CHAPTER 3 ANALYSIS OF THE REGION'S CHARACTERISTICS

3.1 INTERNATIONAL, NATIONAL AND REGIONAL CONTEXTS OF THE STUDY AREA

3.1.1 Introduction

The economic, spatial, environmental and social conditions and transformation, as discussed in the following sections, exist and are occurring not merely within the study area but also within the international, national and regional setting of the study area. This section presents an overview of the relationships of the study area, first, with other countries and, second, with other parts of the region and Indonesia.

3.1.2 International Context of the Study Area: Globalization and Inter-regional Economic Relations

The Indonesian economy is in the process of globalization driven by economic deregulation as well as by trade liberalization, for which Indonesia has committed to AFTA and WTO. This process induces increasingly closer economic linkages with other countries. One example is shown in the success of the Growth Triangular (SIJORI), in which Singapore, Johore and Riau complement each other's resources across national borders. Another effort has been made to establish the East ASEAN Growth Area composed of Brunei, East Indonesia, East Malaysia and the Philippines, Mindanao (BIMP-EAGA). In addition to these efforts, the economic relationship between West Kalimantan and Sarawak has become stronger year by year. Such regional linkages are promoted based upon the competitive advantages of each region, and it is expected to stimulate the entire economic activity of the region.

From the viewpoint of the western part of Kalimantan, the relationship with Malaysia will be significant, in utilizing their experience and know-how of oil-palm and rubber plantations, and their capital and technology in agro-processing industries. On the other hand, the Kalimantan side can provide land, manpower and raw material.

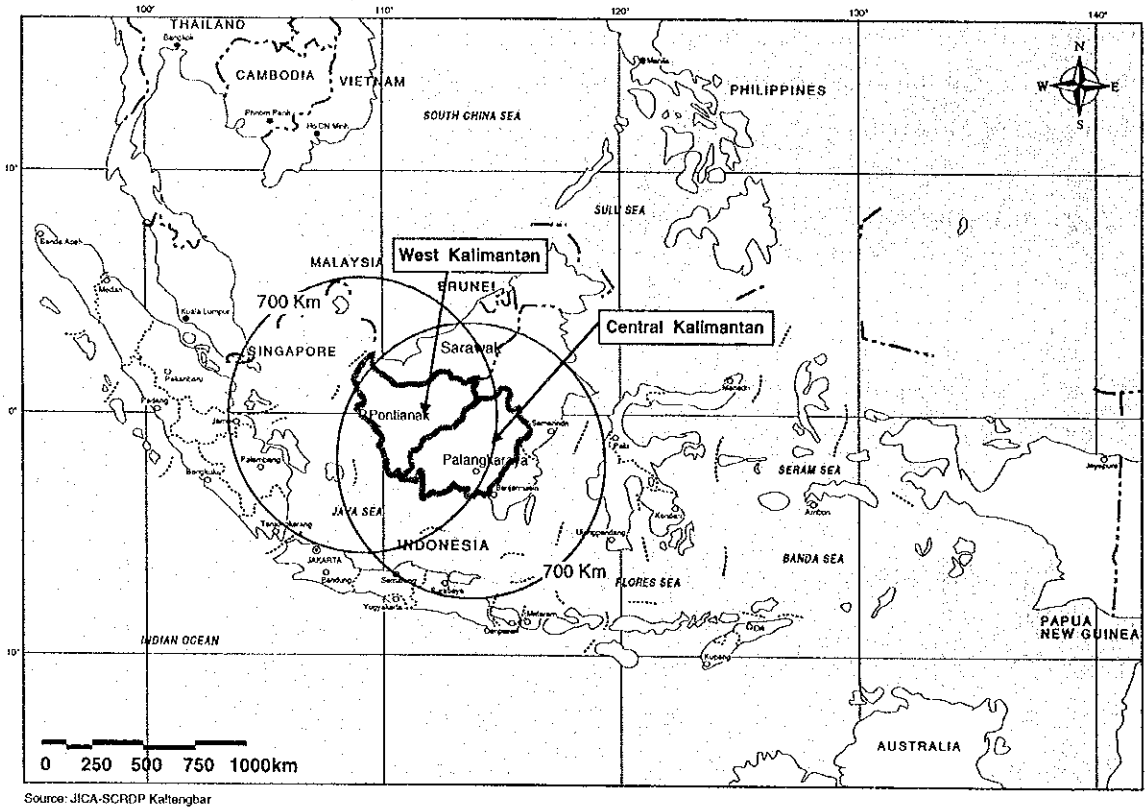
Another possibility will be the development of natural gas on Natuna Island. West Kalimantan is expected to provide logistics for the island, and this will have a large impact on the overall regional economy if it is realized. Since this type of development requires high quality goods and services, the existing industries and business should modernize and upgrade their

operations in order to exploit the Natuna-related development potential. Related infrastructures (both institutional and physical) also need to be modernized to meet the requirements.

The proximity to the Growth Triangular (SIJORI) could provide the western part of Kalimantan with opportunities to develop future economic relations with them. They may include a large market, a large source of capital for the Western Part of Kalimantan.

In this perspective, the Pontianak airport expansion project to be financed by ADB will make Pontianak the hub of air transportation in the western part of Kalimantan, and it will accelerate the international and domestic flow of people and business relations.

Figure 3.1.1 International Context of the Study Area



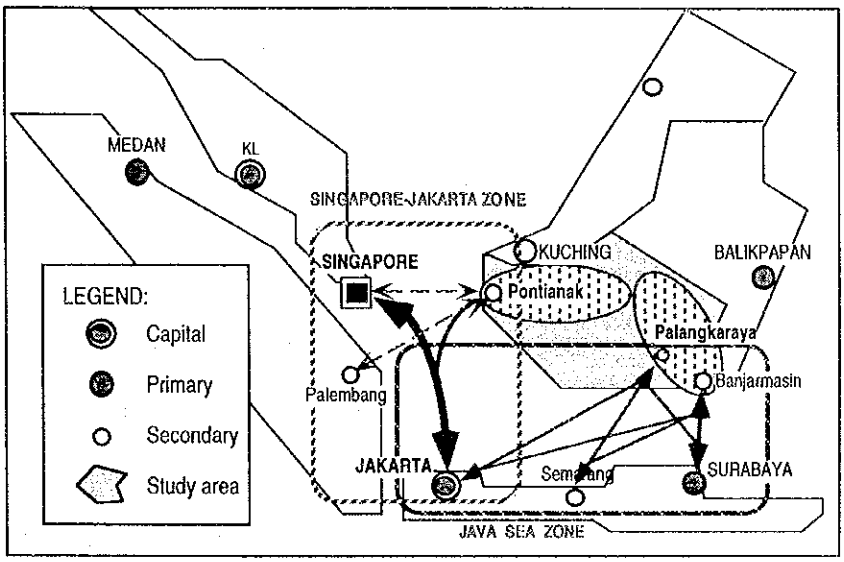
Source: JICA-SCRDP Kaltengbar

3.1.3 National and Regional Contexts of the Study Area

(1) External Relations of the Region with Other Parts of Indonesia

The region needs to be understood not only by looking at regional characteristics, but also by looking at the national context in which the region is situated. The western part of Kalimantan has two gateways to other parts of Indonesia, as well as to parts outside Indonesia. One is Pontianak, which faces the South-China Sea and has a close linkage to Jakarta, as well as to Singapore. Its commercial network covers most of West Kalimantan. The other is Banjarmasin. It is the provincial capital of South Kalimantan but extends its commercial network over a large part of Central Kalimantan. However, some areas, such as Pangkalanbun and Sampit, remain uncovered by these two gateway centers and have direct relations with Java and others.

Figure 3.1.2 Inter-Regional Linkages of the Study Area



Source: JICA-SCRDP Kaltengbar

(2) Population Pressure from Java and Other Islands

Although the population size and density is still low in the region, most of the land of the region is used somehow, e.g. swidden agriculture, timber extraction, and plantation. However, the pressure of the population increase is felt now, because of the increasing volume of migration of people from Java and other islands to Kalimantan, including transmigration and spontaneous migration. At the same time, the pressure of using land in the region has also been increasing as timber-extraction, timber processing industries and tree-crop plantations have been developed.

3.2 OVERVIEW OF THE PRESENT CONDITIONS OF THE STUDY AREA

3.2.1 Introduction

This section provides a summary of the present conditions of the study area. A more interpretive description of the region and regional transformation is given in Section 3.3. Furthermore, the detailed picture of each development activity is presented in Section 3.4

A more essential characterization of the region is given as the salient features of the Kalimantan System in Section 4.2.

3.2.2 Natural Conditions of the Region[1]

(1) Topography and Geology

Over 75 % of the study area lies below 100 m in altitude (Table 3.2.1, Figure 3.2.1). Flat plains and swamps, covering about 30 percent of the total study area, extend along the coast. Overland travel is difficult because the lowland plain is characterized by poor drainage.

Table 3.2.1 Area by Elevation in the Study Area

Elevation (m)	West Kalimantan		Central Kalimantan		Total	
	Area(km^2)	(%)	Area(km^2)	(%)	Area(km^2)	(%)
-100	113,194	76.8	118,637	77.2	231,831	77.0
-500	25,904	17.6	26,251	17.1	52,155	17.3
-1,250	8,008	5.4	8,658	5.6	16,665	5.5
1,250<	337	0.2	123	0.1	460	0.2
	147,444	100.0	153,669	100.0	301,112	100.0

Source:RUPABUMI

The study area is dissected by great rivers which run from the mountainous interior to the coast providing the main routes of transportation and communication. As a result, the population is concentrated around the coast and the main rivers. This is the reason why the inland areas were poorly exploited until quite recently. Length and catchment areas of the main rivers in the study area are shown in Table 3.2.2.

[1] This section is based on Kathy Mackinnon et al., *The Ecology of Kalimantan: Indonesian Borneo*, Singapore: Periplus Editions (HK), 1996

Table 3.2.2 Main Rivers in the Study Area

West Kalimantan				Central Kalimantan			
River	Length km	Catchment Area km^2	Share* %	River	Length km	Catchment Area km^2	Share* %
Kapuas	1,143	85,200	58	Barito	900	42,800	28
Pawan	197	13,400	9	Kahayan	600	17,900	12
Landak	178	8,700	6	Seruyan	350	17,900	12
Sambas	233	7,700	5	Katingan	650	17,000	11
Jelai	135	5,800	4	Kapuas	600	16,800	11
Kendawangen	128	3,400	2	Mentaya	400	16,700	11

Note: *: Catchment area /Provincial area
Source: Kalimantan Barat Dalam Angka 1996, Kalimantan Tengah Dalam Angka 1995

Although Kalimantan has no active volcanoes, its main mountain ranges are igneous in origin. The mountain chains run down the island's center like an inverted trident from north to south. However, the mountainous areas in the study area rise in height from the 1,681 m Mount Cemaru of the Kapuas Hulu range to the 2,278 m Bukit Raya of the Schwaner range and generally cover a limited area.

(2) Climate and Water Resources

The study area lies on the equator and temperatures are relatively constant throughout the year, between 25 °C and 35 °C in the lowland areas.

The study area has very few months of rainfall of less than 200 mm. Most of the hilly inland areas receive between 2,000 and 4,000 mm of rain each year. The wet season usually begins in August and continues to May peaking in November and April. The climate is relatively drier from June to August, but no month has less than 100 mm rainfall.

To ensure water supplies throughout the year, forest conservation on such mountains and foothills is particularly important because the tropical forests act like sponges, slowing and regulating water discharge into rivers and streams. Coupled with an almost continuous heavy rainfall, the area enjoys plenty of water resources (Table 3.2.3). In the majority of rural areas, however, rainwater is the favored source of drinking water because the tannins of peat swamps and salt water infiltration of surface waters, rivers and ground water make them undrinkable. Generally, water can be tidal up to 100 km inland because of the expanding area of vast low coastal and river plains.

Table 3.2.3 Potential of Water Resources by Island

Island	Amount of Water Resource m^3/person/year
Java, Bali, Nusa Tenggara	-10,000
Sumatera, Sulawesi, Maluku	10,000 - 100,000
Kalimantan, Irian Jaya	100,000-
Average	18,845

Source: Kualitas Lingkungan Indonesia 1990, Ministry of Population

(3) Biological Resources

Indonesia has been identified as one of the most biologically diverse countries in the world. The two major centers for species richness and biological diversity within Indonesia are Kalimantan and Irian Jaya (Table 3.2.4).

Table 3.2.4 Species Richness on Borneo and Other Indonesian Islands

Species	Borneo	Java	Sumatra	Sulawesi	New Guinia
Plants	10,000 - 15,000	4,500	9,000	5,000	15,000 - 20,000
Mammals	222 (44)	183 (19)	196 (9)	127 (79)	220 (124)
Birds	420 (37)	340 (31)	465 (18)	240 (88)	578 (324)
Snakes	166	7 (4)	150 (8)	64 (15)	98
Amphibians	100	36 (10)	70	29 (19)	197 (115)
Fish	394 (149)	132 (12)	272 (30)	68 (52)	282 (55)
Swallowtail butterflies	40 (4)	35 (2)	49 (4)	38 (11)	26 (2)

Note: Numbers in brackets are island endemics
Source: Ecology of Kalimantan

1) Flora

The continuous rainfall along with constant high temperatures throughout the year facilitates maximum plant growth, making Kalimantan one of the most luxuriant tropical habitats on earth. With 10,000 to 15,000 species of plants, it has a flora as rich as that recorded for the whole African continent, which is 40 times larger.

The island has at least 3,000 species of trees including 267 species of dipterocarps, the most important group of commercial timber trees in Southeast Asia; of these dipterocarps, 58 % are endemic to the island. Since the 1970s, the resources have sustained the regional and national economy through the exporting of forest industry products.

Differences in vegetation types and forest structure provide a wide variety of niches for other plants and animals. The forests are rich in fruit trees which are important both to wildlife and the local peoples.

2) Fauna

Borneo's fauna include families of deer, wild cattle, pigs, cats, monkeys and apes, and birds which are of Asian origin. There are 81 endemic species of mammals and birds.

The study area, especially, is known for its richness of freshwater fish species. A great number of fresh water fish species are found in Borneo (394 species of which 149 are endemic). Of all the species, 290 species of freshwater fish are recorded from the Kapuas and its tributaries. Inland fisheries in the study area, therefore, can be regarded as a national resource, providing food for local consumption and export to Java.

Genetic materials which may have future potential for crops, drugs and commercial projects are still being discovered in the forest and natural wetlands in the study area. These areas also provide other numerous environmental benefits: protecting watersheds and the integrity of water supplies; and preventing soil erosion and conserving soil fertility.

However, it is assumed due to the lack of sufficient study of the biodiversity that there are still many unknown species in Kalimantan or the study area. Tropical forest species are especially susceptible to extinction because species richness is linked to species rareness. It is predicted that possibly 35 % to 50 % of all species could be lost by the year 2000 if the present rate of habitat destruction continues through rampant development[2].

