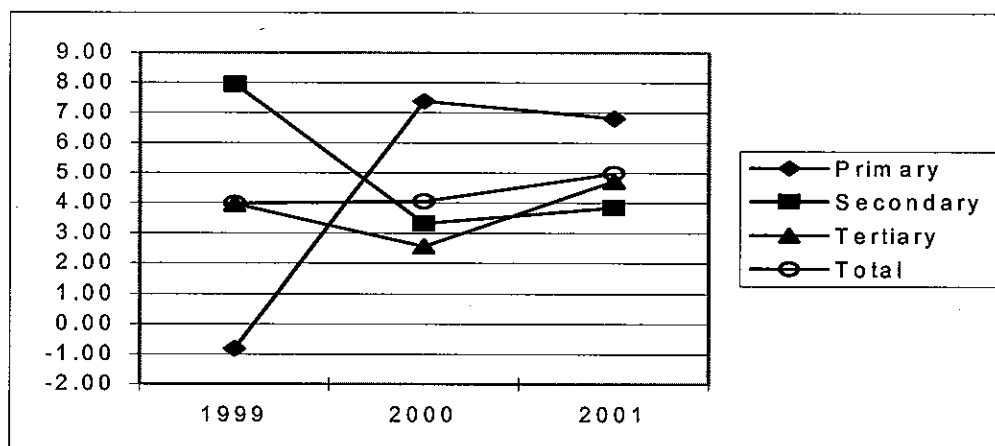
In 1999, the GVA of the primary sector (agriculture and fishing) decreased by 0.82% but in 2000 and 2001 the sector grew at high rates of 7.38% and 6.81%, respectively. As a result, the AAGR from 1998 to 2001 marked 4.39%. The GVA of the secondary sector (mining, manufacturing, construction and utilities) increased at an AAGR of 7.95% in 1999 and continued to grow steadily until 2001. The AAGR of the sector during the

period of 1998-2001 was 5.02%, which was more than double the national average. Although the AAGR of the tertiary sector (commerce and services) of 3.74% was lower than the national average of 4.29% during the period 1998-2001, the sector grew at a rate of 4.72% in 2001, which was a little higher than the national level. In conclusion, the recent economic growth of the Region X was propelled by the very good performance of the primary sector, and supported by the steady achievements of the secondary and tertiary sectors. (See Table 1.2-4 and Figure 1.2-3).

**TABLE 1.2-4 ECONOMIC GROWTH OF REGION X**

	Sector	GRDP/GDP at 1985 Prices (million pesos)				Annual Average Growth Rate (%)			
		1998	1999	2000	2001	1998-99	1999-00	2000-01	1998-01
GRDP of Region X	Primary	9,134	9,059	9,728	10,390	-0.82	7.38	6.81	4.39
	Secondary	11,071	11,951	12,348	12,822	7.95	3.32	3.84	5.02
	Tertiary	13,987	14,541	14,913	15,617	3.96	2.56	4.72	3.74
	Total	34,192	35,551	36,989	38,829	3.97	4.04	4.97	4.33
GDP	Primary	173,201	184,464	190,691	197,737	6.50	3.38	3.69	4.52
	Secondary	313,881	316,650	332,258	336,697	0.88	4.93	1.34	2.37
	Tertiary	400,918	417,046	435,462	454,824	4.02	4.42	4.45	4.29
	Total	888,000	918,160	958,411	989,258	3.40	4.38	3.22	3.67
% Share of Region X's GRDP to GDP	Primary	5.3%	4.9%	5.1%	5.3%				
	Secondary	3.5%	3.8%	3.7%	3.8%				
	Tertiary	3.5%	3.5%	3.4%	3.4%				
	Total	3.9%	3.9%	3.9%	3.9%				

Source: NSO



**FIGURE 1.2-3 REGION X'S GROWTH RATES OF GRDP BY SECTOR, 1999-2001**

2) Position of Metro Cagayan de Oro in the Province and Region X

GRDP or Gross Value Added (GVA) by sector is not estimated officially at the provincial or city/municipal levels. However, the employment by sector in Metro Cagayan de Oro demonstrates an aspect of its economic position in the province and the Region. Table 1.2.5 shows the number of employed persons by sector (workplace base) in 2000 for Metro Cagayan de Oro, the province and the Region X.

**TABLE 1.2-5 NUMBER OF EMPLOYED PERSONS BY SECTOR, 2000**

Administration	Unit	Primary	Secondary	Tertiary	Total
Region X	Number	566,997	104,957	468,886	1,140,840
	Percentage	49.7%	9.2%	41.1%	100.0%
Province of Misamis Oriental	Number	112,562	57,757	251,263	421,582
	Percentage	26.7%	13.7%	59.6%	100.0%
Metro Cagayan de Oro	Number	43,240	39,911	189,576	272,727
	Percentage	15.9%	14.6%	69.5%	100.0%
% Share of Province to Region		19.9%	55.0%	53.6%	37.0%
% Share of Metro Cagayan de Oro to Province		38.4%	69.1%	75.4%	64.7%

Source: Study Team Estimates based on the 2000 Census (NSO)

According to the table, employment in the primary sector occupies the largest percentage of 49.7% in the Region X. In the Province of Misamis Oriental, the largest one is of the tertiary sector but that of the primary sector still occupies 26.7%. In the Metro Cagayan de Oro, employment in the primary sector occupies only 15.9%, while that in the tertiary sector is the majority of 69.5%. The percentage shares of the Metro Cagayan de Oro to the Province for the primary, secondary and tertiary sectors are 38.4%, 69.1% and 75.4%, respectively. The Metro Cagayan de Oro occupies around three fourths of the non-agricultural activities in the Province. This means that the economic position of the Metro Cagayan de Oro in the province and the Region is more important in the non-primary sectors despite keeping a considerable role in the primary sector.

A comparison of Table 1.2-4 and 1.2-5 gives values of labor productivity by sector in the Region X in 2000. The values of the primary, secondary and tertiary sectors are 17,229 pesos/person, 121,945 pesos/person and 31,805 pesos/person, respectively. Labor productivity of the secondary sector is the highest, about 7.1 times of that of the primary sector and 3.8 times of that of the tertiary sector. Labor productivity of the tertiary sector is around 1.8 times of that of the primary sector. The fact that the percentages of employment in the secondary and tertiary sectors with higher labor productivity are large in the Metro Cagayan de Oro indicates a considerably higher GRDP per capita of Metro Cagayan de Oro, if calculated, than the regional and provincial averages.

### 1.2.3 Economic Activities by Sector

#### 1) Primary Sector

Although weight of the primary sector is comparatively lower in the Metro Cagayan de Oro than in the province as a whole, land area used for agricultural production, including fishponds, occupies 50.6% of the total land area of the Metro Cagayan de Oro. The main crop is Coconut, Corn and rice. According to Table 1.2-6, the areas devoted to coconut, corn and rice production are 17,700 ha, 9,300 ha and 1,100 ha, respectively. These in all



occupy 50% of the total cropland of 56,375 ha.

**TABLE 1.2-6 LAND AREA USED FOR AGRICULTURAL PRODUCTION (HA), 1998**

City/ Municipality	Cropland					Fishpond	Total Agricultural Land
	Rice	Corn	Coconut	Other Crops	Total		
CDO City	456	1,732	1,844	13,442	17,474	67	17,541
Tagoloan	45	404	1,249	2,379	4,077	0	4,077
Villanueva	94	361	864	2,214	3,533	0	3,533
Jasaan	66	1,241	3,710	2,159	7,176	20	7,196
Opol	250	1,415	1,583	427	3,675	134	3,809
El Salvador	84	1,245	1,637	3,193	6,159	14	6,173
Alubijid	134	1,810	3,331	1,670	6,945	161	7,106
Laguindingan	0	494	1,453	1,234	3,181	0	3,181
Gitagum	0	670	2,011	1,474	4,155	0	4,155
<b>Total</b>	<b>1,129</b>	<b>9,372</b>	<b>17,682</b>	<b>28,192</b>	<b>56,375</b>	<b>396</b>	<b>56,771</b>

Source: 1) Area total of cropland is measured by the Study Team on the map.

2) Areas by crop are based on the provincial data.

Rice production is at a comparatively lower position in the agricultural production in the Province of Misamis Oriental. As shown in Table 1.2-7, rice production is less than half of corn production in Misamis Oriental and less than one thirds of corn production in Metro Cagayan de Oro. Municipalities of Laguindingan and Gitagum do not produce rice. Instead, corn, coconut and fruits are main crops in these municipalities.

**TABLE 1.2-7 CROP PRODUCTION IN METRO CAGAYAN DE ORO (TON), 1998**

City/Municipality	Rice	Corn	Copra	Root Crops	Vegetable	Fruits
Cagayan de Oro City	1,756	3,501	1,466	4,305	2,502	13,328
Tagoloan	248	1,186	577	635	404	3,566
Villanueva	535	844	155	30	21	39
Jasaan	221	2,851	875	64	16	1,858
Opol	679	3,496	545	114	37	1,437
El Salvador	555	1,343	830	500	5	6,029
Alubijid	890	2,901	2,525	0	0	212
Laguindingan	0	125	937	0	1	84
Gitagum	0	554	1,053	0	0	622
<b>Total</b>	<b>4,884</b>	<b>16,801</b>	<b>8,963</b>	<b>5,648</b>	<b>2,986</b>	<b>27,175</b>
<b>% to the Province</b>	<b>30.1%</b>	<b>48.1%</b>	<b>12.2%</b>	<b>32.6%</b>	<b>11.1%</b>	<b>41.7%</b>
<b>Misamis Oriental</b>	<b>16,225</b>	<b>34,933</b>	<b>73,685</b>	<b>17,343</b>	<b>26,917</b>	<b>65,196</b>

Source: Provincial Agricultural & Natural Resources Office (PANRO)

Table 1.2-8 shows a calculation result of demand/supply balance of rice for the Province and Metro Cagayan de Oro. Assuming that rice production in 2000 is at the same level of 1998, milled rice produced in the Province covers only 6% of the consumption demand from the provincial population of 1,126,215 persons, and in Metro Cagayan de Oro 3%. As a result, it is required to import 131,000 tons for the province as a whole and 84,000 tons for Metro Cagayan de Oro. According to the data of Cagayan de Oro City, the City was supplied 707,049 bags of 50 kilograms of rice in 2000 by National Food Authority (NFA), which was imported from Vietnam and Thailand.

**TABLE 1.2-8 DEMAND/SUPPLY BALANCE OF RICE, 2000**

		Province of Misamis Oriental	Metro Cagayan de Oro
Supply	Area harvested (ha) 1)	4,313	1,351
	Palay production (ton) 1)	16,225	4,884
	Reserve for seeds (ton) 2)	906	284
	Feeds/wastages (ton) 3)	1,055	317
	Food consumption (ton)	14,265	4,283
	Milled rice (ton) 4)	8,559	2,570
Demand	Population 5)	1,126,215	699,771
	Per capita requirement (kg/year) 6)	124	124
	Required rice (ton) 7)	139,651	86,772
Balance	Surplus rice (ton)	-131,092	-84,202

Note:

- 1) Provincial data: Obtained from "Provincial Socio-Economic Profile 1998, Misamis C
- 2) 210 kg/ha
- 3) 6.5 % of production
- 4) Milling recovery 60 %
- 5) 2000 Census population as of May 1
- 6) Food requirement for "cereals and cereal products" shown in HLURB guideline
- 7) Rice is assumed to meet the total food requirement for cereals and cereal products

In addition to the crops shown in Table 1.2-7, banana production in Cagayan de Oro City plays a considerable role with a harvested volume of 13,629 tons in 2000.

Livestock, poultry and fishing have some shares in the metropolitan economy. As shown in Table 1.2-9, production volume of the poultry industry in Opol is outstanding. These products are mainly sold to the local market.

**TABLE 1.2-9 PRODUCTION IN LIVESTOCK, POULTRY AND FISHING (TON), 1998**

City/ Municipality	Livestock		Poultry		Fish
	Beef	Pork	Eggs	Meat	
Cagayan de Oro City	-	-	-	-	611.00
Tagoloan	-	-	-	-	28.00
Villanueva	7.71	10.80	4.00	116.25	5.00
Jasaan	-	-	-	-	4,983.00
Opol	327.14	42.00	4,999.60	139,920.00	148.00
El Salvador	64.55	37.58	1.29	242.86	74.00
Alubjid	-	-	-	-	-
Laguindingan	18.53	105.90	8.97	23.90	23.00
Gitagum	11.04	1.40	15.08	1,098.34	-
Total	428.97	197.68	5,028.94	141,401.35	5,872.00

Source: PANRO

## 2) Secondary Sector

As shown in Table 1.2-10, 127 secondary sector establishments of companies with an estimated capitalization of at least 5 million pesos are located in the Metro Cagayan de Oro as of December 2000. Although Cagayan de Oro City with 65 establishments keeps the leading position in the number, 34 establishments are located in Tagoloan and Villanueva altogether, where the Phividec Industrial Authority (PIA) is developing an industrial estate. Of the 34 establishments in Tagoloan/Villanueva, 16 are located within the industrial estate. Reflecting the recent severe economic

situation, however, 4 establishments are currently forced to suspend the operation.

**TABLE 1.2-10 NUMBER OF SECONDARY SECTOR ESTABLISHMENTS LOCATED IN METRO CAGAYAN DE ORO, DECEMBER 2000**

City/Municipality	Mining	Manufacturing	Construction	Utilities	Total
Cagayan de Oro City	0	50	12	3	65
Tagoloan/Villanueva	0	33	1	0	34
Jasaan	0	7	0	0	7
Opol	1	5	1	0	7
El Salvador	0	9	0	0	9
Alubijid	0	2	0	0	2
Laguindingan	0	2	0	0	2
Gitagum	0	1	0	0	1
<b>Total</b>	<b>1</b>	<b>109</b>	<b>14</b>	<b>3</b>	<b>127</b>

Note: Companies with an estimated capitalization of at least 5 million pesos

Source: Cagayan de Oro-Iligan Corridor Selected Facts and Figures

The PIA is a corporation fully owned and controlled by the Government. It was established in 1974. Although the PIA is an independent entity by virtue of its organizational and financial character by law, the PIA is a subsidiary of the Philippine Veterans Investment Development Corporation (PHIVIDEC). In 1985, EO 1031 provided for the constitution of the PIA Board of Directors separate and independent from the PHIVIDEC. As mandated by its Charter, PD 538, the PIA identifies and develops sites in the country as prospective industrial areas. The PIA equips these areas with the necessary infrastructures to encourage the inflow of domestic and foreign investments. The PIA is empowered to assess and collect real property taxes and port fees; collect lease rentals; issue permits and licenses; and establish related revenue-generating businesses, such as subsidiaries and joint ventures.

The Phividec Industrial Estate in Misamis Oriental (PIE-MO) is situated in the two municipalities of Tagoloan and Villanueva, with an area of 3,000 ha, which is the largest industrial estate in the Philippines. The main incentives are as follows:

- Lowest land lease in the country and in Asia (P 25/sq.m./yr at port side, P 17/sq.m./yr at road side, and P13/sq.m./yr at inner areas for 25 years)
- Exemption from tariff customs duties and internal revenue taxes for raw materials, supplies, articles, equipment, machinery, spare parts and wares of every description brought into the estate and utilized in the production, storing, packing and shipment of goods meant for the foreign market
- Exemption from local taxes and licenses, although real property taxes shall be collected by the Authority
- Exemption from wharfage dues if pier or wharf is constructed by importer's own private funds
- Admission of fully foreign-owned enterprises in selected industries

As of August 2003, 38 establishments are registered in the PIE-MO. Of these 22 establishments are operating, 8 suspending operation, 2 under construction and 6 newly registered. The operating establishments employ 2,300 regular workers in all. According to the administrator of the PIA, as many contractual/service workers as the regular workers are hired. Of the total area of 3,000 ha, 2,400 ha is usable for industrial development. The area is currently 1/3 occupied (800 ha). The entire area is to be fully occupied by 2013.

Within the PIE-MO, the Mindanao Container Terminal (MCT) is being constructed at the southwest site facing the Macajalar Bay. The MCT is intended to complement the Cagayan de Oro Port that has already been congested since 1996. The MCT can accommodate container vessels up to 30,000 DWT and has a capacity of 550,000 TEUs per year with 4 gantry cranes and 8 rubber-tired gantry (RTG) cranes for loading and unloading of containerized cargoes. It will be operational in February 2004.

In addition to the establishments listed in Table 1.2-10, there are many small-scale secondary sector establishments licensed by the city/municipalities. Most of them are commercial/service related cottage industries such as bakeries, welding shops, hollow block making, printing press, tailoring and so on.

### 3) Tertiary Sector

Table 1.2-11 shows the number of tertiary sector establishments registered in Metro Cagayan de Oro. More than 80% of them are concentrated in Cagayan de Oro City.

As the City is the center of tertiary sector activities in Mindanao, many commercial, financing and service establishments are located, and their number is increasing (see Table 1.2-12). Wholesale and retail trade, including hotels and restaurants counted 8,264 establishments in 2001. Among them, large-scale commercial centers such as Limketkai Complex, Gaisano Mall and SM, and 18 hotels were included. As engaged in financing, insurance, real estate and business services, 1,205 establishments were counted in 2001. The total number of banks and their branches was 99, and non-bank financial institutions 240. Of these, 145 were financing/lending firms and 95 pawnshops.

The number of establishments in the service industry is 4,329. This includes 22 movie houses, 13 disco houses and 30 sports facilities. As sophisticated communication services, 8 internet service providers are operating. The Port of Cagayan de Oro is a contributing factor that made the City the trading center in Mindanao. Reflecting this fact, 10 establishments engaged in international and domestic sea transport services are located.

**TABLE 1.2-11 NUMBER OF TERTIARY SECTOR ESTABLISHMENTS LOCATED IN METRO CAGAYAN DE ORO**

City/Municipality	Commerce	Financing	Services	Total	Year
Cagayan de Oro City	8,264	1,205	4,329	13,798	2001
Tagoloan	301	6	687	994	1996
Villanueva	178	1	39	218	1995
Jasaan	-	-	-	303	1998
Opol	157	1	-	158	1992
El Salvador	470	7	5	482	1999
Alubijid	422	1	11	434	1995
Laguindingan	153	2	2	157	2000
Gitagum	89	1	-	90	2000
<b>Total</b>	<b>10,034</b>	<b>1,224</b>	<b>5,073</b>	<b>16,634</b>	

Source: For Cagayan de Oro City, "Socio Economic Profile 2000-2001"

For other municipalities, Documents of City/Municipalities for CLUP

**TABLE 1.2-12 INCREASING TREND OF TERTIARY SECTOR ESTABLISHMENTS IN CAGAYAN DE ORO CITY, 1998-2001**

	1998	1999	2000	2001
Commerce	6,489	8,070	8,156	8,264
Financing	1,045	1,146	1,140	1,205
Services	3,075	3,580	3,930	4,329
<b>Total</b>	<b>10,609</b>	<b>12,796</b>	<b>13,226</b>	<b>13,798</b>
Growth Rate (%)		20.6	3.4	4.3

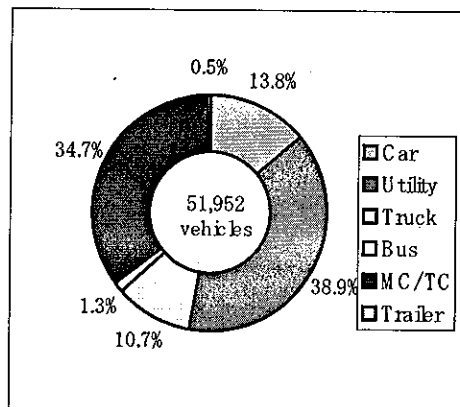
Source: "Socio Economic Profile 2000-2001, Cagayan de Oro City"

For the other municipalities in Metro Cagayan de Oro, trade and service activities are of limited scale. Every municipality has at least one public market in its central urban district called "poblacion". Generally it is a building of 5,000 to 10,000 square meters divided into the dry and wet areas according to the commodities. It is open every day for the residents of the municipality. In addition, during market days, one or more days a week, inhabitants of surrounding rural barangays (sometimes in the adjacent municipalities) bring their farm products to the market place, and in return buy their farm and household needs from the different commercial establishments inside and around it.

The most popular commercial establishment is 'sari-sari' store. It is a small retail shop of around 10 square meters operated by 1-2 persons servicing barangay residents a variety of commodities. Generally one sari-sari store services 10-20 households or 50-100 persons at the barangay level. It means that a barangay with a population of 1,000 has 10-20 sari-sari stores.

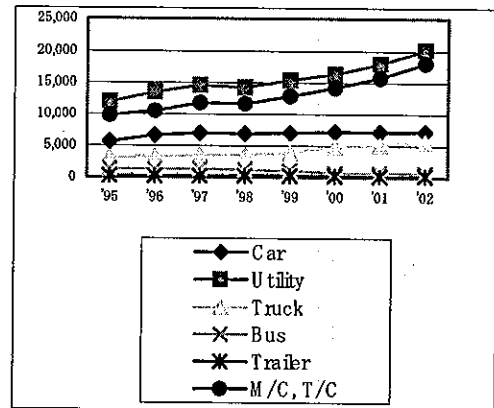
#### 1.2.4 Vehicle Ownership

There are three district offices of Land Transport Office (LTO) for vehicle registration in the Province of Misamis Oriental: Cagayan de Oro City, Gingoog City and Puerto Ext. The total number of car registration in the province in 2002 was 51,952 vehicles, of which 65.3%, 33,926 vehicles were four-wheel types. Motorcycles and tricycles occupy 34.7%. The majority of them and utilities seem to be used for public transport as tricycles and jeepneys. The growth rates of motorcycles and tricycles have been very high, 9.1% per annum during the recent seven years from 1995 to 2002.



Source: LTO

**FIGURE 1.2-4**  
VEHICLE REGISTRATION IN PROVINCE OF MISAMIS ORIENTAL, 2002



Source: LTO

**FIGURE 1.2-5**  
PAST TREND OF VEHICLE REGISTRATION IN PROVINCE OF MISAMIS ORIENTAL

Since the vehicle registration has not been compiled by the owner's residence but by district office basis, the number of vehicles by municipality or barangay is not available from the record published by LTO.

However, some vehicle ownership data by barangay can be obtained from the "Barangay Accessibility Survey" conducted during the years from 2001 to 2002, within the framework of the Integrated Rural Accessibility Planning Information System. The system was developed by the Department of Interior and Local Government (DILG), in collaboration with the Government of the Netherlands. The Survey was made only for municipalities in the Metro Cagayan de Oro and it gives the vehicle ownership by barangay as of 2001, except for Tagoloan. An estimation formula was established by using the Survey results in order to estimate the present vehicle ownership by barangay for Tagoloan and Cagayan de Oro City, and future ownership for the entire Study Area.

The vehicle ownership for four-wheel vehicles is estimated by using the following formula:

$$N = K \times \alpha \times I^\beta$$

Where N: Number of persons per vehicle by barangay base

K: Constant (=56868451)

$\alpha$ : Adjustment factor: Selected values by zone applied for the future projection in order to adjust the differences between actual and estimated ownership

I: Family income per year by barangai base

$\beta$ : -2.82211

R: Correlation coefficient: 0.914



As a result, the vehicle ownership in 2001 is estimated as shown in Figure 1.2-6 and is summarized by city/municipality as follows. The vehicle ownership in Cagayan de Oro City is estimated at 43.2 vehicle per 1000 persons. Among the other municipalities, Opol has an outstandingly high ownership, which means that a lot of middle to high-income class families have immigrated into residential subdivisions developed in the municipality. The ownership of the other municipalities ranges from 5.4 to 10.5 vehicles per 1000 persons.

**TABLE 1.2-13 VEHICLE OWNERSHIP IN METRO CAGAYAN DE ORO, 2001**

City/Municipality	Number of Vehicles	Vehicle Ownership (Vehicles/1000 persons)
Cagayan de Oro City	19,937	43.2
Tagoloan	250	5.4
Villanueva	235	9.5
Jasaan	231	5.8
Opol	1,366	37.5
El Salvador	291	8.4
Alubijid	179	7.7
Laguindingan	194	10.5
Gitagum	104	7.7
Metro Cagayan de Oro	22,787	32.6