(4) Land Resources

It is reported that soils in Kalimantan are generally much less fertile than the rich volcanic soils of neighboring Java because the predominant parent materials of the area are sedimentary rocks, shale and sandstone, which produce soils of low fertility.

Land suited for agriculture covers 43 % of the study area. Arable land area, consisting of relatively fertile soils which are, suited for annual crops and paddy, covers only 10 % of the study area (Table 3.2.5, Figure 3.2.2). Soils of unarable lands consist of peat soils (covering 23 % of the study area), sandy soils (10 %) and mountain soils (21 %).

2 P. Ehrlich and A. Ehrlich, Extinction, the Causes and Consequences of the Disappearance of Species, St. Edmundsbury Press, 1981; and N. Myers, A Wealth of Wild Species: Storehouse for Human Welfare, Boulder, Colorado: Westview, 1983, As cited in Mackinnon et al., op. cit., p. 673.

Table 3.2.5 Land Resources in the Study Area

		Arable Land			Sub-total	Unarable Land	Others	Total
		Annual Crops	Perennial Crops	Wetland Paddy				
West Kalimantan	Km^2	6,949	56,130	6,312	69,391	75,352	1,549	146,292
	%	5	38	4	47	52	1	100
Central Kalimantan	Km^2	9,474	40,847	8,802	59,123	88,870	6,114	154,107
	%	6	27	6	38	58	4	100
Total	Km^2	16,423	96,977	15,114	128,514	164,222	7,663	300,399
	%	5	32	5	43	55	3	100

Note: Annual Crops = Zone 1,2 , Perennial Crops = Zone 3,4, Wetland Paddy = Zone 5, Unarable = Zone 6,7,8,9,10 in Table 3.2.6

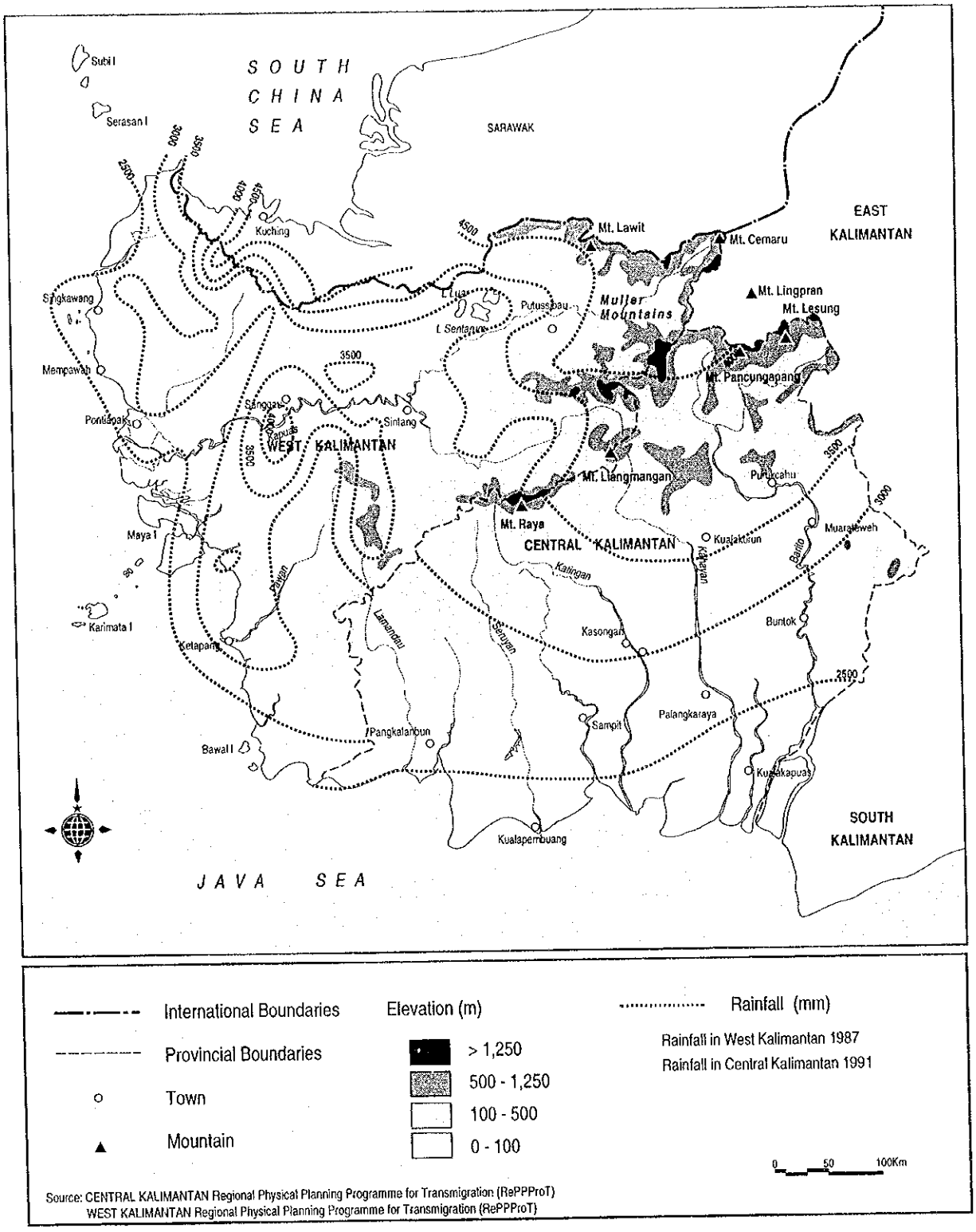
Source: JICA-SCRDP Kaltengbar based on RePPProT's data

Although the soils support luxuriant rainforests, this does not indicate soil fertility. When cleared, the soils often give poor agricultural yields. This is because most of the inorganic nutrient capital is held in the forests rather than the soil.

The agricultural systems in Kalimantan are constrained by the low soil fertility. The indigenous people have long practiced swidden agriculture, which is a system that can be sustained on poor soils when practiced in low density with a long fallow period. Expanding populations, logging concessions and transmigration programs have opened up new areas of forest to agriculture, often exposing poor soils and growing inappropriate crops without a long fallow period. The soils lose their fertility and the farmers eventually abandon their degraded fields.

Soil conditions reflect that fertile Java can support human densities of about 800 people/km^2 whereas Kalimantan supports human populations 50 times lower.

Figure 3.2.1 Topography and Rainfall



International Boundaries

Provincial Boundaries

Town

Mountain

Elevation (m)

> 1,250

500 - 1,250

100 - 500

0 - 100

Rainfall (mm)

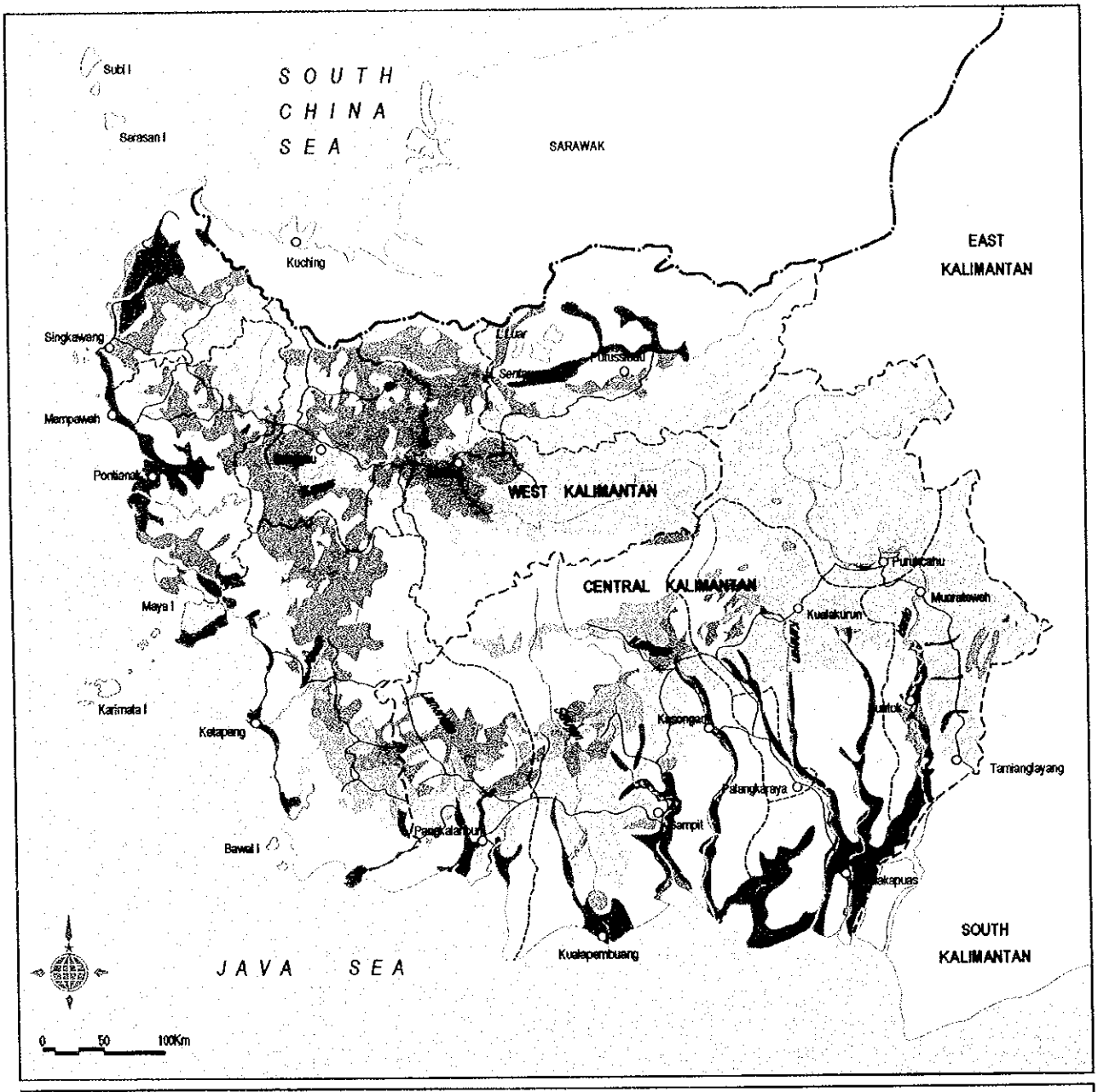
Rainfall in West Kalimantan 1987

Rainfall in Central Kalimantan 1991

0 50 100Km

Source: CENTRAL KALIMANTAN Regional Physical Planning Programme for Transmigration (RePPProT)
WEST KALIMANTAN Regional Physical Planning Programme for Transmigration (RePPProT)

Figure 3.2.2 Land Potential Map



Legend

- International Boundaries
- Provincial Boundaries
- Town
- 1. Arable Land Suited to All Kinds of Crops
- 2. Arable Land Suited to Crops Except Paddy
- 3. Arable Land Suited to Tree Crops
- 4. Arable Land Suited to Tree Crops, Moderately Suited to Oil Palm
- 5. Arable Land Suited to Wetland Paddy
- 6. Peat Soils
- 7. Acid Sulfate Soils
- 8. Sandy Soils
- 9. Steep Slope
- 10. Coastal Sands

Source: JICA-SCRDP Kaltengbar: Recategorized using RePPProT(1989)'s data

Table 3.2.6 Land Resources

Zone	Legend	Characteristics	Original Vegetation	West Kalimantan		Central Kalimantan	
				km2	%	km2	%
1	Arable Land Suited to All Kinds of Crops	Moderately fine, Flat	Lowland dipterocarp forest	1,705	1	3,349	2
2	Arable Land Suited to Crops Except Paddy	Moderately fine texture, Flat	Lowland dipterocarp forest	5,224	4	6,125	4
3	Arable Land Suited to Tree Crops	Moderately fine, Rolling (9-25%)	Lowland dipterocarp forest	16,114	11	23,336	15
4	Arable Land Suited to Tree Crops, Moderately Suited to Oil Palm	Steep slope (16-40%)	Lowland dipterocarp forest	40,016	27	17,511	11
5	Arable Land Suited to Wetland Paddy	Fine texture, Fertile alluvial soil, Flat	Freshwater swamp forest	6,312	4	8,802	6
6	Peat Soils	Flat	Peat swamp forest	22,616	15	45,536	30
7	Acid Sulfate Soils	Strongly acid, Flat	Mangrove forest	2,126	1	1,657	1
8	Sandy Soils	Acid, Infertile, Coarse texture	Heath forest	11,402	8	18,769	12
9	Steep Slopes	Acid, Very steep slope (40%<)	Lowland dipterocarp forest	39,208	27	22,908	15
10	Coastal Sands	Sand	-	228	0	813	1
			Subtotal	144,743	99	147,993	96
			River	1,549	1	6,114	4
			Total	146,292	100	154,107	100

Source: JICA -SCRDP Kaltengbar: Recategorization of RePPProT (1989)'s data.

3.2.3 Social Conditions of the Region

(1) Population Growth and Density

The population growth of Kalimantan is much higher than the average growth rate of Indonesia for the period of 1971-1995 (Table 3.2.7). Also, the share of the total population in Kalimantan to that of Indonesia has increased. The population in West Kalimantan is the largest and that of Central Kalimantan is the smallest in Kalimantan. The population of East Kalimantan has had the highest growth rate during the past two decades. Central Kalimantan has the second highest growth rate followed by West Kalimantan.

Regarding the population density, South Kalimantan is the most dense province in Kalimantan with West Kalimantan following. Central Kalimantan has the lowest density. Comparing West and Central Kalimantan, both population and density in Central Kalimantan are much smaller, about half of that of West Kalimantan. However, West Kalimantan's share of Kalimantan's total population has decreased while that of Central Kalimantan has increased.

Table 3.2.7 Population Growth and Density in Kalimantan

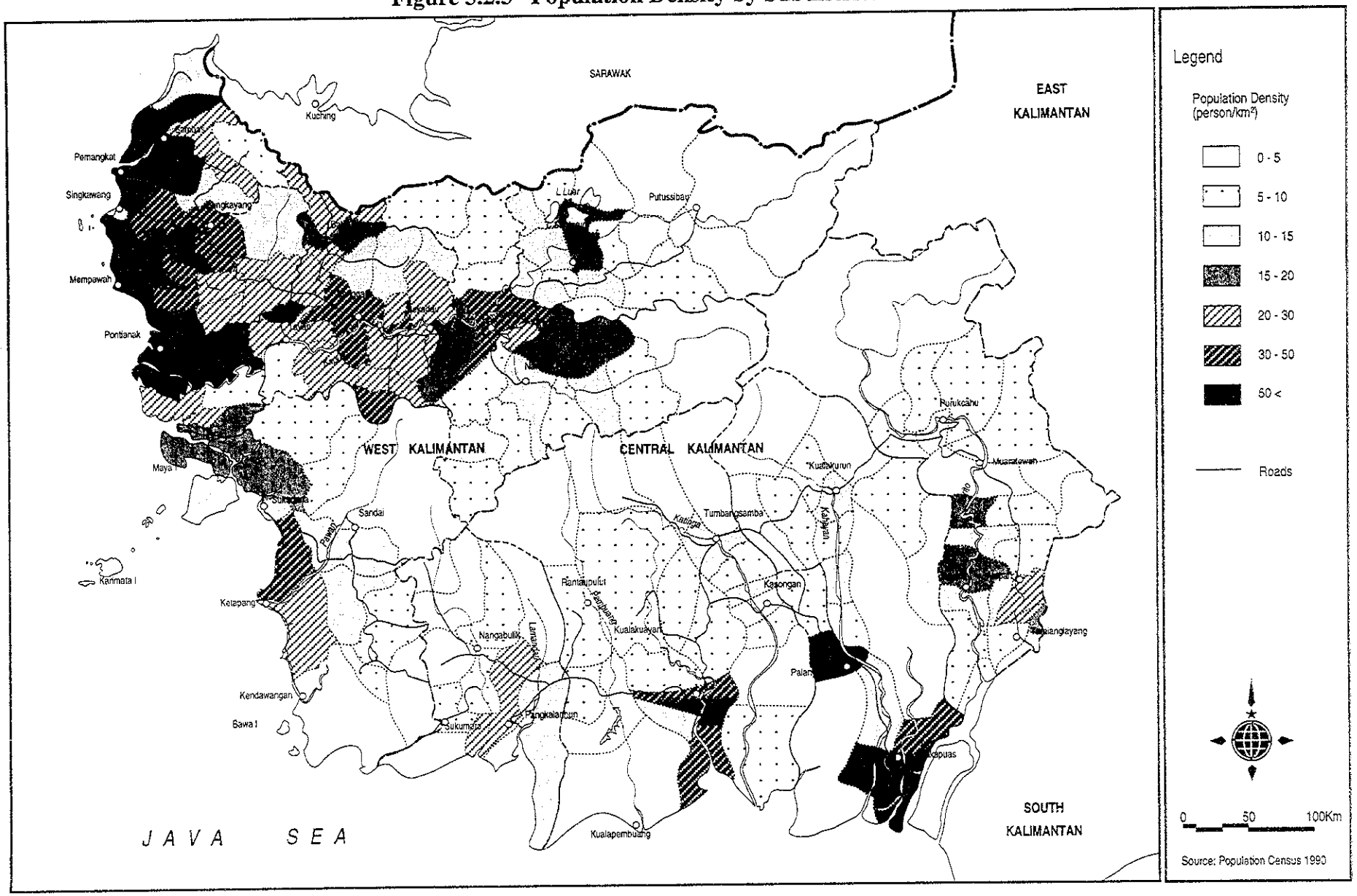
	Population (1,000 persons)				Population Growth			Population Density (persons/km²)			
	1971	1980	1990	1995	1971-80	1980-90	1990-95	1971	1980	1990	1995
West Kalimantan	2,020	2,486	3,229	3,636	2.33%	2.65%	2.40%	13.8	16.9	22.0	24.8
Central Kalimantan	702	954	1,396	1,627	3.47%	3.88%	3.11%	4.6	6.2	9.1	10.6
South Kalimantan	1,699	2,065	2,597	2,893	2.19%	2.32%	2.18%	46.5	56.5	71.1	79.2
East Kalimantan	734	1,218	1,877	2,314	5.79%	4.42%	4.27%	3.5	5.8	8.9	11.0
Kalimantan	5,155	6,723	9,099	10,470	2.99%	3.07%	2.85%	9.4	12.3	16.6	19.1
Share in Indonesia	4.3%	4.6%	5.0%	5.4%							
Indonesia	119,208	147,490	179,379	194,755	2.39%*	1.98%	1.66%	61.5	76.1	92.6	100.5

Source: Statistik Indonesia 1996
Note: Including persons with no permanent residence, except in 1995
Based on Population Censuses, 1995 Intercensal Population Survey
* Excluding Timor Timur

(2) Population Distribution in West and Central Kalimantan Provinces

In terms of the geographical distribution of the population, the population inside West and Central Kalimantan is not proportionate (Figure 3.2.3). In West Kalimantan, about 60% of the population is concentrated along the coastal and north-west regions mainly in the districts of Pontianak and Sambas as well as the municipality of Pontianak whose areas account for 21% of the province's size. However, only 15% of West Kalimantan's population occupies inland areas in the east and south mainly in the districts of Kapuas Hulu and Ketapang whose

Figure 3.2.3 Population Density by Subdistrict in 1990



areas account for 45% of the province size. The municipality of Pontianak is the most densely populated area in West Kalimantan while the district of Kapuas Hulu is the least. The population of the district of Sintang has increased at the highest rate from 1980 to 1995 in West Kalimantan and followed by the district of Sanggau (Table 3.2.8).

Table 3.2.8 Population by District

	Total Population			Annual Growth Rate (Total)		Urban Population		
	1980	1990	1995	1980-90	1990-95	1980	1990	1995
West Kalimantan								
Sambas	603,058	761,375	844,154	2.4%	2.1%	90,403	117,441	132,319
Pontianak	608,849	778,546	868,885	2.5%	2.2%	12,207	69,450	155,050
Sanggau	323,499	428,295	487,463	2.9%	2.6%	9,513	21,640	30,051
Ketapang	253,069	326,377	365,389	2.6%	2.3%	12,661	22,092	26,404
Sintang	263,279	377,399	446,562	3.7%	3.4%	13,181	20,837	23,490
Kapuas Hulu	128,647	159,423	175,645	2.2%	2.0%	2,293	6,647	10,725
Municipality Pontianak	304,490	396,658	447,632	2.7%	2.5%	276,665	386,427	409,632
Sub-Total	2,484,891	3,228,073	3,635,730	2.7%	2.5%	416,923	644,534	787,671
Central Kalimantan								
Kotawaringin Barat	94,367	165,731	210,392	5.8%	4.9%	5,082	27,377	61,336
Kotawaringin Timur (including Katingan)	249,189	378,706	448,496	4.3%	3.4%	16,377	49,868	85,340
Kapuas (including K. Hulu/ Gunung Mas)	314,507	441,062	500,238	3.4%	2.5%	15,685	24,850	30,303
Barito Selatan (including Barito Timur)	120,229	152,296	164,368	2.4%	1.5%	9,427	19,283	27,406
Barito Utara (including Murung Raya)	115,437	145,707	156,488	2.4%	1.4%	0	24,178	27,900
Municipality Palangkaraya	60,447	112,511	147,471	6.4%	5.6%	51,686	99,693	133,485
Sub-Total	954,176	1,396,013	1,627,453	3.9%	3.1%	98,257	245,249	365,770
Total	3,439,067	4,624,086	5,263,183	3.0%	2.6%	515,180	889,783	1,153,441

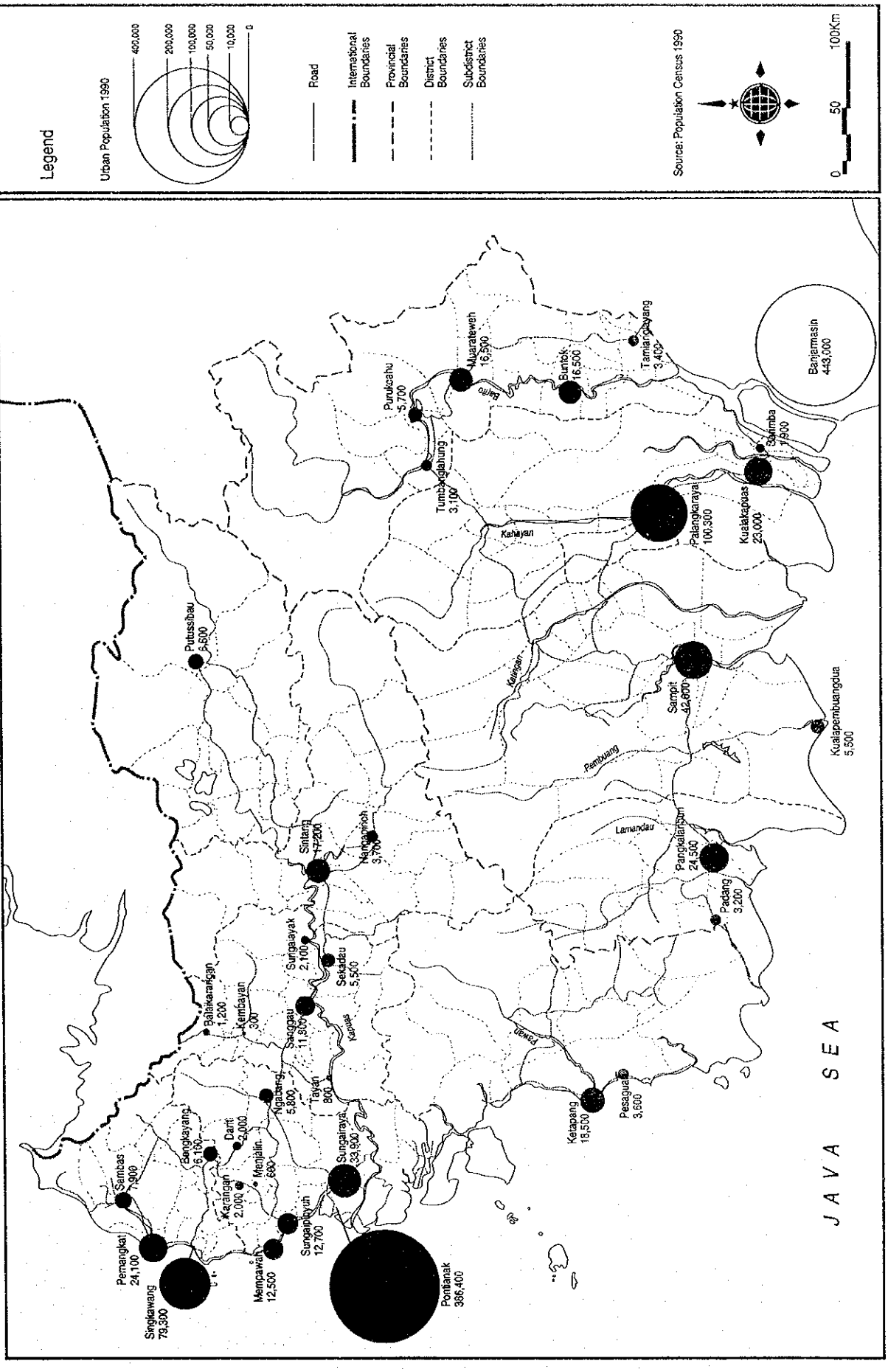
Source: Population of Kalimantan Barat, Results of the 1980 Population Census 1980
Population of Kalimantan Tengah, Results of the 1980 Population Census 1980
Population of Indonesia, Result of the 1990 Population Census
Population of Kalimantan Barat, Results of the 1995 Intercensal Population Survey
Population of Kalimantan Tengah, Results of the 1995 Intercensal Population Survey

In Central Kalimantan 58% of the total population lives in the districts of Kotawaringin Timur and Kapuas which cover 58% of the total area. The highest population density is the municipality of Palangkaraya and the area of lowest density is the district of Barito Selatan. Communities in Central Kalimantan are developed along rivers on a limited scale in a north-south distribution pattern due to the lack of roads. The population of the district of Kotawaringin Barat has grown at the highest rate while the district of Barito Utara has increased at the lowest rate in 1990-95.

(3) Urban Centers

In West Kalimantan, there are different scales of commercial towns in the branch points of the middle and upper stream areas of the Kapuas river (Figure 3.2.4). Major commercial centers

Figure 3.2.4 Urban Population of Urban Centers, 1990



such as Sanggau and Sintang have grown at bigger branch points. Pontianak, the provincial capital, is the largest city in the province near the mouth of the Kapuas river where commodities are assembled. In contrast, the rivers in Central Kalimantan have not developed the big commercial towns in the middle and upper stream areas except in Muarateweh and Buntok along the Barito river. Compared with Pontianak, towns in the lower streams of Central Kalimantan, which are generally the biggest cities in each catchment area, are quite small. Rural settlements are mostly located along rivers and some are along roads due to plantation development and road extension.

The percentages of urban population of West and Central Kalimantan in 1995 are lower than those of South and East Kalimantan. The urban population in Central Kalimantan has quadrupled during the period of 1990-1995. The urban population of the municipality of Pontianak accounts for more than 50% of all the urban population in West Kalimantan, while the share of urban population of the municipality of Palangkaraya in Central Kalimantan is at 36%. The districts of Pontianak, Kapuas Hulu and Sanggau in West Kalimantan have grown at a high rate of urban population from 1990 to 1995. The growth rates of the districts of Kotawaringin Barat, Kotawaringin Timur, Barito Selatan and the municipality of Palangkaraya in Central Kalimantan from 1990 to 1995, are very high.