*Note: Excluding vehicles for hire and motorcycles/tricycles*

*Source: Barangay Accessibility Survey 2001, Study Team*

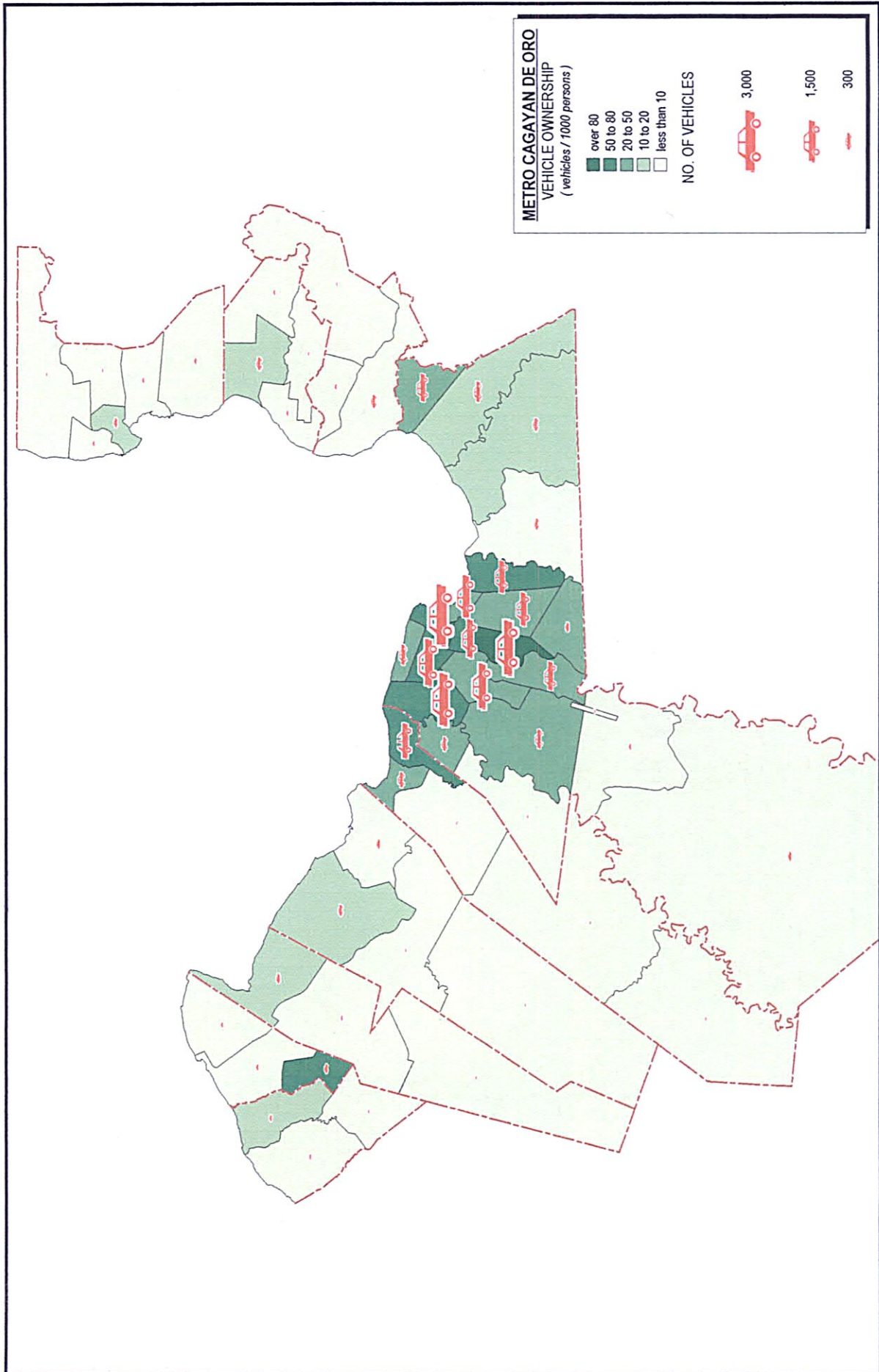
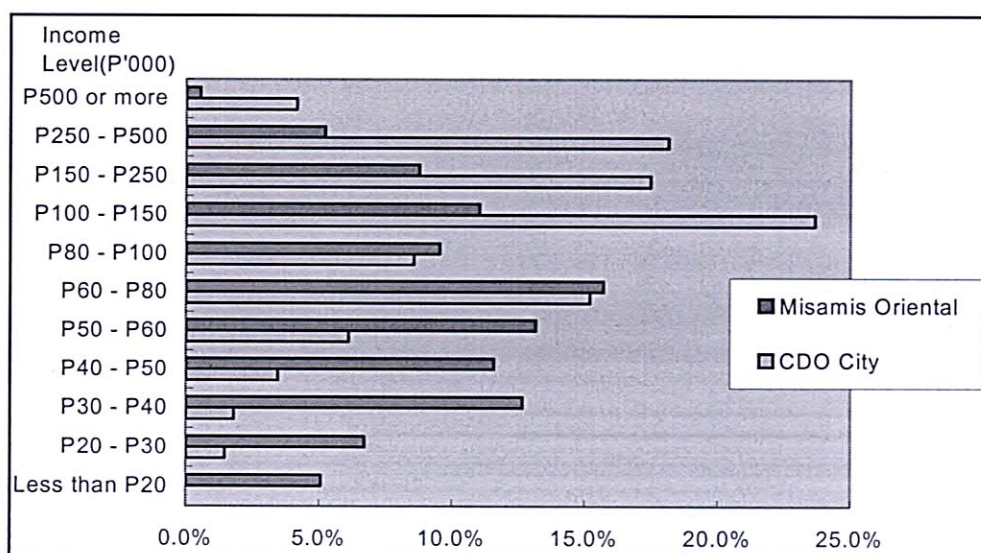


FIGURE 1.2-6 VEHICLE OWNERSHIP IN METRO CAGAYAN DE ORO

### 1.2.5 Income Level

The family income distributions in Cagayan de Oro City and Province of Misamis Oriental (excluding Cagayan de Oro City) are illustrated in Figure 1.2-7, based on the Family Income and Expenditure Survey in 2000.

The average annual family incomes in Cagayan de Oro City and Province of Misamis Oriental are P 176,600 and P 89,600, respectively. The average income of the City is higher than the national average of P 144,000, while that of the province is about 2/3 of the national average.



Source: Family Income and Expenditure Survey 2000

**FIGURE 1.2-7 FAMILY INCOME IN CAGAYAN DE ORO CITY AND PROVINCE OF MISAMIS ORIENTAL**

It is difficult to break down the above survey results further to the city/municipality or barangay level because of the sampling variations of the survey. Hence, the average income by municipality or barangay is estimated by using the relationship between the family income and the floor area of housing unit the family occupies, of which distribution pattern is obtainable at the barangay level from the 2000 Census of Population and Housing. The family income and the floor area of housing unit are highly correlated as follows.

$$\text{Cagayan de Oro City: } I = 2.667A + 62.20 \quad (R = 0.982)$$

$$\text{Province of Misamis Oriental: } I = 1.703A + 45.01 \quad (R = 0.962)$$

Where I: Average Family Income (P '000 per year)

A: Average Housing Floor Area (m<sup>2</sup>)

R: Correlation Coefficient

Using the above relationship between the family income and floor area of occupied housing unit, the average income levels are estimated by traffic zone. The results are shown in Figure 1.2-8.

In general, the urban areas of Cagayan de Oro City are at the higher income level, while the peripheral zones of Metro Cagayan de Oro, particularly rural areas are relatively at the lower level.



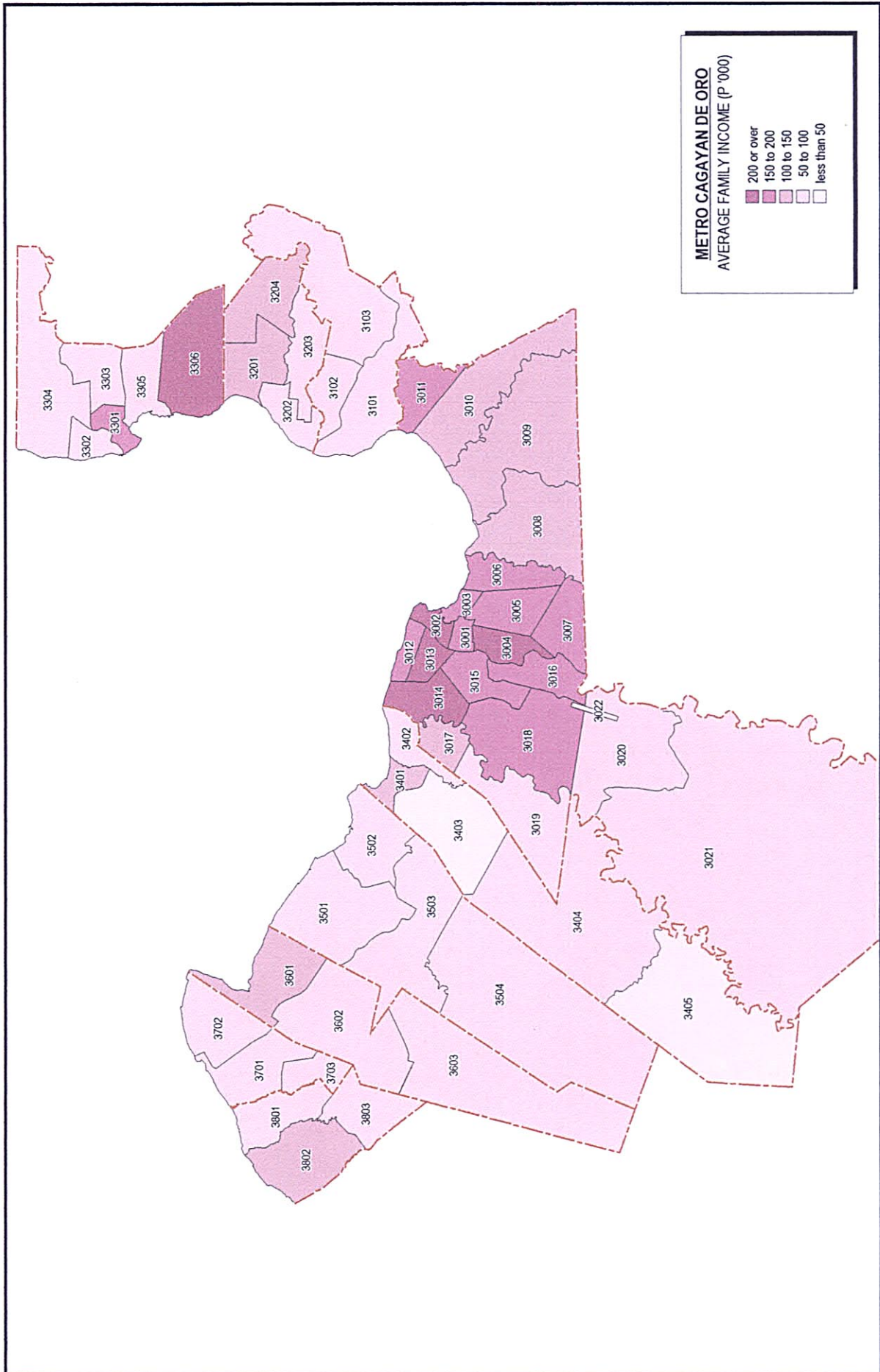


FIGURE 1.2-8 AVERAGE FAMILY INCOME LEVEL BY ZONE

### **1.3 EXISTING LAND USE AND SOCIO-ECONOMIC FRAMEWORK**

#### **1.3.1 Urban Structure**

As shown in Figure 1.3-1, the existing physical urban structure of Metro Cagayan de Oro is composed of nine urban areas connected by only one road, Iligan-Cagayan-Butuan Highway, like a necklace of beads with the pendant of urban areas of Cagayan de Oro City. The poblacion of Cagayan de Oro City with an area of 468 ha is playing a role of not only metropolitan but also provincial center of tertiary sector activities. From there to the northeast, Cagayan-Butuan Highway runs through Tagoloan, Villanueva, Jasaan to the eastern part of Misamis Oriental. To the west, Cagayan-Iligan Highway connects Opol, El Salvador, Alubujid, Laguindingan and Gitagum.

In addition, the Cagayan de Oro Port connects provinces in Mindanao to other Regions including Metro Manila, and foreign countries. The Cagayan de Oro Airport is located in the Barangay of Lumbia connecting Manila, Cebu and other major cities in the Philippines.

Such urban structure as concentrated to the Central Business District (CBD) of Cagayan de Oro City causes traffic congestion on streets within the central part of the City.

#### **1.3.2 Existing Land Use**

The existing land use is shown in Figure 1.3-2. Green (agricultural use) and dark green (forest) colored areas are widely extended over the Metro Cagayan de Oro. According to the area measurement on the map, the Metro Cagayan de Oro covers an area of 112,096 ha, of which 56,375 ha is used for agriculture, 42,334 ha for forest, 4,321 ha for grassland, 527 ha for fishpond and 66 ha for mining. An aggregated area of these uses, rural land use, amounts to 103,623 ha, which occupies 92.4% of the total area.

Urban land uses amount to 8,473 ha, equivalent to 7.6% of the total area. Among them residential use covers an area of 5,173 ha, 61.1% of the total urban area. Commercial areas amount to 652 ha in all, most of them are located in Cagayan de Oro City. Other urban land uses are industrial 952 ha, institutional 351 ha, park/open space 22 ha, Infrastructure (airport and sea port), tourism 8 ha, and vacant land 1,170 ha. (See Table 1.3-1)



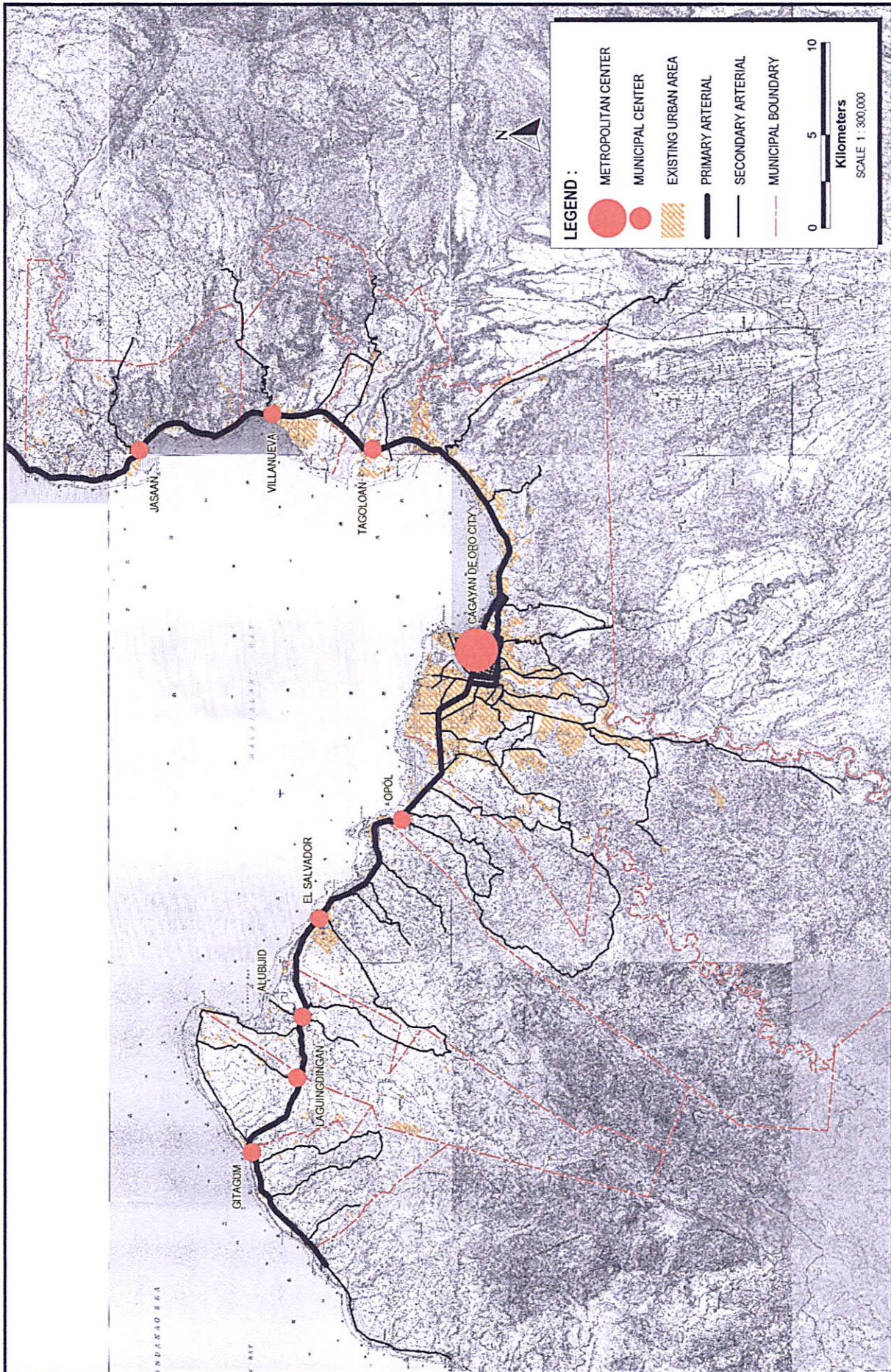


FIGURE 1.3-1 EXISTING URBAN STRUCTURE OF METRO CAGAYAN DE ORO



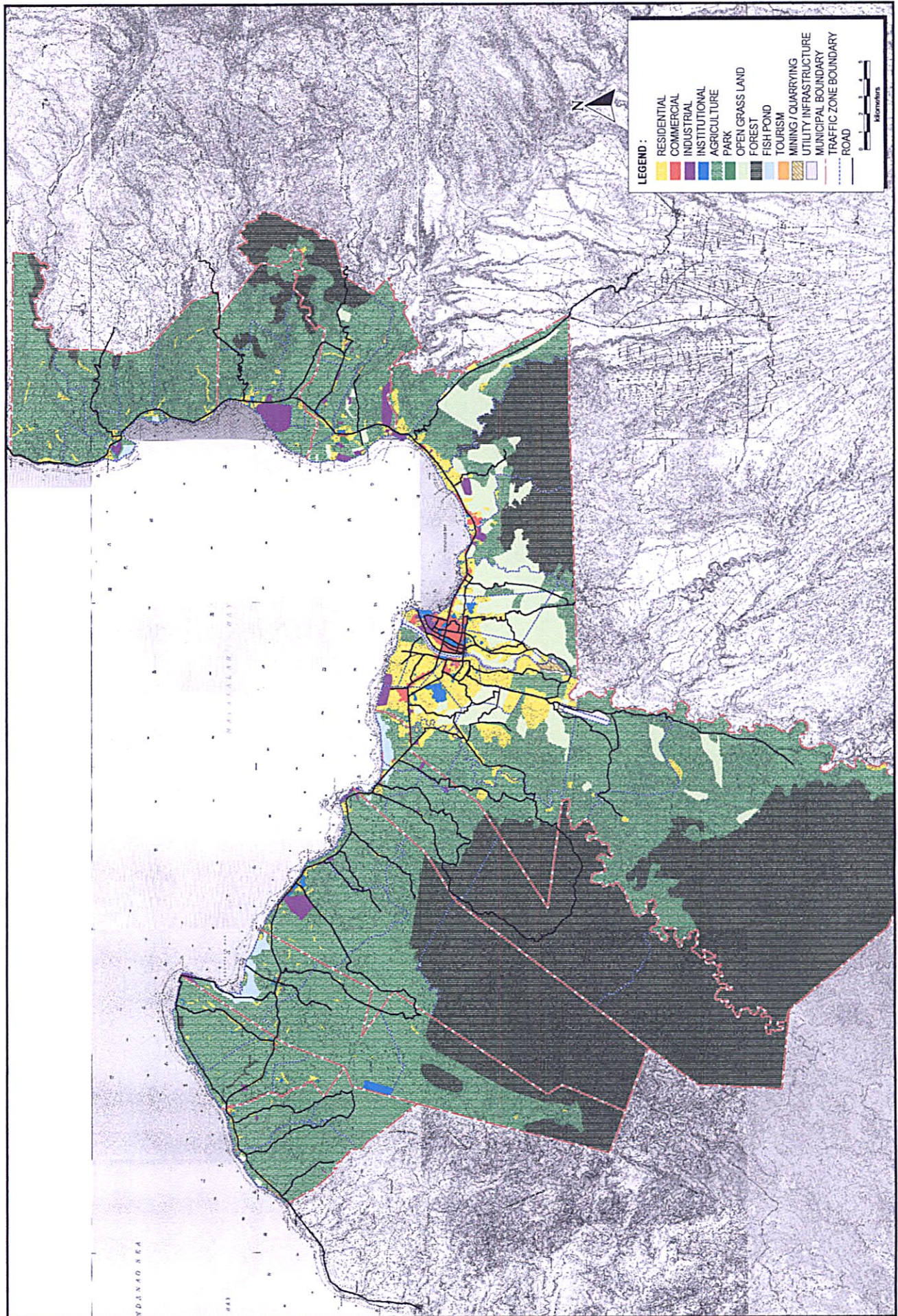


FIGURE 1.3-2 EXISTING LANDUSE MAP : 2000



**TABLE 1.3-1 AREAS BY LAND USE CATEGORY (2000)  
METRO CAGAYAN DE ORO**

Land Use Category	Area (ha)	Percentage
<b>Rural Land Use</b>		
Agriculture	56,375	50.3
Forest	42,334	37.8
Grassland	4,321	3.9
Fishpond	527	0.5
Mining	66	0.1
<b>Total</b>	<b>103,623</b>	<b>92.4</b>
<b>Urban Land Use</b>		
Residential	5,173	4.6
Commercial	652	0.6
Industrial	952	0.8
Institutional	351	0.3
Park/Open Space	22	0.0
Infrastructure	145	0.1
Tourism	8	0.0
Vacant Land	1,170	1.0
<b>Total</b>	<b>8,473</b>	<b>7.6</b>
<b>Grand Total</b>	<b>112,096</b>	<b>100.0</b>

*Source: Study Team Measurements on the Map*

### 1.3.3 Socio-economic Framework

The following is a description about the present population and employment distribution in Metro Cagayan de Oro. As socio-economic indicators for the analysis of the present situation of traffic and for the future projections of traffic demand in Metro Cagayan de Oro, population and employment by economic sector were selected and tabulated by traffic zone. Traffic zones are demarcated aggregating several barangays from the viewpoint of transport planning

#### (1) Population

Population by barangay is available for 1990, 1995 and 2000 from the Population Censuses carried out in respective years. Table 1.3-2 shows the population growth trend by traffic zone.

In Cagayan de Oro City, Zones 3001 (a part of Poblacion) and 3002 (a part of Poblacion and adjacent barangays) have shown population decrease during the period between 1995 and 2000. These zones are CBD and its vicinities. Especially in Zone 3001, a change of land use from residential to commercial or other uses is in progress, and its population has continued to decrease since 1990. Population density of Zone 3002 is the highest in Metro Cagayan de Oro, with 205.6 persons/ha. In this zone, population increased at a rate of 2.21% per annum during the period 1990-95, and turned to decrease after 1995. It means that the zone has already reached the saturation point.

On the contrary, Zone 3016 (Balulang) has recorded a great population increase since 1990. Located to the south of the central part of the City along Cagayan River, the zone is being developed as a middle class residential area. Its population drastically increased from 3,352 persons in 1990 to 11,631 persons in 1995 and to 20,893 persons in 2000. Another zone that experienced a high population growth is Zone 3017 (Iponan). The annual average growth rates of population were 11.02% in 1990-95 and 8.32% in 1995-00. This zone is located to the west of the City center and development projects of subdivision for lower income classes are going on. These subdivisions have very high population densities of 300-400 persons/ha. Despite the rapid population increases in these zones, the population growth of Cagayan de Oro City as a whole is declining, from 4.45% in 1990-95 to 1.63% in 1995-00.

In the other municipalities, Zone 3402 (Barra and Igpit) of Opol marked a great population growth. Annual average growth rates were 4.75% in 1990-95 and 20.11% in 1995-00, and the population increased from 5,548 persons in 1990 to 16,712 persons in 2000. This zone is adjacent to the west boundary of Cagayan de Oro City along the Cagayan-Iligan Highway. By virtue of its location, housing developments for middle to higher classes are going on. Population of Opol as a whole increased 12,431 persons from 1995 to 2000. Population density of Zone 3402 is 24.6 persons/ha, which is the highest density among zones outside Cagayan de Oro City. Zone 3401 (Poblacion and adjacent barangays) has a second highest population density of 22.9 persons/ha.

Zone 3104 of Tagoloan is the site of the Mindanao Container Terminal. Construction work is currently going on in the zone. Zone 3102 (Mohon and Santa Cruz) is located within the PIE-MO and registered a steady increase of population at annual average growth rates of 5.45% in 1990-95 and 6.23% in 1995-00. Population density of the zone is 13.7 persons/ha next to 14.2 persons/ha of Zone 3101 (Poblacion and adjacent barangays).

During the period from 1990 to 2000 only three zones experienced population decrease; Zones 3202 (Balacanas, Katipunan and San Martin) of Villanueva, 3504 (Calongonan) of El Salvador and 3803 (Gregorio Pelaes) of Gitagim. Zone 3202 includes the PIE-MO. The population decrease may be due to relocation for the industrial site development. Zones 3504 and 3803 are rural barangays. Population of Zone 3504 is continuously decreasing since 1990. Population of Zone 3803 decreased in 1990-95 but turned to increase in 1995-00.

Populations of the other zones are continuously increasing since 1990. Population densities are generally less than 10 persons/ha, except Zones 3201 (Poblacion and adjacent barangays) of Villnueva, 3301 (Poblacion) and 3302 (Bobontugan and Jampason) of Jasaan.

Population size and density by zone is shown in Figure 1.3-3.

**TABLE 1.3-2 (1) PAST TREND OF POPULATION GROWTH BY ZONE  
IN METRO CAGAYAN DE ORO, CAGAYAN DE ORO CITY**

Zone Code	Zone Name	Land Area (ha)	Population			Annual Average Growth Rate (%)		Pop.Density (pns/ha)
			1990 (May 1)	1995 (Sep 1)	2000 (May 1)	1990-95	1995-00	2000
3001	Cagayan de Oro City 1	223	29,930	27,080	26,429	-1.86	-0.52	118.5
3002	Cagayan de Oro City 2	245	45,109	50,688	50,432	2.21	-0.11	205.8
3003	Cagayan de Oro City 3	223	28,923	34,947	34,986	3.61	0.02	156.9
3004	Cagayan de Oro City 4	565	22,141	28,202	28,422	4.64	0.17	50.3
3005	Cagayan de Oro City 5	962	18,301	20,963	21,123	2.58	0.16	22.0
3006	Cagayan de Oro City 6	847	14,848	18,446	18,500	4.15	0.06	21.8
3007	Cagayan de Oro City 7	982	1,324	2,261	2,723	10.55	4.06	2.8
3008	Cagayan de Oro City 8	2,588	10,331	13,931	16,972	5.77	4.32	6.6
3009	Cagayan de Oro City 9	3,928	9,283	11,928	13,817	4.81	3.20	3.5
3010	Cagayan de Oro City 10	2,472	17,200	19,262	21,970	2.15	2.86	8.9
3011	Cagayan de Oro City 11	906	12,321	19,296	22,442	8.77	3.29	24.8
3012	Cagayan de Oro City 12	335	8,068	12,298	13,553	8.22	2.10	40.5
3013	Cagayan de Oro City 13	410	18,630	28,439	28,761	8.25	0.24	70.1
3014	Cagayan de Oro City 14	923	28,905	39,205	41,596	5.88	1.28	45.1
3015	Cagayan de Oro City 15	817	38,432	46,855	47,188	3.79	0.15	57.8
3016	Cagayan de Oro City 16	887	3,352	11,631	20,894	26.27	13.37	23.6
3017	Cagayan de Oro City 17	588	3,752	6,553	9,514	11.02	8.32	16.2
3018	Cagayan de Oro City 18	2,817	8,147	10,122	12,259	4.15	4.19	4.4
3019	Cagayan de Oro City 19	2,112	2,244	2,473	3,073	1.84	4.76	1.5
3020	Cagayan de Oro City 20	2,967	5,611	6,211	7,222	1.92	3.28	2.4
3021	Cagayan de Oro City 21	21,508	12,746	17,523	20,001	6.15	2.87	0.9
3022	Cagayan de Oro Airport	70	0	0	0			0.0
3023	Cagayan de Oro Port	38	0	0	0			0.0
	<b>Cag. de Oro City Total</b>	<b>47,413</b>	<b>339,598</b>	<b>428,314</b>	<b>461,877</b>	<b>4.45</b>	<b>1.63</b>	<b>9.7</b>