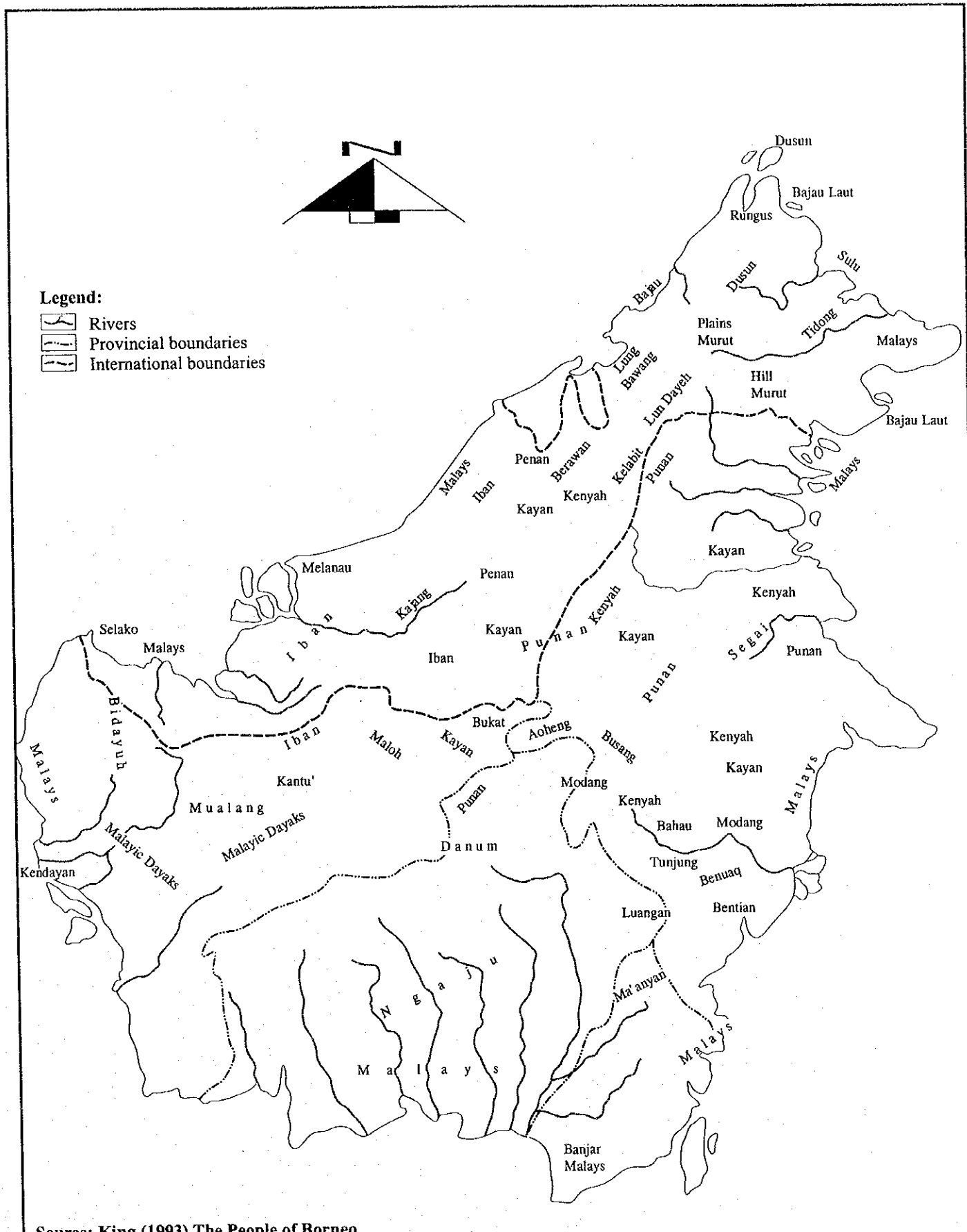
(4) Ethnic Groups in West and Central Kalimantan

It is difficult to give any precise indication of the size of population and distribution by ethnic group in Kalimantan since the population census does not cover ethnic data. The people in Kalimantan can be roughly categorized as Dayak and non-Dayaks. In the 1992 data, the Dayak population (1,300,000 people) shared 41% of total population in West Kalimantan, followed by 39.6% of Malay, 11.3% of Chinese, 8.1% of other ethnic groups including Javanese and Madurese. Figure 3.2.5 shows the distribution of major ethnic groups in Kalimantan.

Dayak

Dayak is, in fact, a collective name for dozens of tribes that differ in language, art, housing and several other elements of culture as well as social organizations. All Dayak groups, however, have some fundamental features in common. The very basic characteristics of the Dayak is their attachment to land and natural resources. Land is not only an economic resource, but also the basis for cultural, social, political and spiritual activities. Most of the Dayak live in lowland river basins and alluvial plains. Their livelihood is mainly the cultivation of dryland paddy and small scale animal breeding, and where possible, some plant wetland paddy. They also hunt wild animals and gather forest products for subsistence and exchange. One of their most important cash sources is rubber latex, which the rubber trees they plan.

Figure 3.2.5 The Main Ethnic Groups of Borneo



Source: King (1993) The People of Borneo

Malay

Malay are a heterogeneous group, united by a common language and religion, Islam. The Malays occupy important territories along the coasts and in the lower plains and all along the middle courses of major rivers, where they are mainly farmers (usually wetland paddy cultivation), fishermen, small-holding rubber-growers, traders and civil servants.

Chinese

An influx of Chinese goldminers to West Kalimantan in the late 18th century and their descendants make up the large Chinese communities today. Their most significant contribution was the introduction of permanent wetland paddy cultivation creating large, rice-growing areas on coastal alluvium. Today the Chinese are particularly active in the trading, commercial and service sectors as well as manufacturing in major Kalimantan towns.

Transmigrants

West and Central Kalimantan have received a substantial number of transmigrants from outside Kalimantan as shown in Table 3.2.9. Together with a gradual shift from Sumatra to Kalimantan and other areas as transmigration sites, the number of sponsored transmigrants in Kalimantan has risen. The share of transmigrants from outside Kalimantan in the total provincial population in West and Central Kalimantan has been increasing gradually and reached 6.6% in West Kalimantan and 12.8% in Central Kalimantan in 1995.

Table 3.2.9 Number of Transmigrants by Repelita Period

Period	West Kalimantan		Central Kalimantan	
	Population from Outside Kalimantan	Share in Total Provincial Population	Population from Outside Kalimantan	Share in Total Provincial Population
Before Pelita	5,222	-	2,973	-
Repelita I (1969-1773)	4,244	0.5%	5,765	1.2%
Repelita II (1974-1978)	15,756	-	4,950	-
Repelita III (1979-1983)	98,191	4.6%	72,600	7.7%
Repelita IV (1984-1988)	20,432	4.4%	54,161	10.4%
Repelita V (1989-1993)	50,952	6.0%	26,205	11.3%
Repelita VI * (1994-)	43,494	6.6%	23,323	12.8%
Total	238,291	6.6%	189,977	12.8%

* In 1994-1996 for West Kalimantan, in 1994-1995 for Central Kalimantan

Source: Kanwil Departmen Transmigrasi dan PPH, West Kalimantan, 1997
Kanwil Departmen Transmigrasi dan PPH, Central Kalimantan, 1996
Kalimantan Tengah Dalam Angka 1996

(5) Land Tenure System

Not until the government has a vested interest in a remote area populated by indigenous people, does it intervene upon the customary rights and customary laws which are still strongly at work in the sphere of indigenous people, not only at the intra-village level, but also at the inter-village level. The first person who makes a swidden of primary forest land establishes the person's individual rights to land. The land ownership can be inherited by their children and other relatives. Community members know well which lands belong to who. Sometimes, fruit trees or other useful trees planted by a person could be the mark of land ownership. Within a community's territory, its members are allowed to make swiddens of primary forest lands and unclaimed forest lands. Some families have collective rights to fruit tree groves. Indigenous communities not only have their own land tenure system, but also a special tree tenure system. When a person has managed trees growing wild, such as Durian trees and Tengkawang trees, by slashing their surroundings and cutting vines, the ownership of the trees are established. This kind of tree tenure is also inherited by children or other relatives. Land and tree tenure disputes within a community are dealt with by adat leaders using customary laws.

However, once new government projects appear for natural resources extraction or land development over the territories of indigenous communities, the situations change completely. Local customary laws or rights to such natural resources and lands become powerless against the projects backed by government policies.

According to the national constitution established in 1945, the land, water and natural resources are controlled by the state and are utilized for the interests of the public. Although local customary rights to lands and natural resources are acknowledged in the Basic Agrarian Law of 1960, the utilization of such customary rights must not disturb the national and state interests concerning land and natural resources development.

According to Article 10 of the Basic Agrarian Law of 1960, it is necessary for a person to get the rights to agricultural land by actively cultivating or exploiting it by himself or herself using the appropriate methods. Since indigenous swidden agriculture is composed of two parts, opening forest for cropping and forest fallow, indigenous swidden farming cannot satisfy the conditions to get formal land rights, because it is not permanent landuse. In fact, indigenous swidden farmers have rarely obtained official land titles to their lands for swidden making, including the lands used for cropping this year and lands under forest fallow, partly due to this condition, and partly due to high costs for getting land titles.

In addition, the Basic Agrarian Law stipulates maximum permitted land sizes depending on population density . For example, in the areas of the lowest population density category, 1-50

persons per square km, only 20 ha of dry land is allowed to be possessed by an individual. This also imposes difficulties on indigenous swidden farmers, who usually control more than 20 ha, including lands for future swidden making , rubber groves and rattan gardens.

Few indigenous farmers have formal land titles to their lands in Kalimantan.[3] This means two things. One is that indigenous swidden farmers tend to be in weak positions when new projects of natural resources development or land development come to their areas. The other is that the presence of many people without formal land titles could be a great barrier to smooth implementation of projects requiring land and natural resources.[4]

Without official land titles, the compensation for land acquisition is not paid in the case of land acquisition for public projects or private projects supported by government policies. Some compensation for planted trees and other crops are paid, with negotiation with project owners.

According to the Regulation No. 64 of 1957, provincial authorities have the right to grant forest concessions of certain sizes, and the local government has the power to get taxes from logging operations based on the given concessions. However, this situation has changed much since the central government has expanded its power in forestry. The 1967 Basic Forest Law has set the basis on which Indonesia embarked on large-scale and modern logging business in the Outer Islands. Under the forest law, more than 70% of Indonesia's land is controlled by the Ministry of Forestry, in the respect of utilization of forests and aspects on communities. The government regulation No. 21 of 1970 stipulates the ways by which the state gives concessions to timber companies for logging operation. In this regulation, timber concession areas are imposed over the territories of indigenous swidden farming communities . In the forestry law and regulation, the indigenous people's rights to exploit forests remain valid as far as they do not conflict with the aims stated in the forestry law.

In Indonesia the interests of the forestry business over the outer islands' forests are still very strong, compared with other South Eastern Asian countries. Timber concession areas have been decided despite the presence of indigenous communities. In the early 1980s, consensus forestry landuse maps (TGHK) were made to set different forest function zones over provincial areas. Most of the territories of indigenous communities are under timber concessions. The

[3] The subdistrict government office is supposed to process land titles for parcels of land up to 2 ha. However, the applicants for land titles have to a pay certain amount of fees for land measuring and administration. In many cases, the officers for land measuring and administration come from the provincial capital town. It is costly for most of the swidden farmers to cover the necessary fees to get land titles. At the same time, they do not feel it necessary to get land titles before some government projects come to their lands.

[4] The World Bank has provided the Board of Land Affairs (BPN) with loans for the land administration project to increase the number of issuing land titles.

consensus forestry landuse maps (TGHK) do not acknowledge the territory of indigenous communities.[5]

3.2.4 Economic Conditions of the Region

(1) Economic Growth and Structure

The levels of economic growth and per capita income of the two provinces are not significantly low as compared with other provinces in Indonesia. In particular, Central Kalimantan appears to be one of the wealthiest and fastest growing provinces over the last two decades in the country. In 1995, it had one of the highest per capita GRDP, below only the resource-rich provinces (Aceh, Riau, East Kalimantan, and Irian Jaya) and Jakarta (Table 3.2.10). The GRDP growth of Central Kalimantan over the period of 1975-1981 was remarkably rapid, though the economic performance was more moderate in recent periods (Table 3.2.11).

Table 3.2.10 Per Capita Gross Regional Domestic Product and Retail Prices of Rice by Province

Gross Regional Domestic Product (current prices)							Price of Rice		
Province	1983			1995			Cities	1985	1995
	Total GRDP (Rp. billion)	GRDP Per Capita (Rp. 1,000)	Index of GRDP Per Capita (Indonesia = 100) (with oil)	Total GRDP (Rp. trillion)	GRDP Per Capita (Rp. 1,000)	Index of GRDP Per Capita (Indonesia = 100) (with oil)		Rice Price Index (Jakarta =100)	Rice Price Index (Jakarta =100)
D.I. Aceh*	3,470.5	1,220.7	282	12,835.4	3,362.4	143	Banda Aceh	101	72
North Sumatra*	3,645.7	404.4	93	24,686.4	2,231.4	95	Medan	119	81
West Sumatra	1,251.6	344.6	80	8,114.6	1,888.4	80	Padang	128	106
Riau*	8,687.9	3,660.2	845	21,296.4	5,517.7	235	Pakanbaru	158	111
Jambi*	432.8	266.0	61	3,453.4	1,471.7	63	Jambi	110	79
South Sumatra*	3,189.1	625.4	144	14,567.2	2,039.3	87	Palembang	125	76
Bengkulu	236.2	270.7	62	2,088.2	1,501.2	64	Bengkulu	110	94
Lampung	999.2	182.8	42	8,021.9	1,212.3	52	Tanjung Karang	108	72
D.K.I. Jakarta	7,192.5	984.3	227	69,847.0	7,700.9	328	Jakarta	100	100
West Java*	9,185.9	309.7	71	73,333.0	1,882.8	80	Bandung	121	85
Central Java*	6,740.9	253.3	58	45,996.4	1,554.6	66	Semarang	96	76
D.I. Yogyakarta	713.1	251.2	58	5,618.6	1,925.9	82	Yogyakarta	95	85
East Java*	10,347.8	339.6	78	66,212.7	1,961.2	84	Surabaya	97	76
Bali	904.9	348.9	81	7,409.6	2,563.1	109	Denpasar	126	79
West Nusa Tenggara	525.4	180.1	42	3,466.0	955.3	41	Mataram	125	75
East Nusa Tenggara	509.7	176.0	41	2,880.2	810.6	35	Kupang	141	109
East Timor	..	..	..	708.4	848.9	36	Dili	132	92
West Kalimantan	759.9	285.9	66	7,138.9	1,976.7	84	Pontianak	113	74
Central Kalimantan	483.6	458.6	106	4,351.7	2,697.2	115	Palangkaraya	124	113
South Kalimantan*	842.1	383.1	88	6,139.4	2,138.7	91	Banjarmasin	124	68
East Kalimantan*	3,880.3	2,697.1	623	21,764.5	9,531.2	406	Samarinda	121	100
North Sulawesi	715.3	316.2	73	3,793.2	1,439.4	61	Manado	123	79
Central Sulawesi	341.0	236.4	55	2,559.7	1,331.0	57	Palu	116	73
South Sulawesi	1,685.4	264.2	61	10,294.2	1,368.9	58	Ujung Pandang	98	71
South-east Sulawesi	315.1	305.6	71	1,820.2	1,159.6	49	Kendari	114	75
Maluku*	536.1	349.4	81	3,103.9	1,498.6	64	Ambon	130	91
Irian Jaya*	892.4	703.5	162	7,014.4	3,645.3	155	Jayapura	141	113
Indonesia	68,483.5	433.2	100	454,514.1	2,345.9	100			

Sources: Hal Hill ed., Unity and Diversity: Regional Economic Development of Indonesia since 1970, New York: Oxford University Press, 1991, p. 7 and pp. 33-34; and BPS, Statistik Indonesia 1996, 1997.

Note: *) GRDP includes oil and its products.

[5] It is interesting to know that Central Kalimantan's provincial land use map (Rencana Tata Ruang Wilayah Propinsi) sets aside 5 km wide land belts along major rivers for local people's usage.