*Source: Population Censuses, 1990, 1995 and 2000 (NSO)*

**TABLE 1.3-2 (2) PAST TREND OF POPULATION GROWTH BY ZONE  
IN METRO CAGAYAN DE ORO, OTHER MUNICIPALITIES**

Zone Code	Zone Name	Land Area (ha)	Population			Annual Average Growth Rate (%)		Pop. Density (pns/ha) 2000
			1990	1995	2000	1990-95	1995-00	
			(May 1)	(Sep 1)	(May 1)			
3101	Tagoloan 1	2,093	23,117	27,302	29,690	3.17	1.81	14.2
3102	Tagoloan 2	792	6,150	8,163	10,824	5.45	6.23	13.7
3103	Tagoloan 3	3,202	4,652	5,464	6,135	3.06	2.51	1.9
3104	Tagoloan 4 (MCT)	37						0.0
	<b>Tagoloan Total</b>	<b>6,124</b>	<b>33,919</b>	<b>40,929</b>	<b>46,649</b>	<b>3.59</b>	<b>2.84</b>	<b>7.6</b>
3201	Villanueva 1	1,166	8,019	10,477	13,596	5.14	5.74	11.7
3202	Villanueva 2	689	5,991	7,236	7,007	3.60	-0.69	10.2
3203	Villanueva 3	1,073	754	864	951	2.59	2.08	0.9
3204	Villanueva 4	1,467	2,358	2,733	3,313	2.81	4.21	2.3
	<b>Villanueva Total</b>	<b>4,395</b>	<b>17,122</b>	<b>21,310</b>	<b>24,867</b>	<b>4.19</b>	<b>3.36</b>	<b>5.7</b>
3301	Jasaan 1	396	6,882	7,676	7,957	2.07	0.77	20.1
3302	Jasaan 2	449	4,530	5,576	6,336	3.97	2.78	14.1
3303	Jasaan 3	945	1,250	1,340	1,462	1.31	1.88	1.5
3304	Jasaan 4	2,979	5,828	6,909	10,155	3.24	8.60	3.4
3305	Jasaan 5	908	4,535	5,265	6,301	2.84	3.92	6.9
3306	Jasaan 6	2,148	6,121	6,832	7,758	2.08	2.76	3.6
	<b>Jasaan Total</b>	<b>7,825</b>	<b>29,146</b>	<b>33,598</b>	<b>39,969</b>	<b>2.70</b>	<b>3.79</b>	<b>5.1</b>
3401	Opol 1	440	8,196	9,069	10,081	1.92	2.29	22.9
3402	Opol 2	678	5,548	7,106	16,712	4.75	20.11	24.6
3403	Opol 3	2,373	2,293	3,073	3,219	5.64	1.00	1.4
3404	Opol 4	5,947	3,034	3,122	4,652	0.54	8.92	0.8
3405	Opol 5	5,190	1,402	1,588	1,725	2.36	1.79	0.3
	<b>Opol Total</b>	<b>14,628</b>	<b>20,473</b>	<b>23,958</b>	<b>36,389</b>	<b>2.99</b>	<b>9.37</b>	<b>2.5</b>
3501	El Salvador 1	2,715	12,558	14,958	16,403	3.33	2.00	6.0
3502	El Salvador 2	1,520	8,746	11,122	12,558	4.61	2.64	8.3
3503	El Salvador 3	2,981	4,034	4,066	4,559	0.15	2.48	1.5
3504	El Salvador 4	7,296	1,383	1,354	1,130	-0.40	-3.80	0.2
	<b>El Salvador Total</b>	<b>14,512</b>	<b>26,721</b>	<b>31,500</b>	<b>34,650</b>	<b>3.13</b>	<b>2.06</b>	<b>2.4</b>
3601	Alubijid 1	1,552	8,680	9,883	10,513	2.46	1.33	6.8
3602	Alubijid 2	3,106	6,122	6,619	7,194	1.47	1.80	2.3
3603	Alubijid 3	4,891	4,729	5,263	5,690	2.03	1.69	1.2
	<b>Alubijid Total</b>	<b>9,549</b>	<b>19,531</b>	<b>21,765</b>	<b>23,397</b>	<b>2.05</b>	<b>1.56</b>	<b>2.5</b>
3701	Laguindingan 1	1,353	7,459	8,312	9,358	2.05	2.57	6.9
3702	Laguindingan 2	1,451	6,514	6,572	7,313	0.17	2.32	5.0
3703	Laguindingan 3	602	1,530	1,637	1,780	1.28	1.81	3.0
	<b>Laguindingan Total</b>	<b>3,406</b>	<b>15,503</b>	<b>16,521</b>	<b>18,451</b>	<b>1.20</b>	<b>2.40</b>	<b>5.4</b>
3801	Gitagum 1	1,158	4,838	4,901	6,265	0.24	5.40	5.4
3802	Gitagum 2	1,851	5,552	5,962	6,648	1.34	2.36	3.6
3803	Gitagum 3	1,235	604	464	609	-4.82	6.00	0.5
	<b>Gitagum Total</b>	<b>4,244</b>	<b>10,994</b>	<b>11,327</b>	<b>13,522</b>	<b>0.56</b>	<b>3.87</b>	<b>3.2</b>
	<b>Metro Cag. de Oro Total</b>	<b>112,096</b>	<b>513,007</b>	<b>629,222</b>	<b>699,771</b>	<b>3.90</b>	<b>2.30</b>	<b>6.2</b>

Source: Population Censuses, 1990, 1995 and 2000 (NSO)



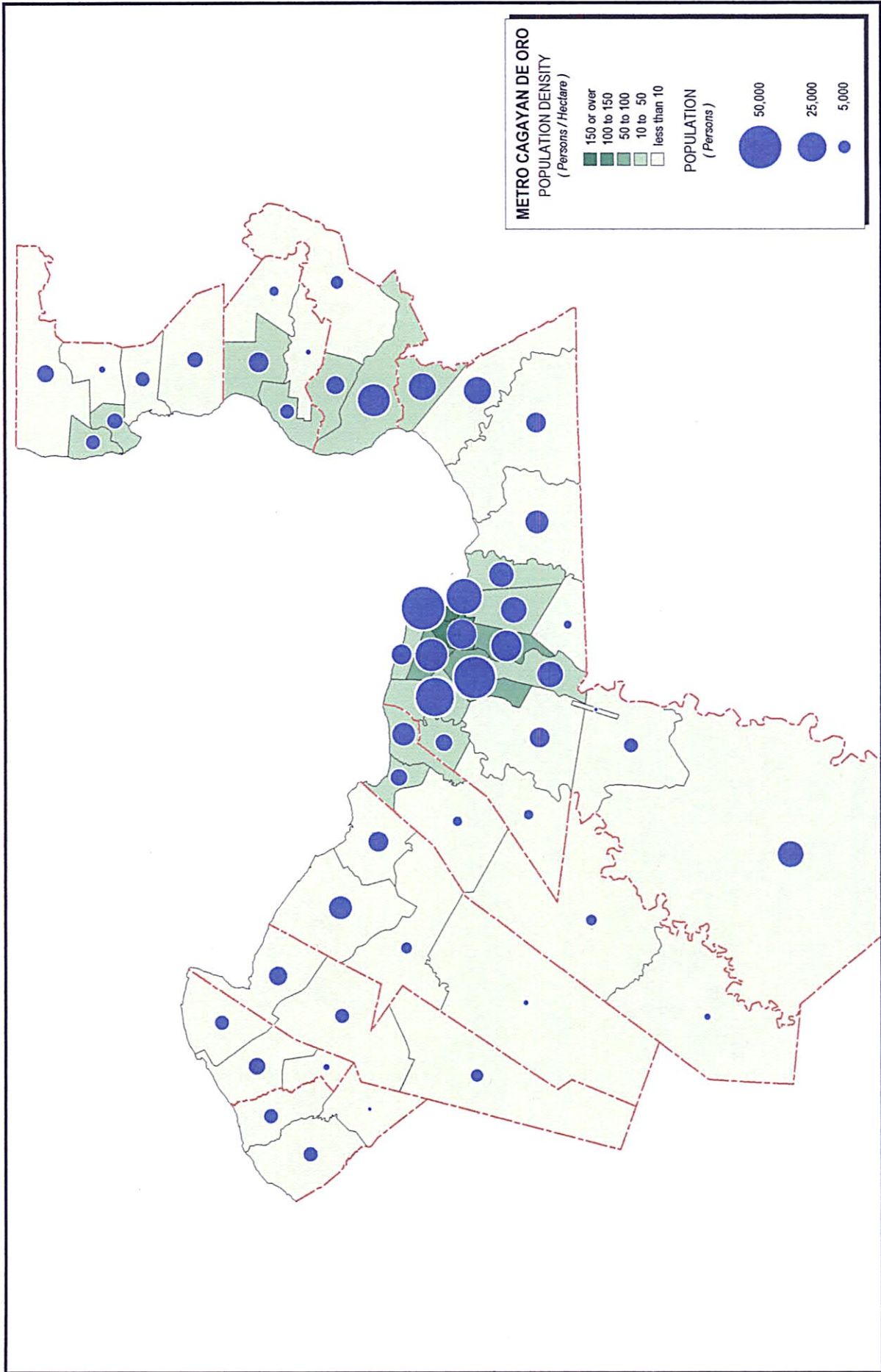


FIGURE 1.3-3 POPULATION SIZE AND DENSITY BY ZONE : 2000

## (2) Employment

Employment distribution is expressed as the number of employed persons by economic sector by zone on the workplace base. However, these data are neither available from the population censuses, nor from the labor force surveys. The 1995 Population Census gives information about the number of employed persons by sector by bagangay on the residence base. On the other hand, the 2000 census carried out the workplace base employment survey at the city/municipality level by 10% sampling. Using these data, the Study Team estimated the employment distribution for the Metro Cagayan de Oro in 2000.

The results are shown in Figure 1.3-4. As shown in the figure, employment is concentrated in Cagayan de Oro City. Especially, Zones 3001, 3002 and 3003 (Lapasan), which form the central part of the City, have a total employment of 69,076 persons with employment densities of 144.4 persons/ha, 80.3 persons/ha and 77.1 persons/ha, respectively. 92% of the employment is in the tertiary sector. Various government agencies, offices of large companies and large-scale shopping centers such as Gaisano Mall and Limketkai Commercial Complex are located there.

Zones with large employment of the secondary sector are Zones 3011 (Bugo), 3014 (Bulua and Patag), 3009 (Tablon) and 3008 (Cugman and F. S. Catanico). These zones include industrial areas. Typical firms are Del Monte Philippines (Zone 3011), Cagayan de Oro Tropical Fruits (Zone 3014), Nestle Philippines (Zone 3009) and Magnolia Processing Plant (3008).

Cagayan de Oro City is highly urbanized, however about 7,700 persons are engaged in the primary sector. Nearly half of them live and work in Zone 3021 (11 barangays in agricultural and forest area).

The other municipalities of Metro Cagayan de Oro are basically of agriculture-based economy. Except the built-up area called poblacion and its vicinity, most zones are rural and employment in the primary sector is dominant there. In these zones, however, some secondary and tertiary sector employment is existent providing the residents with daily services at the barangay level such as bakeries, sari-sari stores and educational and social institutions.