Table 3.2.11 The Growth of Gross Regional Domestic Product by Sector, West and Central Kalimantan in 1975-1995

	Annual Economic Growth Rate (%)					
	West Kalimantan			Central Kalimantan		
	1975-1981	1983-1992	1993-1995	1975-1981	1983-1992	1993-1995
Agriculture	0.3	5.3	5.6	5.2	5.1	10.2
Mining & Quarrying	15.8	15.3	20.6	19.0	4.2	81.3
Manufacturing	10.1	12.4	8.1	26.5	10.8	4.4
Electricity, Gas & Water Supply	16.6	19.3	15.4	41.5	18.2	21.4
Construction	17.0	8.8	13.5	38.7	11.2	6.8
Trade, Hotel & Restaurant	6.6	9.0	8.1	20.0	5.5	8.1
Transport & Communication	22.4	6.8	9.1	10.4	8.8	3.3
Finance, Rent of Building & Business	16.8	12.0	2.5	20.0	7.2	5.7
Services	6.4	7.8	13.2	9.8	7.5	1.0
Total	5.3	8.3	8.2	12.6	7.2	8.0

Sources: West Kalimantan in Figures 1982;
GRDP by Province 1983-1990 and 1988-1993;
Pendapatan Regional Kalimantan Barat 1993-1996;
Physical, Social and Economic Setting of Central Kalimantan Province;
Analisis Propinsi Kalimantan Tengah Tahun 1996.

However, these figures should not be simply taken as the indexes of the general economic conditions of the study area for the following reasons:

1) The high per capita GRDP results partly from the higher living costs as indicated by the higher prices for rice in Central Kalimantan and the hinterland of West Kalimantan in relation to Jakarta (Table 3.2.10). The retail rice price in Palangkaraya was the highest among the major cities of the country in 1995. In West Kalimantan, prices in Pontianak are not necessarily higher than those in Jakarta, but prices in the hinterland, e.g., Sanggau, Sintang, and Putussibau, are relatively high as described in Appendix A.5. The higher prices, as well as the intraprovincial price variations, reflect not only their deficiency in food but also underdeveloped transport infrastructure, i.e., poor internal economic integration. Under the current economic and monetary crisis, the higher living costs seem to have become a more critical economic issue in the two provinces, casting a gloom over the prospect of recovery.

2) The higher per capita GRDP has also been brought about by resource-based industries, particularly forestry and wood processing, whose profits are not always equally distributed among all the participants. Such a situation is indicated by the poverty rates of the two provinces which are among the highest in the country as discussed in Appendix A.11.

3) The high growth rates are due partly to a low initial base and the calculation method which simply measures a larger percentage of the output of the subsistence economy.[6]

[6] Mubyarto and Revrisond Baswir, Central Kalimantan: The Dayak Heartland, in Hal Hill ed., *Unity and Diversity: Regional Economic Development of Indonesia since 1970*, New York: Oxford University Press, 1991, p. 504.

The growth rates above or around the national average during the 1980s and the early 1990s may suggest that the two provinces have successfully managed the transition from forest exploitation through sawmilling to plywood manufacturing.

The distribution of GRDP by sector shows the shift of importance from agriculture to industry and services over the period of 1975-1995 in both provinces (Table 3.2.12). However, the "structural change" in the provincial economy needs to be interpreted with caution because: 1) agriculture's relative decline came largely from forestry, following the prohibition on log exports; and 2) manufacturing is virtually entirely wood-based with little diversification, especially in Central Kalimantan.

Table 3.2.12 Share of Gross Regional Domestic Product by Sector, West and Central Kalimantan in 1973, 1983 and 1993

(% at current price)

	West Kalimantan			Central Kalimantan		
	1975	1983	1993	1975	1983	1993
Agriculture	51	34	25	55	34	37
Mining & Quarrying	0	0	1	0	1	1
Manufacturing Industry	11	14	20	4	10	13
Electricity, Gas & Water Supply	0	0	1	0	0	0
Construction	3	4	6	2	10	6
Trade, Hotel & Restaurant	14	22	21	15	26	18
Transport & Communications	5	8	10	7	5	11
Finance, Rent of Building & Business	2	4	8	0	1	3
Services	14	14	9	14	14	11
Total (%)	100	100	100	97	100	100
Total (Rp. Million)	170,151	850,588	5,147,967	63,430	478,308	3,066,885

Source: As for Table 3.2.11.

The structural change has not been necessarily associated with economic modernization and diversification. The expansion of services, e.g., construction, transport and communications, and trade was rather the result of large infrastructure development projects and the spread of the commercial economy. Even though the share of agriculture in their GRDP has declined, the two provinces are still resource-based agrarian economies. Upon the depletion of timber resources, therefore, they are likely to lose a substantial part of manufacturing output and, consequently, may return to agrarian economies.

(2) Labor Force

The picture of the two provinces as agrarian economies is confirmed by the sectoral distribution of the labor force (Table 3.2.13). In 1995, the shares of agriculture in the total labor force were 68% for West Kalimantan and 63% in Central Kalimantan, which were among the highest rates in the country. Agriculture's share in the labor force higher than its share in GRDP implies the

sector's relatively lower labor productivity in each province. Other major sources of employment were the manufacturing, trade and other service sectors. The increase of the population economically active but unemployed or underemployed, especially among those who have a higher education, senior high school level or higher, is one of the serious economic and social problems in the two provinces as discussed in Appendix A.14

Table 3.2.13 Labor Force by Sector in West and Central Kalimantan, in 1990 and 1995

	West Kalimantan		Central Kalimantan	
Sector	1990	1995	1990	1995
Agriculture	73	68	62	63
Mining & Quarrying	1	2	3	4
Manufacturing	5	5	10	4
Electricity	0	0	0	0
Construction	2	3	2	2
Trade, Hotel, Restaurant	7	10	9	10
Transport	2	2	2	2
Finance	1	0	0	0
Services	9	10	11	14
Total (%)	100	100	100	100
Total (persons)	1,384,392	1,601,771	575,088	697,944

Sources: 1990 Population Census of West and Central Kalimantan;
West Kalimantan in Figures 1996;
Central Kalimantan in Figures 1995.

(3) Export and Import

The trading patterns of the two provinces are characterized, to a larger extent for Central Kalimantan, by the export of raw materials and semi-processed products and the inter-insular import of food and manufactured goods, reflecting the resource-based economic structure. Nevertheless, West Kalimantan has a greater variety of export commodities than Central Kalimantan. Those shown in the export statistics were 31 commodities for West Kalimantan in 1994 and 6 commodities for Central Kalimantan in 1993. The major export items were plywood and crumb rubber in West Kalimantan, and plywood and other processed wood products in Central Kalimantan (Table 3.2.14).

Both provinces import a large part of basic commodities which their populations consume, e.g., rice, cooking oil, flour, etc. from other provinces, mainly from Java and, in the case of Central Kalimantan, from its neighboring South Kalimantan. In 1994, West and Central Kalimantan imported 156,737 tons and 20,587 tons of rice, respectively (Table 3.2.15). In 1995, the volume of rice import increased by 8% in West Kalimantan and 55% in Central Kalimantan. From 1994 to 1995, the volume of imported rice and flour in West Kalimantan increased while that of sugar decreased substantially. In 1997 and 1998, the rice import is expected to grow further.

Table 3.2.14 Export by Commodity, West Kalimantan in 1994 and Central Kalimantan in 1993

West Kalimantan in 1994			Central Kalimantan in 1993		
Commodity	Values (US$1,000)	Share (%)	Commodity	Value (US$1,000)	Share (%)
Plywood	415,329	65	Plywood	97,549	58
Crumb Rubber	109,322	17	Other Wood	67,417	40
Prawn	4,428	1	Processed Products		
Others	114,247	18	Others	3,094	2
Total	643,325	100	Total	168,059	100

Source: West Kalimantan in Figures 1996;
Central Kalimantan in Figures 1995.

Table 3.2.15 Major Basic Needs Imported by West and Central Kalimantan in 1994 and 1995

	West Kalimantan (ton)			Central Kalimantan (ton)		
Commodity	1994	1995	Change (%)	1994	1995	Change (%)
Rice	156,737	169,632	8	20,587	33,845	64
Sugar	46,235	36,013	-22	-	-	
Flour	18,858	19,310	2	-	-	

Sources: West Kalimantan in Figures 1996;
Central Kalimantan in Figures 1996.

(4) Investment

The patterns of investment in West and Central Kalimantan are different. From 1967 up to 1995, the approved cumulative amount of domestic investment and the average amount of domestic investment projects in West Kalimantan were bigger than those in Central Kalimantan, while for foreign investment they were vice versa (Table 3.2.16).

Table 3.2.16 Approved Domestic and Foreign Investment, West and Central Kalimantan in 1994-1995

	West Kalimantan		Change (%)		Central Kalimantan		Change (%)	
	1994	1995	1994-1995	1967-1995	1994	1995	1994-1995	1967-1995
Domestic Investment (Rp. Billion)								
Capital	932	1051	13	9306	873	1858	113	3379
Project	11	5	-55	204	16	13	19	117
Foreign Investment (US$ Million)								
Capital	77	175	2087	284	0	73		341
Project	2	6	200	32	0	1		32

Source: Statistical Pocketbook of Indonesia 1995.

Domestic investment has apparently been more attracted to Central Kalimantan than to West Kalimantan in recent years. This is indicated by the rapid growth in domestic investment in Central Kalimantan. From 1994 to 1995, domestic investment more than doubled in this province. The amount of approved domestic investment in Central Kalimantan in 1995 exceeded

that of West Kalimantan. The scale of domestic investment projects was also increased, reflected by the decreased number of investment projects from 16 in 1994 to 13 in 1995.

In contrast, West Kalimantan appears to be more attractive than Central Kalimantan to foreign investors. Though Central Kalimantan also experienced rapid growth of foreign investment in recent years, from almost nil in 1994 to US$73 million in 1995, the amount of approved foreign investment in Central Kalimantan was much smaller than that in West Kalimantan.

The patterns of investment by sectors are somewhat different between West and Central Kalimantan (Table 3.2.17). Almost half of the total foreign investments in these two provinces were in mining. The second important sector was the food industry in West Kalimantan and forestry in Central Kalimantan. The estate crop sector had the largest share of the total domestic investment both in West and Central Kalimantan. The other major sectors in domestic investment were forestry and the wood processing industry in West Kalimantan and wood processing in Central Kalimantan.

Table 3.2.17 Major Domestic and Foreign Investment, West Kalimantan in 1995 and Central Kalimantan in 1996

West Kalimantan in 1995*			Central Kalimantan in 1996**		
Domestic investment (Rp. Million)			Domestic investment (US$ Million)		
Estate Crops	1,289,122	54%	Estate Crops	45,041,715	95%
Forestry	450,915	19%	Wood Industry	2,199,007	5%
Wood Industry	404,271	17%	Others	56,427	0%
Others	226,312	10%		47,297,149	100%
Total	2,370,620	100%			
Foreign Investment (US$1,000)			Foreign Investment (US$1,000)		
Mining	36,269	50%	Mining	206,861	46%
Food Industry	13,265	18%	Forestry	180,936	41%
Others	22,682	31%	Others	57,575	13%
Total	72,216	100%	Total	445,372	100%

Sources: West Kalimantan in Figures 1996;
Central Kalimantan in Figures 1995.
Notes: *) The data refer to cumulative actual investment up to 1996.
**) The data refer to approved investment.

(6) Economic Conditions by District

One of the important characteristics of the regional economy is a large intraprovincial difference in terms of economic growth, the sizes of GRDP and per capita income, economic structure, prices, etc., reflecting weak economic integration and linkages within each province. In West Kalimantan, Pontianak has closer economic ties with Singapore and Java than with much of its vast hinterland.[7] The western districts of Central Kalimantan, i.e., Kotawaringin Barat,

[7] Pulo Siahaan and Ruth Daroesman, "West Kalimantan: Uneven Development?" in Hill ed., op. cit., p. 538.

Kotawaringin Timur, and Kapuas, are directly oriented to Java, and the eastern districts, i.e., Barito Utara and Barito Selatan, have closer economic relations with Banjarmasin.

In 1995, economic growth of the districts in West Kalimantan was the highest in Sanggau (12.1%) and the lowest in the municipality of Pontianak (8.9%), while in Central Kalimantan the highest was in Barito Utara (17.2%) and the lowest was in Palangkaraya (7.2%).[8] From 1994 to 1995, the economy of all districts grew, where Sanggau and Kapuas Hulu in West Kalimantan and Kotawaringin Timur and Barito Utara in Central Kalimantan achieved higher economic growth than other districts in the respective provinces.

In West Kalimantan, the higher economic growth in Sanggau is due to the development of oil palm plantations and infrastructure. Since the district is a gateway to Kuching, the improved transportation made an increase of trade between Malaysia and Indonesia. However, major contributors to GRDP were the municipality and the district of Pontianak in 1993-95, with a combined share of more than 50% of the total, followed by Sambas (Table 3.2.18).

Table 3.2.18 Distribution of Gross Regional Domestic Product by District, West and Central Kalimantan in 1993, 1994 and 1995

West Kalimantan				Central Kalimantan			
District	1993	1994	1995	District	1993	1994	1995
Sambas	15.0	15.1	15.2	Kotawaringin Barat	18.2	17.4	17.4
Pontianak	29.6	29.5	28.7	Kotawaringin Timur	28.5	29.3	31.0
Sanggau	9.4	9.5	9.7	Kapuas	21.3	21.2	20.2
Ketapang	9.2	9.2	9.2	Barito Selatan	9.8	9.8	9.2
Sintang	6.4	6.5	6.6	Barito Utara	12.7	13.4	13.9
Kapuas Hulu	3.8	3.8	3.8	Palangkaraya Municipal	9.5	9.0	8.4
Pontianak Municipality	26.6	26.5	26.7	-	-	-	-
Total (%)	100.0	100.0	100.0	Total	100.0	100.0	100.0
Total (Rp. Billion)	5,148.0	5,536.1	6,062.2	Total (Rp. Billion)	3,066.9	3,309.9	3,608.7

Source: Gross Regional Domestic Product of Regencies/Municipalities in Indonesia 1993-1995.

In Central Kalimantan, the districts of Kotawaringin Timur, Kapuas and Kotawaringin Barat are major contributors with a total share of 75% in GRDP in 1995 (Table 3.2.18). The economic role of the capital city, Palangkaraya, is relatively small in the province.

The economic structure of each district in West Kalimantan is more varied than in Central Kalimantan (Table 3.2.19). The Pontianak district, the Pontianak municipality and the Sambas district have different main economic sectors, manufacturing, services and agriculture, respectively. The economic structure of other districts in West Kalimantan, i.e., Sintang, Sanggau, Ketapang and Kapuas Hulu are dominated by agriculture. Among these four districts,

[8] BPS, *Gross Regional Domestic Product of Regencies/Municipalities in Indonesia 1993-1995.*

Ketapang had the lowest share of agriculture in GRDP, while Kapuas Hulu had the highest in 1995.

Table 3.2.19 Gross Regional Domestic Product by Sector, West Kalimantan in 1995

Sector	Gross Regional Domestic Product (%)						
	Sambas	Pontianak	Sanggau	Ketapang	Sintang	Kapuas Hulu	Pontianak Municipality
Agriculture	36.0	27.7	35.5	26.0	44.6	52.0	1.7
Mining & Quarrying	0.7	0.3	1.8	6.0	4.2	1.9	0.0
Manufacturing	9.4	40.3	28.7	21.7	4.9	2.2	5.3
Electricity	0.7	0.2	0.3	0.3	0.3	0.2	2.0
Construction	3.5	1.6	4.8	3.0	4.5	5.7	14.4
Trade, Hotel, Restaurant	29.1	20.1	18.8	21.0	27.5	20.9	19.9
Transport	7.0	4.3	2.5	13.6	2.6	2.3	19.6
Finance	6.0	2.6	3.8	4.6	4.7	5.3	13.7
Services	7.6	2.9	3.9	3.9	6.5	9.6	23.6
Total	100	100	100	100	100	100	100

Source: West Kalimantan in Figures 1996.

In Central Kalimantan, the economy of each district is based more on agriculture than in West Kalimantan (Table 3.2.20). Agriculture is the main economic activity in all districts except Palangkaraya. The share of agriculture in GRDP in 1995 was the lowest in Kotawaringin Barat and the highest in Barito Utara. The share of agriculture in Palangkaraya was only 8%. Rapid development in infrastructure led Palangkaraya to have a greater share in the transport sector and other services which include public administration. In Kotawaringin Barat, the share of manufacturing industry is the second largest following agriculture. In other districts, the share of trade is higher than that of manufacturing.

Table 3.2.20 Gross Regional Domestic Product by Sector, Central Kalimantan in 1995

Sector	Gross Regional Domestic Product (%)					
	Kotawaringin Barat	Kotawaringin Timur	Kapuas	Barito Selatan	Barito Utara	Palangkaraya Municipality
Agriculture	33.5	42.1	42.7	45.0	50.1	8.1
Mining & Quarrying	0.4	10.0	0.2	0.5	10.7	2.2
Manufacturing	23.1	10.8	14.7	5.8	52.4	4.9
Electricity	0.2	0.2	0.2	0.2	0.1	1.2
Construction	6.2	3.8	6.5	9.9	4.4	10.7
Trade, Hotel, Restaurant	19.4	19.0	17.3	13.4	16.2	12.1
Transport	8.6	6.7	6.4	11.4	8.9	29.6
Finance	2.8	2.1	3.1	3.0	1.9	5.8
Services	5.9	5.3	8.9	10.8	5.4	25.5
Total	100	100	100	100	100	100

Source: Indikator Perkembangan Ekonomi Kalimantan Tengah 1995.

In West Kalimantan, the municipality of Pontianak and the district of Pontianak had higher per capita income than other districts in 1995 (Table 3.2.21). Their higher per capita income is due to the larger shares of the manufacturing and service sectors in the provincial economy as compared with other provinces, which mainly depend on agriculture. Higher productivity in the service sector compared with the manufacturing sector led the Pontianak municipality to have higher per capita income than the Pontianak district.

Table 3.2.21 Per Capita Income by District, West and Central Kalimantan in 1995

West Kalimantan		Central Kalimantan	
District	Per Cap Income (Rp.1,000)	District	Per Cap Income (Rp.1,000)
Sambas	1,322	Kotawaringin Barat	3,675
Pontianak	2,428	Kotawaringin Timur	3,072
Sanggau	1,471	Kapuas	1,782
Ketapang	1,843	Barito Selatan	2,469
Sintang	1,090	Barito Utara	3,917
Kapuas Hulu	1,602	Palangkaraya	2,553
Pontianak Municipality	4,397		
Provincial Average	1,977	Provincial Average	2,697

Source: Gross Regional Domestic Product of Regencies/Municipalities in Indonesia 1993-1995.

In Central Kalimantan, although Palangkaraya is a center for the tertiary sector, the highest per capita income is seen in Kotawaringin Barat, which is the center of the manufacturing industry. Per capita income in Kotawaringin Barat is more than twice that of the Kapuas district, which has the lowest per capita income in the province. The high per capita income in Kotawaringin Barat is generated by high productivity in the manufacturing sector. However, in this district, the cost of living is relatively high as indicated by the higher prices of rice in Pangkalanbun.

The price level, in general, reflects the accessibility and cost of transportation. Therefore, the people in remote areas in West and Central Kalimantan have to pay higher prices for daily necessities, though the living cost on a monetary basis is usually higher in urban areas than in rural areas.

3.3 MAJOR PATTERNS OF REGIONAL TRANSFORMATION

3.3.1 Introduction

The region is now in great transition in several aspects: economy, spatial structure, infrastructure, environment and communities. Major patterns of the regional transformation are discussed in this section.

Infrastructure development and institutional building should be carefully planned not only for the purpose of efficiently supporting smooth transformation of the region, but also for effectively guiding the regional changes from the standpoints of environment and society. Considering possible measures to cope with the undesirable effects of the on-going and up-coming regional transformation of the environment and society is not enough to seek sustainability in development. We need to consider more comprehensively a variety of aspects, such as economy, spatial structure and infrastructure, environment and society, from the beginning of regional planning practices. We can only draw desirable and realistic development scenarios for the region by seriously assessing the features and patterns of regional transformation.

3.3.2 Regional Economy: Shift from Natural Resources Extraction to Plantations

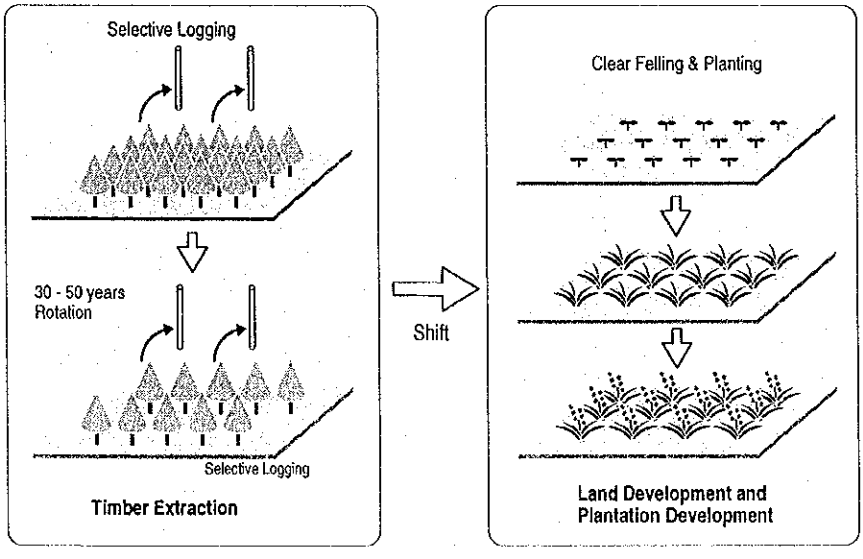
The region is in a process of transition changing from an economy based on natural resources extraction (mostly logging natural forests) to an economy evolved around large-scale plantation/ cultivation (See Figure 3.3.1). While the region's economy still significantly depends on natural timber resources and the wood-based industry, West Kalimantan, to a larger extent, and Central Kalimantan, to a less extent, are already experiencing rapid depletion of timber resources, and thus will be, in the near future, no longer able to provide such a large volume of raw materials to timber processing industries and to support such a large volume of direct and indirect employment as it used to do in the 1980s and the early 1990s. In this sense, the regional economy is faced with inevitable structural changes. It is expected that large-scale development of plantations will be accelerated in the coming years.

Among the number of new developments in the region's economy, the most noticeable is the establishment of large-scale plantations, particularly that oil palm, on the lands where forests have been logged over. Plantation development is also occurring within the forestry sector, i.e., the plantation of fast growing trees for pulp production. In the fishery sector, as open-water catches have begun to decline and the demand for fish has increased, aquaculture is playing an increasingly important role in fish production.

There are clear differences in characteristics between resources extraction and plantation. The existing timber extraction from natural forests is based on selective logging of commercial timber, while the plantation development is based on land development which requires clear-felling of trees and removing of tree roots in the case of forest lands. One of the other features of plantation development is that it invariably needs more investment per unit of land in the longer-term than resource extraction.

The shift to a plantation/cultivation-based economy brings about opportunities for the development of various kinds of new industries in the region. Some of the prospective industries are those directly related to the plantation industry, i.e., marketing business for agricultural inputs and products, agro-based processing, not only primary processing but also secondary or higher processing in the long run, finance, transportation, communications, etc. Although the development of these industries requires massive investment in infrastructure, research and development, and institution building and, therefore, may not materialize in the immediate future. However it will create a better environment for the establishment of plantations and processing industries for products other than oil palms. Other sectors can also benefit from the expansion of agricultural plantations. One example is the producers and distributors of food items and other consumer goods because an increasing number of people will be engaged in non-food producing sectors, such as tree-crop plantation, industry, trade and transport. These changes as a whole could expand opportunities to diversify the region's economy eventually.

Figure 3.3.1 A Shift in the Region's Economy



Source: JICA-SCRDP Kaltengbar

3.3.3 Regional Spatial Structure: Introduction of Road-Based Landuse into the Existing River-Based Spatial Structure

Road construction for connecting the downstream areas with the middle and upper stream areas, as well as for running across different watershed areas is a recent development in the region, unlike other islands of Indonesia. Only since the 1980s has such road development been accelerated in the region.

The formulation of the spatial structure of the region has been based on rivers. Both West Kalimantan and Central Kalimantan are endowed with long navigable rivers which cover a large area of the region. Most of the inland movement of people and goods relied on river transport in the past, especially in West Kalimantan. Moreover, most of the existing patterns of human settlement and landuse have been formed along rivers and streams. The existing towns with local and regional trading functions are also located at the confluence points of rivers. The administrative capital towns of districts (kabupaten) and subdistricts (kecamatan) are based on such local and regional characteristics. The administrative boundaries have also been based on river basins.

Since the early 1970s, modern logging operations have been conducted in the natural forests of the Kalimantan provinces. This is partly because Kalimantan's forests are rich in commercial timber trees. Another important factor is the large navigable rivers in Kalimantan that have allowed relatively easy access to huge areas of undisturbed forests. Logs are transported from forests to log ponds on logging roads, and the logs are floated downstream by rafts or barges. Roads connecting forests with downstream areas are not always required by the logging industry.

The road development, since the 1980s has opened new opportunities to attract other types of economic activities (landuse), such as oil palm plantations and industrial tree plantations. This plantation development tends to be located in the middle stream areas, relying on paved roads to downstream towns, in which plantation products are shipped or further processed. At the same time, transmigration settlements have been built for supplying labor to the plantations. That is, the emerging plantation economy requires land with relatively good accessibility and supply of labor, which are assured by road connections to downstream towns.

Figure 3.3.2 River-Based Regional Spatial Structure (1)

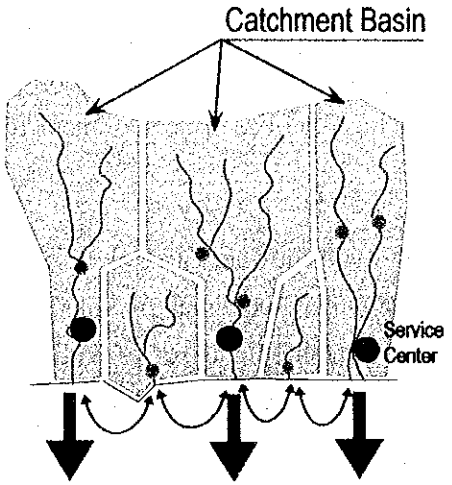


Figure 3.3.3 River-Based Regional Spatial Structure (2)

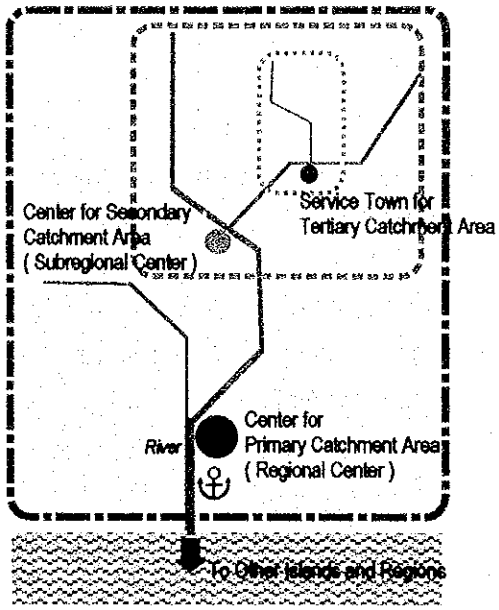


Figure 3.3.4 Road Development in River-Based Regional Spatial Structure (1)

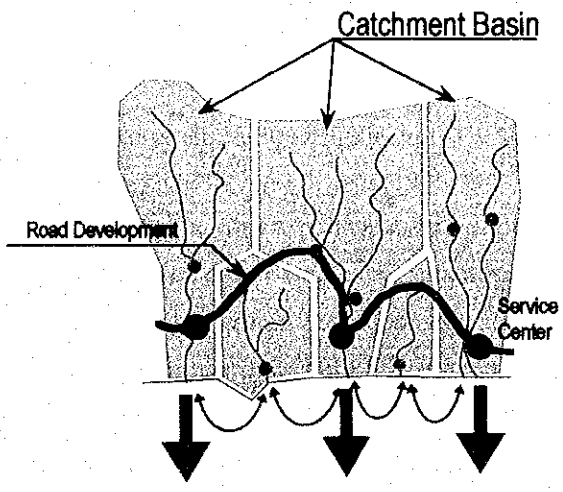


Figure 3.3.5 Road Development in River-Based Regional Spatial Structure (2)

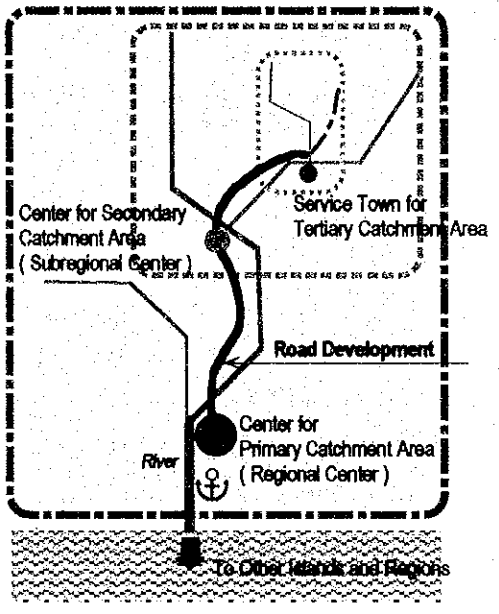


Figure 3.3.2 River-Based Regional Spatial Structure (1)

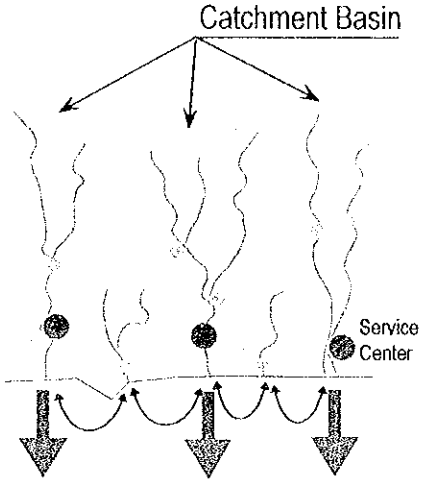


Figure 3.3.3 River-Based Regional Spatial Structure (2)