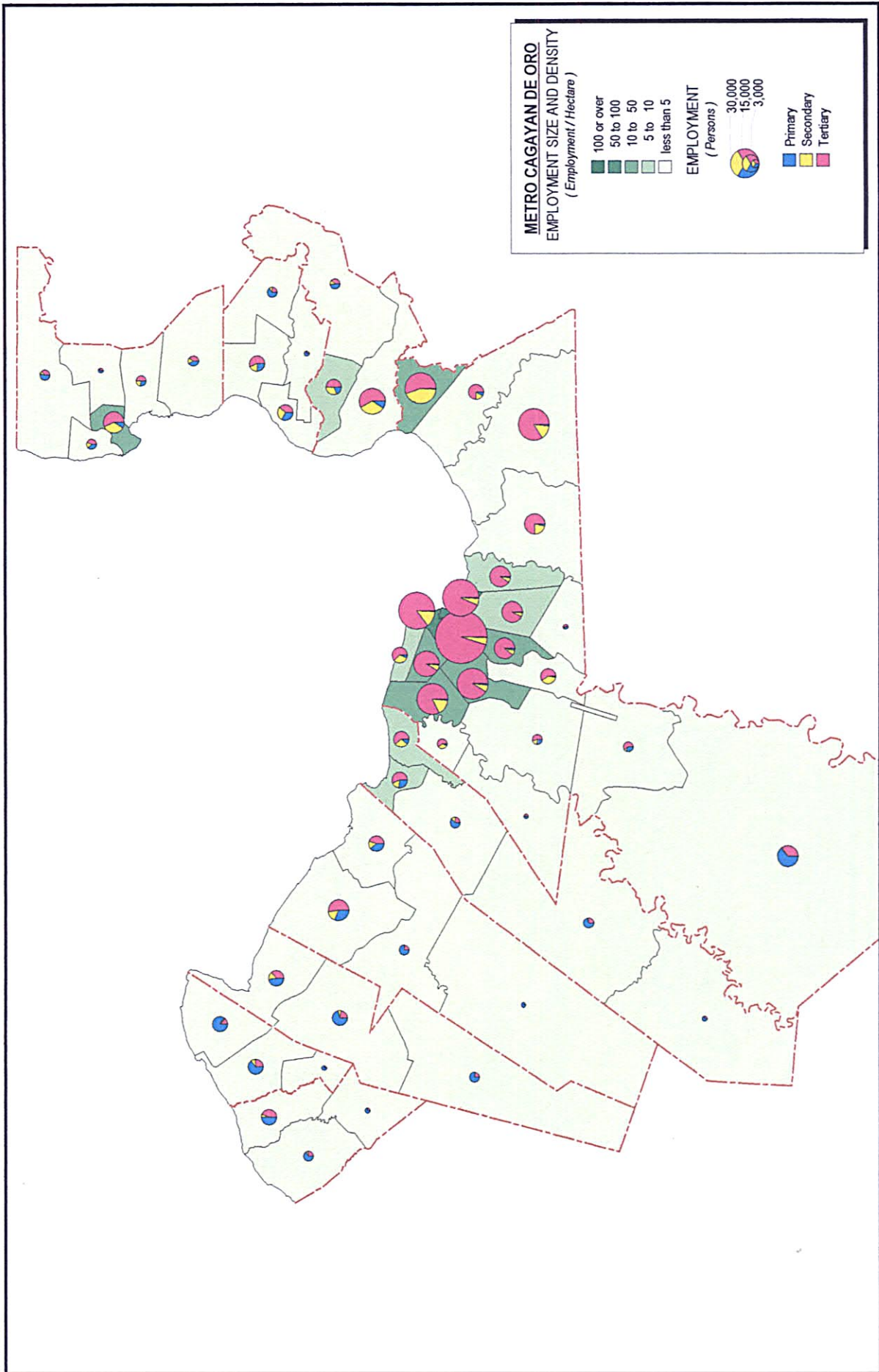


FIGURE 1.3.4 EMPLOYMENT SIZE AND DENSITY BY ZONE : 2000

## CHAPTER 2

### RELEVANT TRANSPORT AND DEVELOPMENT PROJECTS

#### 2.1 MINDANAO CONTAINER TERMINAL PROJECT (MCTP)

##### 2.1.1 Background

The proposed new container port is located on the shoreline of Macajalar bay at Tagoloan, Misamis Oriental, approximately 17km northeast from Cagayan de Oro proper. The deep water immediately offshore makes it an ideal deep seaport location to handle ships with a draft of up to 13.5m. Onshore, there is an adequate back-up area with more than 37 ha of land for storage and warehousing.

The new port aims to provide business opportunities in the region by making the most direct sea linkage to the Visayas and Luzon growth areas from Mindanao. It will motivate shipper and buyers to use the land-sea route through Cagayan de Oro or Misamis Oriental to ship goods, rather much longer direct sea connection.

The port, as an international container terminal, also will support development of PHIVIDEC Regional Industrial Center. The PHIVIDEC Industrial Estate has been identified by the Philippine government as the Regional Industrial Center (RIC) for Northern Mindanao. It is a 3000 ha site on which twenty manufacturing facilities and twenty-eight service facilities are located. The industrial estate has been in existence since 1974. The PHIVIDEC Industrial Authority (PIA) manages the estate and port construction. Japan Bank for International Cooperation (JBIC) has provided financial assistance for the MCTP.

##### 2.1.2 Relevant Study

Feasibility Study, PHIVEDIC Industrial Authority April 1999

##### 2.1.3 Financial Source

Japan Bank for International Cooperation (JBIC)

##### 2.1.4 Implementation Agency

PHIVIDEC Industrial Authority.<sup>1</sup>

##### 2.1.5 The Project

The port will have capacity of 270, 000 TEU/Year, a deep harbor for 12 meters draft panamax vessels, and back-up area for state-of the art container yard, warehouse and storage facilities.

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<sup>1</sup> The PHIVIDEC Industrial Authority is a government –owned and controlled corporation established on August 13, 1974 by Presidential Decree no. 538 as amended P.D.no. 1491. PIA manages the largest industrial estate in the Philippines, the PHIVIDEC Industrial Estate in Misamis Oriental (PIE-MO). It is mandated to develop the estate as an industrial area.

(i) Phase I, Stage 1:

- 400-m-long wharf with two gantry cranes for loading and unloading of containerized cargos.
- Berthing depth of 12m below MLLW
- Filling and reclamation of about 500,000 m<sup>3</sup>
- Back-up facilities equipment including container yard, road network, truck holding areas, weighing bridges, greeneries and four yard cranes.
- Complete with drainage, water, electrical supply and sewerage systems

(2) Phase 1, Stage 2

- Expansion of container yard
- Additional two gantry cranes and four yard cranes

(3) Six Year Development Plan

- Expansion of container terminal facilities
- Construction of general cargo, bulk and food terminal with unloading and silo facilities
- Provision of cargo freight situation
- Development of industrial parks around the port

**2.1.6 Implementation Program**

NEDA approval	June 1999
JBIC Loan Agreement	April 2000
Detailed Design/Bidding	2000 - 2001
Construction for Stage 1 of Phase 1 2003.	December 2001 to December
Commencement of Operation	January 2004

**2.1.7 Project Cost (Estimate)**

**Total Project Cost : 85.32 M US\$**

## **2.2 LAGUINDINGAN AIRPORT DEVELOPMENT PROJECT**

### **2.2.1 Background**

The Laguindingan Airport Project envisages the development of a new major trunk line airport of international standards at Laguindingan, Misamis Oriental in order to meet the increasing air transportation demand and accommodate unconstrained and unlimited development in the region. The proposed airport site is situated in the northern coast of the island of Mindanao in Brgy. Moog, Laguindingan, Misamis Oriental. The area lies north of the municipality of Laguindingan facing Macalajar Bay. It is about 30km northwest of Cagayan de Oro City and 58km from Iligan through the Iligan – Cagayan de Oro – Butuan Road.

### **2.2.2 Relevant Study**

- Feasibility Study and Master Planning for Cagayan de Oro – Iligan Corridor Airport, Nov 1991 USAID
- A Preliminary Design Report and Update Master Plan and Medium Term Development Plan of Laguindingan Airport, December 2000, DOTC

### **2.2.3 Financial Source**

Economic Development Cooperation Fund (EDCF) of South Korea  
Export – Import Bank of Korea (KEXIM)  
Nordic Investment Bank (NIB) for Air Navigation Equipment Component only

### **2.2.4 Implementation Agency**

Laguindingan Airport Development Project  
Department of Transport and Communication (DOTC)

### **2.2.5 The Project Scope**

Based on the updated Master Plan of December 2000 and Medium-Term Development Plan for Laguindingan Airport, the original scope was revised as follows.

#### **Package A**

##### **A1: External Works and Buildings**

- Site development at new site, including construction of a new runway (2,500mx45m, extendable to 3,000m), taxiway, passenger and cargo apron, airside service road, GSE road and access road
- Construction of a new passenger terminal, cargo terminal, control tower and operation building, administration building, fire station, maintenance building, cold water receiving station, power house, sewerage treatment plant, including supply and installing passenger boarding bridges, baggage handling system, security equipment, flight information display system, elevators and escalators, public address system, access control and other related equipment and utilities.
- Access road (4-lane) having 60m of road right of way

A2: Supply and Delivery of Rescue Vehicle and Maintenance Equipment

(Runway Sweeper, Disc-type Lawn Mower, Fire Fighting Vehicle and Ambulance)

**Package B - Supply, Delivery and Installation of Navigation and Support Facilities (Air navigation System and Aeronautical Ground Lighting System)**

**Package C: Consulting Supervision**

**2.2.6 Implementation Program**

Detailed Engineering	September 2001
Loan Agreement	January 2004
Bidding	2004
Construction	2005 to 2007
Commencement of Operation	2008

**2.2.7 Project Cost**

**Total Project Cost      Peso 5,385.55 M**



## **2.3 MINDANAO RAILWAY PROJECT**

### **2.3.1 Background**

There is no existing railway system in Mindanao, but there are proposals calling for the establishment of a railway transport system connecting the major commercial and population centers of the island. There has been a number of studies conducted in this direction. The Department of Transport and Communication (DOTC), in conjunction with technical staff of the Philippine National Railways (PNR), undertook a pre-feasibility study that included among other aspects investigation of possible alignments for an initial phase of a system that would connect Northern and Southern Mindanao. Since Mindanao Railway Project Office (MRPO) has been established, substantial progress of implementation has been made as corridor of Cagayan de Oro and Iligan cities. Also, MRPO intends to update the relevant studies connected with the preparation of comprehensive master plan for the overall Mindanao Railway Project with external cooperation. Despite logistical constraint, PNR is able to get the support of world renowned railway builders that undertake the responsibility of conducting feasibility studies for the areas assigned to each of them. These companies are the Thaipicon & Industry Company, Limited of Thailand, Ircon International Limited of India and the Siemen's AG of Germany.

### **2.3.2 Relevant Study**

- Pre-Feasibility Study on Mindanao Railway System, 1990
- The Detailed Design for Cagayan de Oro and Iligan Part 2004 (On-going)

### **2.3.3 Financial Source**

- (1) Cagayan de Oro to Iligan : Thai Government
- (2) Iligan to Zamboanga: IRCON (Indian)<sup>1</sup>
- (3) Cagayan de Oro to Butuan to Surigao : German Government

### **2.3.4 Implementation Agency**

Mindanao Railway Project Office  
PNR of DOTC

### **2.3.5 The Project Scope**

Cagayan de Oro to Iligan: the first segment of the 1<sup>st</sup> phase

This section covers the distance between Cagayan de Oro City and Iligan City with around 10 intermediate stations. The railway will provide service of express trains between the two major cities complemented by commuter trains between the intermediate stations. For the Laguindingan new airport passengers, special train will be provided from Cagayan de Oro and Iligan terminals where check – in service for air lines will be available. The detailed design of this stage is being conducted by Thai Engineering Company under Thai Government Assistance.

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<sup>1</sup> Counter trading with agricultural produces in Mindanao will cover 600km construction cost.  
*Part-D Metro Cagayan de Oro Road Network Development Master Plan*

### 2.3.6 Implementation Program

#### (1) Cagayan de Oro to Iligan

Evaluation of Detailed Engineering by PNR	:	February 2004
NEDA Approval	:	May 2004
Funding Agreement	:	2004
Construction	:	2004 to 2008
Commencement of Operation	:	2009
Project Cost	:	US\$485 Million

Upon the strong initiative of the Honorable Jose de Venecia, Jr., Speaker of the House of Representatives, a Memorandum of Understanding (MOU) was entered into between the Philippine National Railways (PNR) and the Thaipicon & Industry Co.,Ltd. (TPCON) of Thailand on May 15, 2003 whereby the latter generously takes the responsibility of conducting a Feasibility Study for the 1<sup>st</sup> Segment of Phase 1 of the MRS covering the 83.5 km. of Cagayan de Oro-Iligan Line at no expense on the part of PNR. About six (6) months, the Project Feasibility Study was formally handed over by Mr. Direk Chatpimolkul, President of TPCON, to Secretary Leandro R. Mendoza on December 3, 2003.<sup>1</sup> The study is now currently undergoing rigorous and thorough evaluation by PNR and expected to be completed towards the second week of February of this year.

The Project, which has a total estimated cost of US\$ 485 Million, is likely to be funded through a concessional loan that will be provided by the Government of Thailand and other Thai funding sources.

#### (2) Iligan to Zamboanga

On the same day that the Feasibility Study was formally presented by TPCON to the Philippine Government thru DOTC on December 3, 2003, another MOU was entered into by and between PNR with IRCON International Limited, a Public Sector Undertaking under the Ministry of Railways of the Government of India, whereby the latter will conduct a Feasibility Study, at no expense on the part of PNR, for the establishment of about 576 km. rail between Iligan City and Zamboanga City under Phase V of the MRS by way of a "Conduct-trade Arrangement / Financing Scheme".

In its utmost desire to obtain the support of concerned offices and agencies of the government, PNR conducted a consultation meeting on January 26, 2004 with the Department of Trade and Industry (DTI), Department of Agriculture (DA), Department of Environment and Natural Resources (DENR), Department of Agrarian Reform (DAR), Department of Finance (DOF), Department of Foreign Affairs (DFA), Department of Transportation and Communications (DOTC) and the private sectors. The said meeting, which was held under the auspices of Philippines International Trading Corporation (PITC), also served as an opportune time to discuss the "counter-trade" arrangement in more explicit and definitive terms. Also in attendance was Mr. Bhola Singh of IRCON.

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<sup>1</sup> Key officials from the government led by Speaker Jose De Venecia, Jr., Senator Robert Barbers, Cong. Jesnar Falcon, Cong. Augusto Baculio and Cong. Constantino Jaraula witnessed the turnover ceremony. Also in attendance were DOTC Undersecretary Jose I. Cortes, PNR Part-D Metro Cagayan de Oro Road Network Development Master Plan

Realizing the economic benefits that would be derived not just from the main rail project but from the "counter-trade scheme", the proposed arrangement received the full support and endorsement of all those who attended the said consultation meeting. Thus, the conduct of the study becomes more necessary.