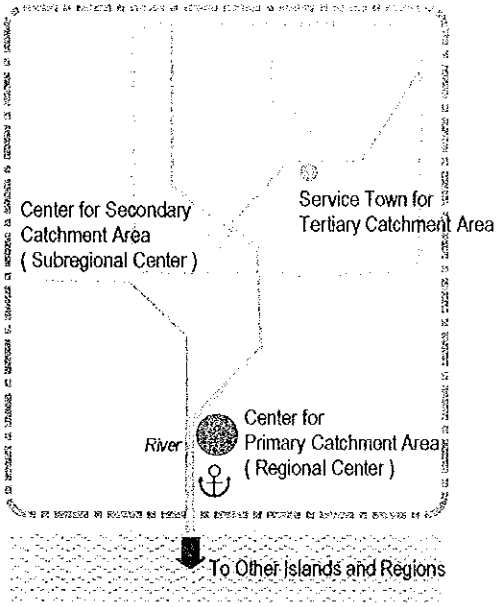


Figure 3.3.4 Road Development in River-Based Regional Spatial Structure (1)

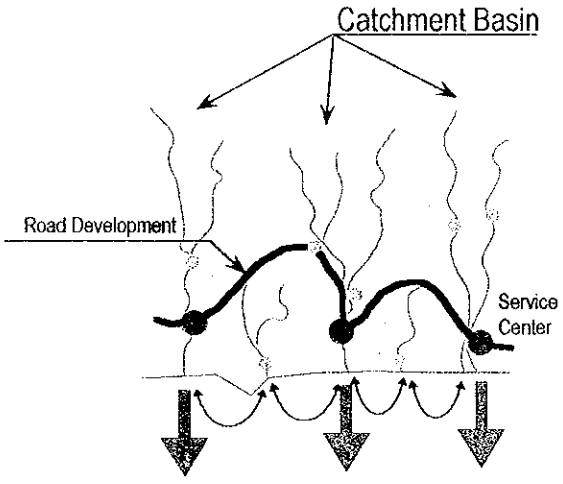
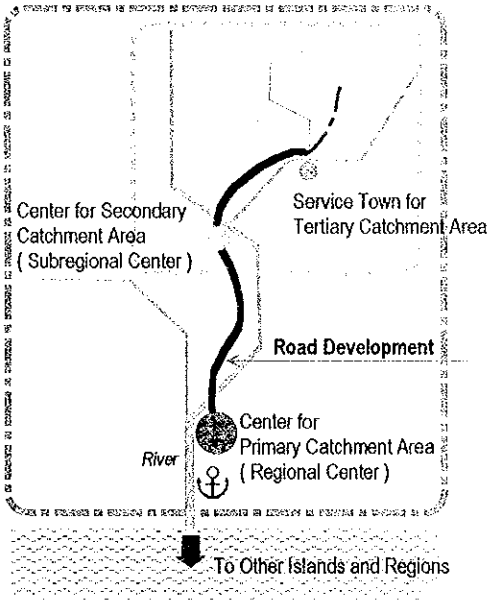


Figure 3.3.5 Road Development in River-Based Regional Spatial Structure (2)



The road development and plantation development take place in upland areas, avoiding swamp areas. This pattern introduces the forces of land development into upland forest areas, which used to have only swidden agriculture and timber extraction. However, road development cannot be easily free from the strongly established river-based spatial structure. Roads connect the existing town centers which have been based on rivers. It can be said that the on-going changes in the spatial structure is in the process of introducing road-based development forces into the river-based spatial structure.

Furthermore, the development of regional roads connecting major downstream towns with the middle and upper stream areas can largely increase development potential of inland areas because the regional road development is one of the minimum requirements for providing local towns and their surrounding areas with electricity and telecommunications.

In this way, the shift in the regional economy from timber extraction to plantation and the changes in the regional spatial structure by road development are taking place simultaneously by influencing each other.

3.3.4 Regional Environment: Regional Transformation and its Impacts on the Environment

The on-going transformation of the regional economy and spatial structure described above could become significant forces generating negative impacts on the regional environment.

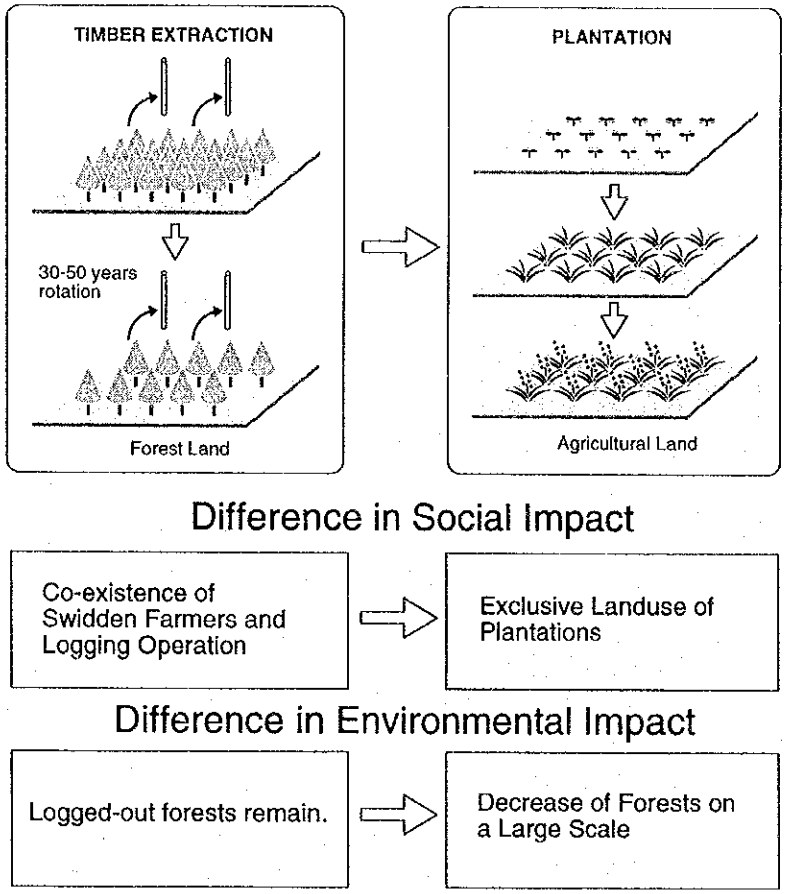
(1) Impacts of Plantation Development and Regional Road Development into Upland Forest Areas

The plantation development and road development would bring significant impacts to upland forest areas for two reasons. First, it is because the characteristics of land development for plantations is quite different from those of timber extraction by selective logging and swidden agriculture based on vegetation recovery. Land development for plantation needs the clear felling of trees and sometimes the removing tree roots. On the other hand, though heavily disturbed, forests still remain after timber extraction by selective logging, and secondary forest recovers after swidden agriculture. That is, plantation development increasingly encroaches on logged-out forests, resulting in substantial losses of the habitat of wildlife and plants in upland areas.

Second, it is because regional road development into inland areas would open up a variety of landuse opportunities, increasing the demand for lands by farmers and entrepreneurs, as well as by plantation development. At the same time, the extension of regional roads would increase the benefits of developing feeder roads which connect remote areas directly with downstream

areas through regional roads. In this way, the improvement of accessibility by roads will be accelerated, leading to an increase in landuse demand.

Figure 3.3.6 Differences in Environmental and Social Impacts between Two Landuse Patterns



(2) Impacts of the Monoculture of Tree Crops in Plantation Development

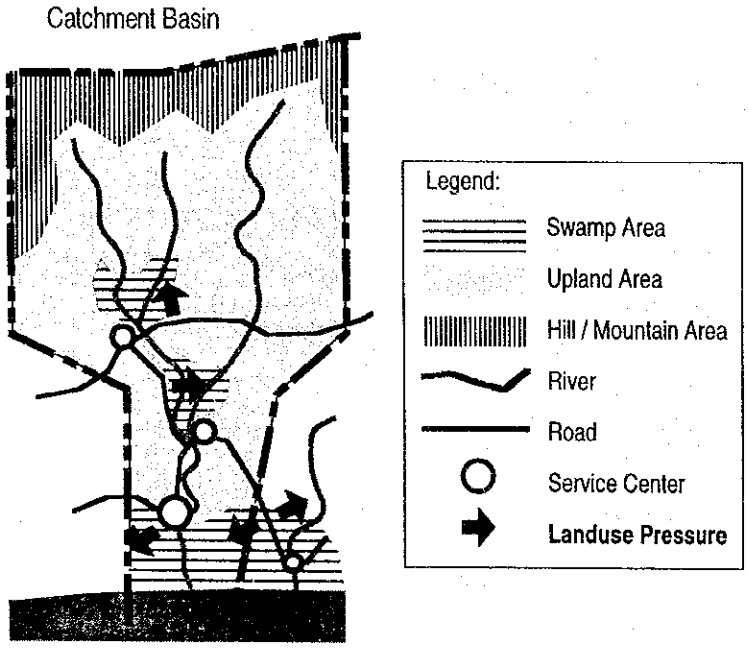
The large-scale monoculture of oil palm and other tree crops by plantation development could weaken their resistance to pests and diseases, threatening the biological and economic Sustainability of those plantation projects. On the other hand, plantation management relying on fertilizers and pesticide increases agro-chemical hazards to the health of plantation workers and local people[9].

[9] According JICA SCRDP-Kaltengbar's Discussion Paper No.8 "Environmental Impact of Large-Scale Oil Palm Plantation Development: A Case Study of West and Central Kalimantan", the total amounts of nutrients to be leached out from the oil palm plantations in 2018 are from West Kalimantan's 871,000ha of oil palm plantations: N: 6,000 ton per year, P_2O_3: 267,000 ton per year, and K_2O: 55,000 ton per year, and from Central Kalimantan's 675,000 ha of oil palm plantations: N: 4,700 ton per year, P_2O_3: 207,000 ton per year, and K_2O: 43,000 ton per year.

(3) Increasing Landuse Pressure on Swamp Areas

Nearly a quarter of the study area is covered by swamp forests, such as fresh water swamp forests, peat swamp forests and mangrove forests. Though the road construction in swamp areas is more costly and ecologically more damaging than in upland areas, quite a few roads run through or are in the fringe areas of swamp forests, as regional roads extended to cover larger parts of the region. As a result, the demands for timber extraction and landuse are increasing not only in upland forest areas but also in swamp forest areas.

Figure 3.3.7 Swamp Areas and Road Development



3.3.5 Regional Society: From Coexistence with Timber Extraction to Exclusion of Indigenous Landuse

In the region a variety of problems are emerging in relation to the on-going regional transformation. Among major features of factors changing regional society, however, this section concentrates on the impacts of plantation development.

(1) Coexistence of Swidden Agriculture and Logging Operations

In forest areas, indigenous Dayak farmers have combined swidden agriculture with tree crops in fallow swiddens. It appears to be irreconcilable between swidden agriculture and logging from natural forests; however, they have coexisted in the last two decades[10]. Although the logging operations remove trees from forest lands, farmers are still able to make swiddens on logged-out forests. It is partly because the timber companies are not interested in protecting logged-out forests from indigenous farmer's swidden making for the second round of timber harvesting in their timber concessions.

(2) Exclusive Landuse of Plantation and Local People's Landuse

In contrast, the development of plantations requires the security of long-term exclusive landuse, since it needs intensive investment in land development and plantation. That is, plantation development is based on exclusive landuse, which excludes local people from the land[11].

This feature of exclusive landuse of plantations compels local people to give up their lands, mostly their fallow swiddens, sometimes rubber groves and rattan gardens. In this situation, most swidden farmers neither have formal land titles nor are eligible to have such land titles because they leave swiddens fallow for at least 5 years. This fallow system of swidden farming does not allow swidden farmers to receive formal land titles, because landuse rights are given based on continuous use / cultivation of land without leaving the land for three years according to the land laws of Indonesia.

(3) Labor Supply to Plantations and Local Communities

[10] Lian (1993) thoughtfully argues that the Sarawak's Iban and Punan struggles against logging operations in the late 1980s were motivated not only for protecting their livelihood's ecological foundations, but also for asking for reasonable shares of logging their forests. King (1993: 304) also notice the same points. See also Primak (1991). Zener (1992) complied some "case summaries from Kalimantan", which contains various cases of conflicts between indigenous communities and outsiders. However, it seems that each case is not to such an extent that timber operations destroy swidden communities' livelihood foundations.

[11] Most of government schemes of oil palm plantation development have systems of involving local people as smallholders, such as Nucleus-Smallholder Plantation (Perkebunan Inti Rayat) and Partnership Scheme (Kemitraan).

Plantations can be established by securing labor, as well as by exclusive landuse. Labor power is supplied not only by the local people but also by transmigrants. The employment opportunities provided by plantations are good news to local communities. At the same time, however, they have to risk their livelihood by giving up traditional landuse systems in many cases, such as swidden agriculture and rubber groves. The local people may welcome plantation development around their communities if the development still brings about opportunities for them to continue their well-established livelihood practices of swidden agriculture and intensive fallow management like rubber groves, fruit trees grove, and rattan gardens.

(4) Socio-economic Relations in Increasing Migration from Other Islands

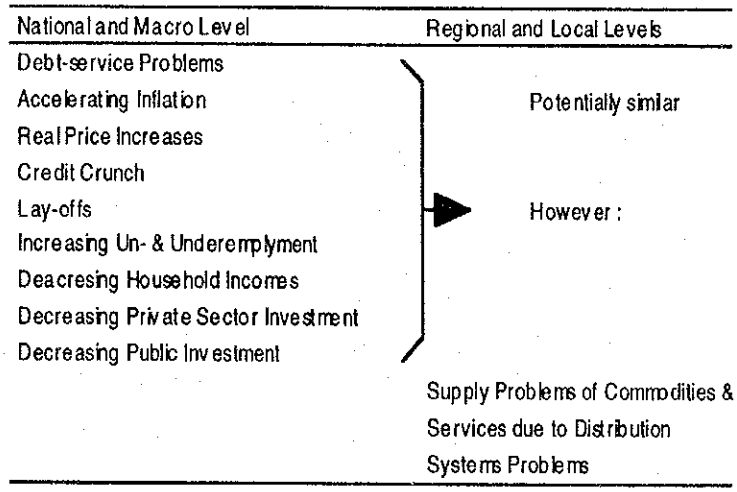
The recent incidence of ethnic conflicts in West Kalimantan reminded us of the dynamic socio-economic relations between ethnic groups. It is said that one of the factors for the incidents is increasing economic discrepancy between indigenous and migrant communities, though there is a historical development of complex social relations. Kalimantan has a long history of migration of a variety of ethnic groups from other islands and continents.