In furtherance of IRCON's effort, preliminary activities have been going on with the <sup>2</sup>plan to conduct surveys on the project coverage towards the 3<sup>rd</sup> week of February 2004.

### **(3) Cagayan de Oro to Butuan to Surigao.**

Consistent with its keen interest at getting involved in the development of Mindanao, particularly in the railway development program for the island, Siemens AG has expressed its desire to cover the Cagayan de Oro-Butuan-Surigao Line. In fact, this German company has already started gathering secondary and primary data pertaining to the project and its technical staff have gone to the project area twice already sometime in December 2003 and last January 27-29, 2004.

To formalize its participation in the development and implementation of MRS, Siemens has offered to execute an MOU with PNR, and the formal signing ceremony is scheduled on February 23, 2004.

#### **2.3.7 Project Cost**

**Total Project Cost for Cagayan de Oro – Iligan part US\$485 Million.**

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*Chairperson Josefa I. Aquino, PNR Chairperson Josefa I. Aquino, PNR General Manager Jose I. Sarasola, PNR Director Jose Antonio Villar, Thai Ambassador to the Philippines, Ms. Busba Bunnag, former Thai Ambassador to China Ocharun Tanaphong, TPCON General Manager Somyote Chatpimolkul and Dr. Prasan Sirinond, TPCON Director for Project Development.*

## **2.4 ROAD AND BRIDGE PROJECTS**

### **2.4.1 Tagoloan Parallel Bridge Construction Project**

#### **(1) Project Content**

The project bridge is to be constructed beside the existing steel bridge on the upstream side and the scope of work is the construction of a two-lane composite girder typed concrete bridge and concrete pavement of its approach. The project aims to provide a 20-25 ton capacity bridge to accommodate the industrial truck haulers to and from the Regional Industrial Center and the port area in addition to the existing regular traffic, in order to support to the Cagayan de Oro – Iligan Corridor Program of the government. The target beneficiaries are the industrial workers, investors, traders and the populace along the Cagayan de Oro – Iligan Corridor (CIC). Once the project realized, it will serve as the only passage of industrial cargos to and from the Regional Industrial Center and the port area, and to adjoining municipalities and Iligan City. In effect, socio-economic development of these areas will be enhanced.

- Length: Bridge = 529.301m
- Spans: 10 spans X 45.1m and 2 spans x 39.301m
- Foundation: RC Bored piles with six(6) composite piles on RC hexagonal pile cap
- Girders: Built-up steel girders

#### **(2) Construction Schedule**

Phase 1: The construction of the whole substructure for the two abutment and eleven (11) piers.

- Contract Amount: P51, 879,272
- Contractor: Grace Construction Corp.
- Started Date: August 27, 1998
- Completed Date: October 18, 2001

Phase 2: The fabrication, furnishing, painting and erection of fourteen (14) steel girders for three (3) spans and two (2) girders for the fourth span.

- Contract Amount: P56, 799,625
- Contractor: Grace Construction Corp.
- Started Date: September 17, 1999
- Completed Date: October 18, 2001

Additional Phase 2 (1): This phase covered the fabrication, furnishing and erection of additional twelve (12) steel girders for three (3) spans and two (2) girders for the fourth span.

- Contract Amount: P46, 540,353.75
- Contractor: Grace Construction Corp.
- Started Date: December 26, 2001
- Completed Date: June 23, 2002

Additional Phase 2 (2): the completion of the entire bridge project, including its super structure. However, the project is still suspended due to the non-payment of 6<sup>th</sup> partial billing.

- Contract Amount: P134, 877,590.25
- Contractor: Grace Construction Corp.
- Started Date: June 24, 2002
- Completed Date: April 23, 2004
- Status of January 31,2004: Actual progress = 95%

**(3) Estimated Project Cost**

- Bridge: P 301 Million
- Approach Road: P 42 Million
- RROW: P 20 Million (Road right of way acquisitions)
- Total: P 363 Million

**(4) Implementation Agency**

DPWH Regional X Office

## 2.4.2 Construction of Cagayan de Oro Third Bridge and Access Road

### (1) Project Content

This bridge is to be constructed across the Cagayan de Oro River connecting Barangay Puntod and Barangay Kauswagan of the City. The scope of work is the construction of a four (4) lane prestressed concrete bridge of 352 m- long for eleven spans at 32 m. While access roads linking the City port road at Puntod, Cagayan de Oro City and National Highway at Igpit, Opol, Misamis Oriental will involved concreting of four (4)- lane, 8.465km road pavement (mostly with embankment along the coastal route) and construction of a RCDG bridge over the Iponan River.

### (2) Construction Schedule

Phase I: This phase covers the construction of abutment "B", four piers, and two (2) bored piles at the preceding pier. This also includes P 4.20M provision for the road right of way acquisition at the abutment. Site was taken into possession on November 8, 2002. However, the road right of way (RROW) acquisition is still under negotiation. The Project is on going in spite of the complaint filed in the court by the affected lot owner on the issue of illegal/forcible entry, since the case was elevated and unresolved in the Supreme Court.

- Contract Amount: P44, 929,259.45
- Contractor: G&P Builders, Inc.
- Started Date: July 9, 1998
- Expiry Date: December 19,2003
- Status of January 31 2004: Actual progress = 96%  
(Suspended due to building obstruction)

Phase II: This phase covers the construction of bridge slab and railings for four (4) spans, additional two (2) piers, completion of the succeeding pier, furnishing and launching 43 PC/PS girders. The Project resumed activities effective on September 24 2003 after its suspension form June 9 1998 due to RROW problem. Accomplishment covers for the precast/pre-stress concrete gilder.

- Contract Amount: P 61,826,585
- Contractor: UKC Builders, Inc.
- Started Date: July 9, 1998
- Expiry Date: March 4, 2004
- Status of January 31 2004: Actual progress = 40%  
(Suspended due to building obstruction)

Phase III: This phase covers the construction of abutment "A", three (3) piers, furnishing and launching three (3) PC/PS gilders. This also includes P15M provision for RROW acquisition at abutment "A". Negotiation with affected lot owners is on going. The construction is suspended because entering fabricated gilders to the site is not allowed due to ROW problem of the building obstructing approach to the abutment.

- Contract Amount: P 33,768,995
- Contractor: UKC Builders, Inc.

- Started Date: September 15, 2001
- Expiry Date: November 9, 2003
- Status of January 31 2004: Actual progress = 96%

Phase IV: This phase covers the construction of bridge slab for four spans, and furnishing and launching twenty seven (27) PC/PS girders.

- Contract Amount: P 29,842,179.60
- Contractor: SCP Construction
- Started Date: July 16, 2003
- Expiry Date: January 11, 2004
- Status of January 31 2004: Actual progress = 30%

Phase V: This phase covers the completion of bridge slab for three (3) spans and railing of the entire bridge, furnishing and launching fifteen (15) PC/PS girders. Contract is under verification with Regional Office of DPWH.

The remaining works for the access road will be scheduled for implementation in the later years.

**(3) Estimated Project Cost**

• Bridge Structure:	P 281.600M
• Access Road and Approach	
Road Component	P 235.228M
Bridge Component	P 45.000M
• Road Right of Way	P 265.000M
• <u>Mobilization / Demobilization</u>	<u>P 10.250M</u>
Sub- Total	P 873.078M
Add 5% inflation rate	P 41.854M
Total Estimated Cost	P 878.932M

**(4) Implementation Agency**

DPWH Region X Office



## 2.5 CAGAYAN DE ORO CITY PROJECTS

### 2.5.1 South Diversion Road

#### (1) Project Content

The project aims to construct a 4-lane cargo PCCP road and PCDG Bridge with lighting capacity. At the present only a two-lane of concrete pavement is provided because of the limited availability of funds. However, the provision of RROW and the width of the Bridge were maintained for 4 lanes (20 m- wide). (See Figure 2.5-1)

#### (2) Construction Schedule

The project is divided into four packages.

Package	Description	Length (km)	Road Width (m)	Cost (Peso M)	Status (%)
Package I	Road	2.073	20	81.667	90
Package II	Bridge	0.276	20	161.347	98
Package III	Road	3.750	20	63.288	85
Package IV	Road	4.091	20	114.533	30

(Status is the progress as in Jan. 2004)

#### (3) Cost

Total Cost P 420.835M

#### (4) Implementation Agency

LGU- Cagayan de Oro City, locally funded project

#### (5) Contractor

UKC., Inc

### 2.5.2 Cogon Market Renovation

#### (1) Project Content

The project aims to construct 3-storey public market and sopping center complex at the existing Cogon market site. (See Figure 2-1)

#### (2) Construction Schedule

January 2004 to August 2004

#### (3) Cost

P 200 Million

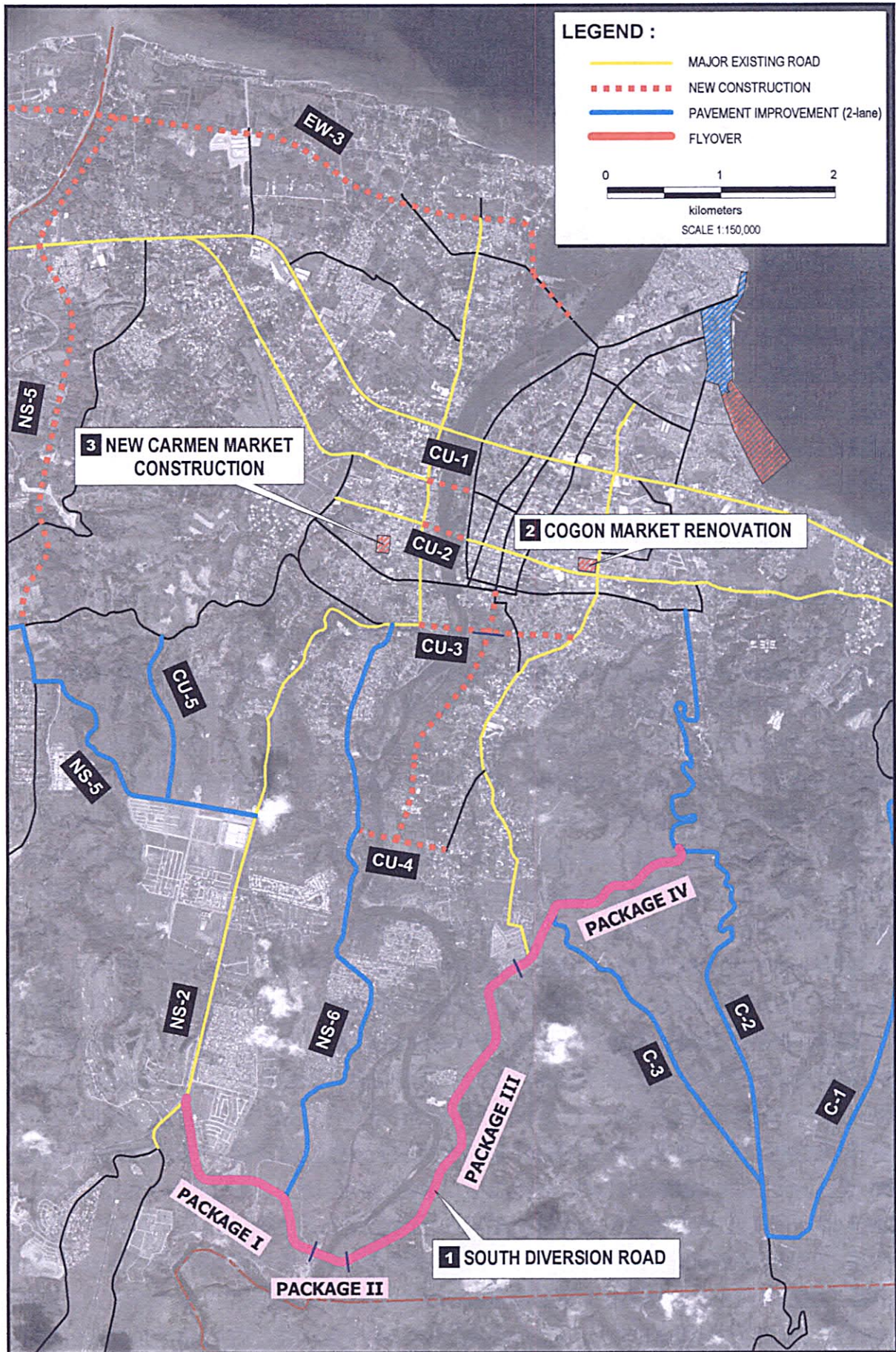


FIGURE 2.5-1 MAJOR CAGAYAN DE ORO CITY PROJECTS

**(4) Implementation Agency**

LGU-Cagayan de Oro City through Build-Operate-Transfer (BOT) Scheme

**(5) Contractor**

UKC., Inc

**2.5.2 Carmen Market Construction**

**(1) Project Content**

The project aims to construct 2-storey public market and sopping center complex at Barangay Carmen proper. (See Figure 2-1)

**(2) Construction Schedule**

August 2003 to May 2004

**(3) Cost**

P 119 Million

**(4) Implementation Agency**

LGU-Cagayan de Oro City through Build-Operate-Transfer (BOT) Scheme

**(5) Contractor**

UKC., Inc

## **CHAPTER 3**

### **INTER-CITY TRANSPORT SYSTEM**

#### **3.1 MINDANAO CONTAINER TERMINAL PROJECT (MCTP)**

Metro Cagayan de Oro is located at the center of northern Mindanao. Major cities and inter-city roads are shown in Figure 3.1-1.

There are three major inter-city roads in the Metro Cagayan de Oro area as follows:

- Iligan-Cagayan de Oro (CDO)-Butuan Road: providing land transport access to Region IX and ARMM in the West and Region XIII in the east.
- Syre Highway : providing land transport access to Region X.
- CDO – Talakag – Kibawe Road : providing land transport access to Region X and ARMM

#### **3.2 AIR TRANSPORT**

There are three Alternate International Airports and two Trunkline Airports in Mindanao (see Figure 3.2-1).

Alternate International Airport	:	Davao City, Gen. Santos City and Zamboanga City
Trunkline Airport	:	Cagayan de Oro City and Cotabato City

Existing Cagayan de Oro Airport will be transferred to Laguindingan by 2010.

#### **3.3 SEA TRANSPORT**

There are eight base ports in Mindanao (see Figure 3.3-1).

Base Port along Northern Coast	:	Cagayan de Oro, Nasipit, Surigao, Iligan
Base Port along Western Coast	:	Zamboanga, Polloc
Base Port along Southern Coast	:	Gen. Santos, Davao

In the Study Area, Mindanao Container Terminal Port is under construction and is expected to start operation early 2004.



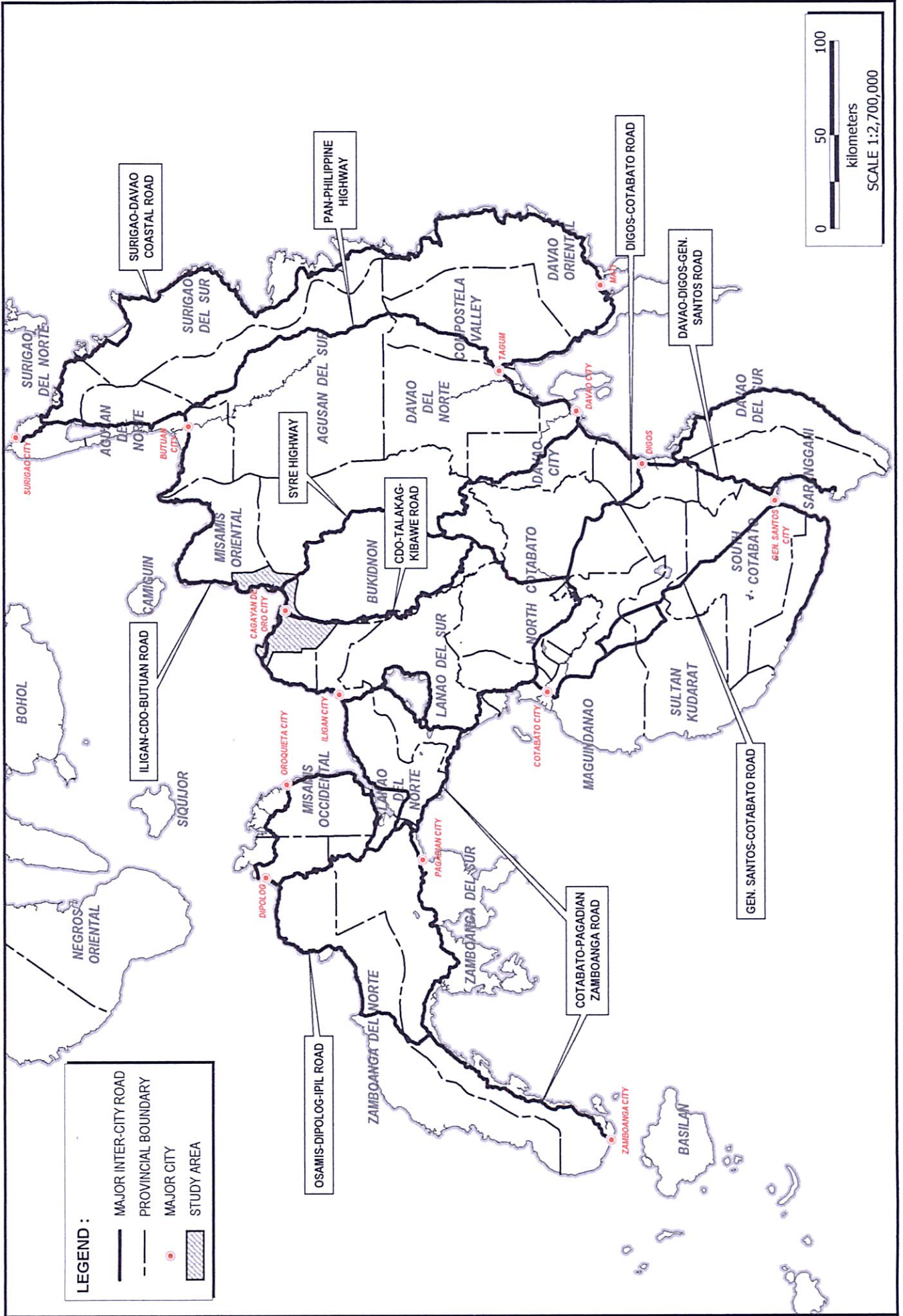


FIGURE 3.1-1 MAJOR INTER-CITY ROAD NETWORK IN MINDANAO

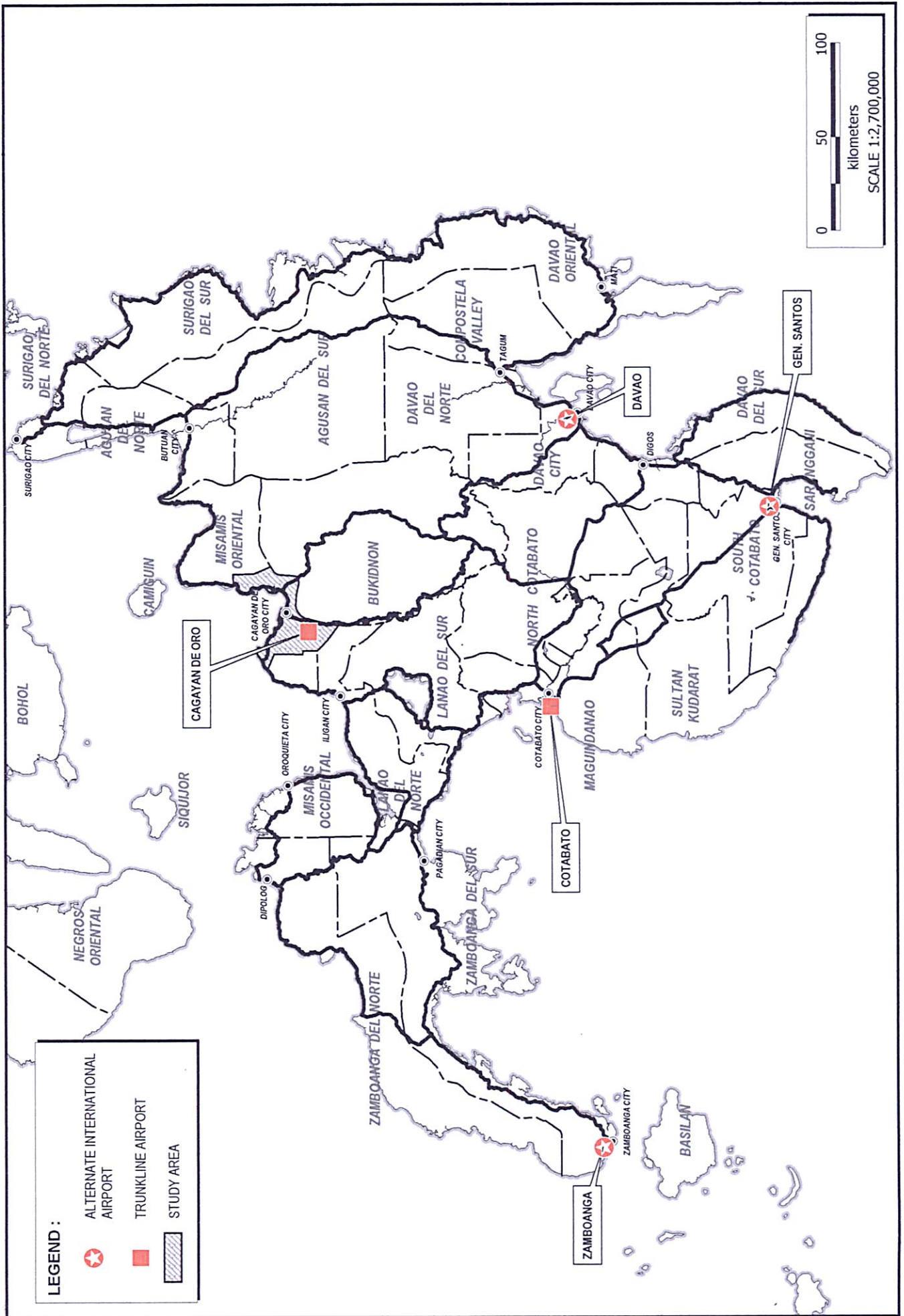


FIGURE 3.2-1 AIRPORTS IN MINDANAO ISLAND



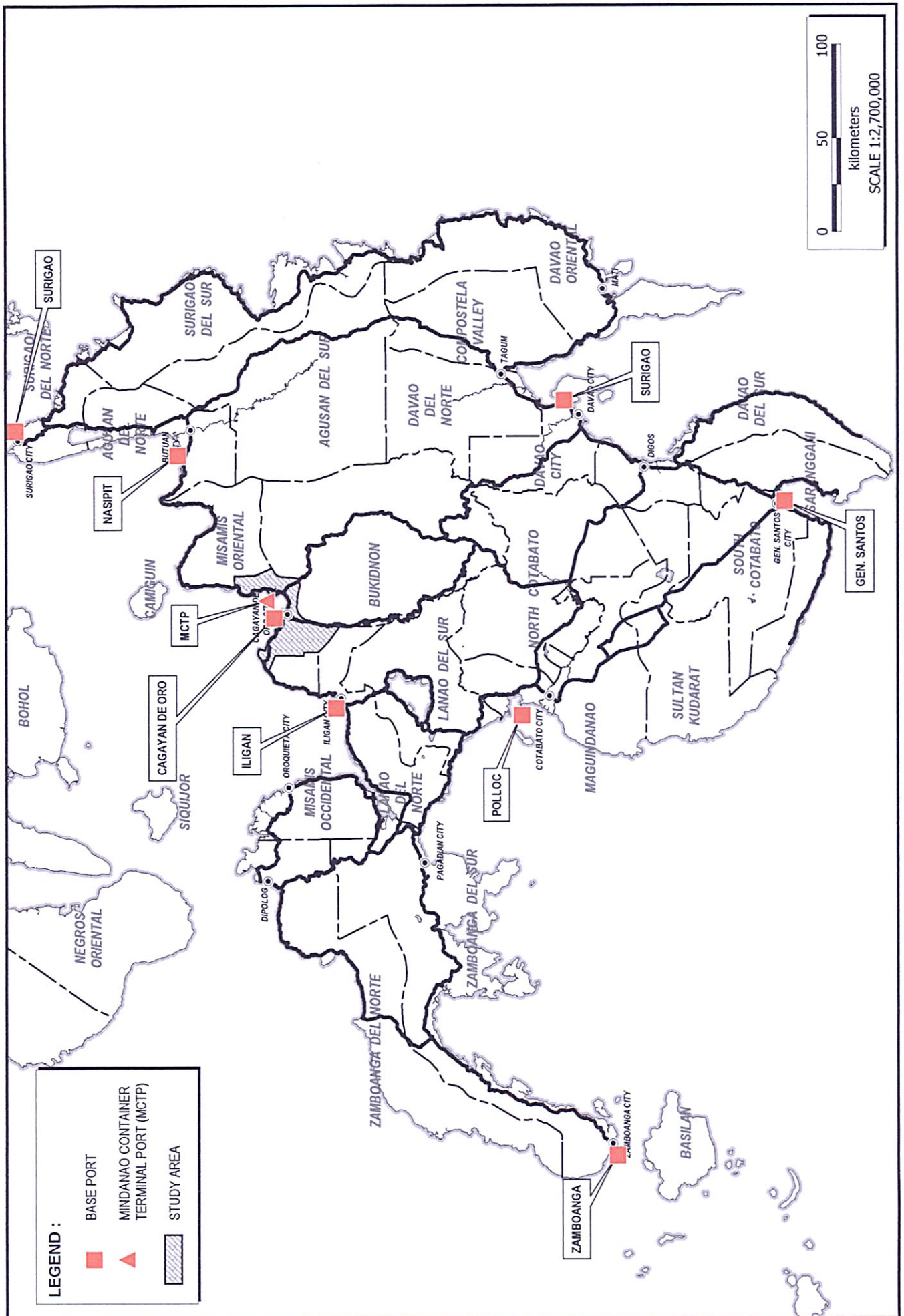


FIGURE 3.3-1 BASE PORTS AND MINDANAO CONTAINER TERMINAL PORT