The on-going economic and spatial changes, which are hinged upon road development and plantation development, would push the region into a new phase of migration to the region at an accelerating speed. The land to be opened up by road and plantation development would attract an increasing number of migrants from other islands in the future. Regional planning needs to pay more attention to the social aspects in relation to the in-migration of the on-going regional transformation.

3.4 IMPACT ASSESSMENT OF THE ECONOMIC CRISIS

There is common appreciation of the fact, that no in-depth empirical data exist at national and/or regional/local levels measuring empirically the impact of the economic crisis at the time of writing this report. An in-depth empirical assessment is, furthermore, clearly beyond the scope of this study's terms-of-reference. What is, however, needed, is an common sense "economic" appraisal of the most likely direction of the crisis impact. Figure 3.4.1 summarizes the general economic crisis' symptoms.

Figure 3.4.1 General Symptoms of Indonesia's Economic Crisis



Source: JICA-SCRDP Kaltengbar

There are, in principle, four major economic actors : the consumers (households), the producers (the enterprise base), other asset holders investors. This group is overlapping, and the government (recurrent and development expenditures). Figure 3.4.2 summarizes the qualitative factors shaping their likely direction of economic and social behavior.

The three outstanding crisis impact indicators for the mining subsector are :

- Reduced private sector investment activities and, subsequently, declining growth perspectives, or growth realization below potential
- Undercapacity utilization in the enterprise base and subsequent lay-offs, and increasing under- and unemployment, and
- Reduced Government budgetary resources (in particular for development expenditures).

Figure 3.4.2 Major Economic Actors and Economic Crisis Impact

A. CONSUMERS

Urban consumers :

Integrated into the monetary economy. Most seriously affected by inflation, real price increases, and lay-offs.

Rural consumers :

Only about 30% integrated into the monetary economy. Also affected by inflation, real price increases, and perhaps by lay-offs if engaged as day laborers.

B. ENTERPRISE BASE

Urban enterprise base :

a) Producers for the domestic market will be strongly affected by decreasing demands, and input price increases, without having the chance to roll such increases fully over to consumers.

Response :

1) Lay-offs to reduce variable costs.

2) Delayed or cancelled investments.

b) Producers for export markets will only be partially affected, since they can, in principle, compensate input price increases through their much higher Rupiah revenues (exchange rate).

Response :

1) Optimize share of the production to be exported.

2) Hold back investments.

[3) Perhaps temporary lay-offs.]

Rural enterprise base :

a) Producers for the domestic market will be somewhat affected by decreasing demand, and input price increases, without having the chance to roll such increases fully over to consumers. Major effect : reduced income.

b) Same as for urban producers.

C. ASSET HOLDERS

Rephasing and/or cancellation of investments.

D. GOVERNMENT

Reduced recurrent and development budget.

Increasing "social" expenditures.

Source : JICA-SCRDP Kaltengbar compilation

It is roughly estimated that a one percent decrease in mining subsector output would generate :

- Potential lay-offs in West Kalimantan's mining subsector of between 300 to 350 employees/workers, and
- Potential lay-offs in Central Kalimantan's mining sector of between 270 to 300 employees/workers.

In other words, it is roughly estimated that, if mining subsector output contracted in 1998 say by five percent, between 2,850 to 3,250 employees/workers in the Study Area are likely to lose temporarily or permanently their income generating employment. While this number may not be very big in absolute terms, it may have considerable repercussions at local area levels, where the enterprises are located.

The three outstanding overall crisis impact indicators for the manufacturing subsector are :

- The phasing out of private sector investment activities in the wood-based processing industry, in particular in the industrial scale sawmills, plywood and particle board enterprises, mainly due to the depletion of the resource-base, but accelerated by the crisis
- Increasing undercapacity utilization in the wood processing enterprise base, and subsequent lay-offs, and increasing under- and unemployment
- Rephasing of net-investments in the plantation sector (palm-oil, rubber, other cash crops), with subsequent delays and rephasing of net-investments for required processing enterprises, and
- Possible fluctuations in capacity utilization in the plantation based processing enterprise base, and subsequent lay-offs, and increasing under- and unemployment.

It is roughly estimated that a one percent decrease in manufacturing subsector output by major-lines-of industry would have a direct and indirect impact on employment.

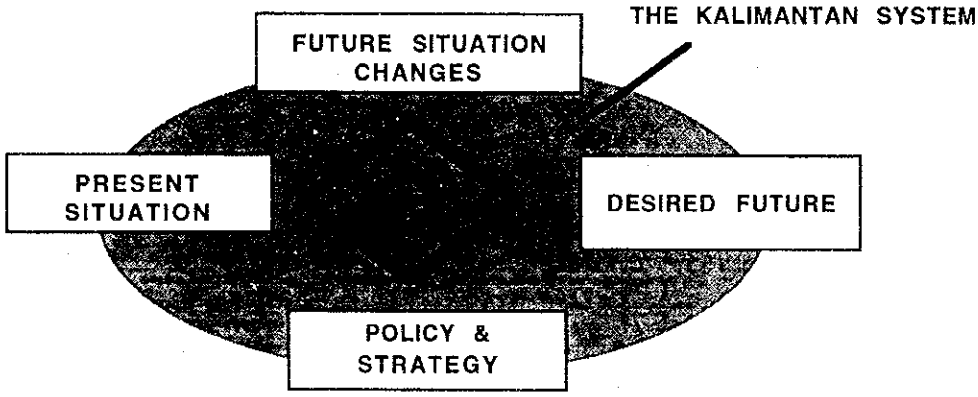
CHAPTER 4

THE KALIMANTAN SYSTEM AND GOALS OF SUSTAINABLE REGIONAL DEVELOPMENT FOR KALIMANTAN

CHAPTER 4 THE KALIMANTAN SYSTEM AND GOALS OF SUSTAINABLE REGIONAL DEVELOPMENT FOR KALIMANTAN

4.1 INTRODUCTION

This chapter discusses the goals for the regional development of Kalimantan. First, the Kalimantan System is described as an entity of salient features. Second, future situations surrounding Indonesia and Kalimantan are considered. Third, the region's future by taking into consideration the past and present trends is presented. Then by presenting one of opposing views of the case based on past trends, we will draw a desirable vision for the region. Fourth, based on the first, second and third analyses, we will propose regional development goals for Kalimantan.



4.2 THE KALIMANTAN SYSTEM

Based on our analysis of the natural and socio-economic conditions of Kalimantan, especially in West and Central Kalimantan, we identified 'the Kalimantan System' which has salient features comparatively different from Sumatra and Sulawesi.

In Kalimantan, the natural conditions and the socio-economic conditions have influenced each other to formulate a unique system of nature and socio-economy. The salient features of the Kalimantan System are summarized as follows:

4.2.1 Natural Conditions of the Kalimantan System

(1) The fertility of Kalimantan's soils are generally poor. The land areas covered by flat and fertile alluvial soils account for 5% in West Kalimantan and 8% in Central Kalimantan. Intensive estate agriculture is suited to areas of flat, fertile soils and rolling, moderately fertile soils. Such areas are limited, accounting for only 15% in West Kalimantan and 19% in Central Kalimantan.

(2) The land areas which need conservation are huge, consisting of peat swamps, acid sulfate soils, sandy soils and very steep slopes. Such areas occupy 51% of West Kalimantan and 59% of Central Kalimantan.

(3) The natural system of each river basin is supported by a variety of elements within the river basin. These elements are subtly inter-related. The destruction of parts of the natural system leads to the deterioration and malfunctioning of other parts of the river basin. Especially, the function of vast swamp areas is significant in various ways, such as regulating water flow, purifying water and acting as water reservoirs to absorb and release water gradually.

(4) The quality of river water and underground water is generally acid, especially in the coastal and lowland areas because of the presence of huge peat swamps.

(5) The coastal land is covered by contiguous and wide swamps while the upland area used to be covered by dense rain forests. The access to inland areas has been hindered by limited availability of transport means. Rivers have shaped the human settlement patterns of the region.

4.2.2 Socio-Economic Conditions of the Kalimantan System

(1) The rural population density in Kalimantan has been relatively low due to the development of extensive landuse based on the infertile soils. Since the people live along rivers and their means of transportation are walking and manual boat, one unit of human settlement is also relatively small, ranging from 50 to 100 households.

(2) The society of the Kalimantan System is constituted of a variety of ethnic groups. The majority of the regional population is the Dayak people, who mostly live along rivers in the middle and upper stream areas. They live on swidden agriculture[1],relying on the ability of the forest land's vegetation recovery. The Dayak people have spontaneously formed small-scale communities (of sizes of 50-100 households) of certain characteristics while adjusting to their

[1] The Dayak's swidden agriculture is a type of slash and burn agriculture, which uses forest lands cyclically and relies on the recovery of forest vegetation.

places' natural conditions. The Dayak people's communities are called "Nature-Based Communities".[2] They use forest lands extensively (sparsely and separately each other) for their agriculture, they need to keep territory to secure access to forest lands for extensive agriculture, and they need some social integration for synchronizing agricultural practices within their communities for exchanging labor among households, as well as for protecting their crops from animal pests. Therefore, the damage to any of these essential characteristics (small-scaleness, secured territory, and social integration) could socially and physically collapse the communities, resulting in destruction of the social power of the Kalimantan System.

(3) Dayak is a collective name of the inland indigenes. The people called Dayak have developed different cultural traits and languages in each locality. Due to this cultural differentiation, their ethnic identity as the Dayak has been relatively weak, for example, in comparison with the Bugis in Sulawesi and the Batak in Sumatra.

(4) Kalimantan has historically accepted migrants of various ethnic groups, such as Melayu, Chinese, Bugis, Javanese and Maduranese, from outside Kalimantan. This constant flow of migrants has formed a complex society, in which sometimes social stability is very difficult to maintain.

(5) The production of the Kalimantan System is based on "nature's power" derived from forests and water. Indigenous swidden agriculture, rubber groves, Tengkawang, rattan gardens and informal gold mining are this sort of the Kalimantan System's production.

(6) The fruit of the production of the Kalimantan System has been made available by the local people working on the nature. This is true of the case of the inland Dayak and the coastal Melayu. The traders deal in various forest products, which are the surplus produce of nature's power.

(7) The modern development in Kalimantan became full-scale in the form of commercial timber extraction in the 1970s. It relies on nature's productivity. Although the large-scale logging operations have substantially disturbed the forest environment, forest-based production, such as swidden agriculture and extraction of minor forest products, is still possible in logged-over forests.

(8) However, the degraded forests by such logging operations have invited other types of modern production systems, which are oil palm plantations and pulp wood plantations. The plantation system is completely different from the nature-based production of the Kalimantan

[2] Takaya, Koichi (1998) "Sizen-Kyodotai to Ekoroji (Nature-Based Community and Ecology)" (in Japanese) in Tikyu-no Kankyo to Kaihatu (Global Environment and Development) edited by Kawada et.al Tokyo: Iwanami

System in that it is based on land development and chemical inputs after removing forest vegetation.

(9) Another type of development, not part of the Kalimantan System, is the transmigration settlement development. Its development is based on migrants from outside Kalimantan, sedentary cultivation, road connection to urban service centers and large-scale settlement to satisfy the rationality of infrastructure provision. Its agricultural practices unsuitable to the area and its relatively large size compared with the existing communities have often made the transmigration settlements unsustainable and socially unfeasible.

4.3 IMPLICATIONS OF ACKNOWLEDGMENT OF THE KALIMANTAN SYSTEM TO REGIONAL DEVELOPMENT PLANNING

It is obvious to any concerned persons that the understanding of the region's salient features (natural, social, economic and spatial features) is essential for formulating concrete measures and methods of sustainable development and conservation. However, it was not always true of Indonesia's past 25-year regional development efforts, which were heavily reliant on the top-down system of government not only from the central government to local governments, but also from local government officials to local communities. It means that similar programs and projects have been distributed all over Indonesia despite a wide range of differences in natural, social, economic and spatial conditions. As a result, much of the resources (not only government expenditure but also people's time and efforts) spent for such top-down government programs and projects were wasted.

In this planning study, we argue for the importance of recognizing the Kalimantan System. However, this has wider implications to Indonesia's regional development planning. Since Indonesia has a great diversity in ethnicity, physical/natural conditions and cultural/social values, there are some different systems, which need to be identified and recognized for the purpose of differentiating the development and conservation efforts.

Once different regional systems (such as the Kalimantan System, Sulawesi System, Irian System, Sumatra System, and Java System) are identified and widely understood, development measures, projects, strategies, and plans could be formulated to be more suitable and responsive to regional and local conditions and more effective in solving the problems.

4.4 FUTURE SITUATIONS SURROUNDING INDONESIA AND KALIMANTAN

4.4.1 Future Situations Surrounding Indonesia

(1) Indonesia will become a net importer of oil and gas in the near future. It will be no longer able to export wood products, such as plywood and sawn timber within ten years, due to the rapid depletion of timber resources and the increase of domestic demands for wood products. Therefore, the state revenues from oil, gas and timber will no longer be able to support the development budgets of the whole nation as they do now.[3]

(2) Indonesia will have a population of 269 million in 2018 with more than 50 % living in urban areas. Due to continuous intrusion of urban and industrial landuses into agricultural lands, Java and Bali will no longer be able to supply surplus food to the outer islands. Moreover, the world as a whole will be in the age of food shortage.[4] Food supply, especially to the non-agricultural population, will be a serious problem for the nation.

(3) Western Indonesia will have achieved substantial industrialization and urbanization, contributing to the Indonesian economy and the tax payment for the state revenues. Eastern Indonesia will also be required to become self-supporting in its own development fund and food supply.

4.4.2 Future Situations Surrounding Kalimantan

(1) Due to the exhaustion of timber resources, the production of timber, plywood and other wood products will decline heavily. In five years, the timber production from timber concession areas will decrease by 40 % in West Kalimantan and by 30 % in Central Kalimantan. By 2018, the timber concession areas in the both provinces will be no longer able to supply enough amounts of timber to support their wood processing industries.

(2) If Kalimantan finishes the exploitation of timber resources and then proceeds with land development, and if the land resources are exhausted by excessive land utilization, Kalimantan will not be able to support itself in the aspects of funds and food. When that happens, the central government will have to aid Kalimantan's economy and population. However, by then, the ample revenues from oil/gas and timber would not be available to the central government.

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[3] Widhyawan Prawiraatmadja (1997), "Indonesia's Transition to a Net Oil Importing Country: Critical Issues in the Downstream Oil Sector, " Bulletin of Indonesian Economic Studies Vol.33, No.2.

[4] Lester R. Brown etal. (1997) State of the World 1997 New York: W. W. Norton & Company

4.5 THE FUTURE BASED ON THE PAST DEVELOPMENT PATTERNS

The past development patterns, shown in Chapter 3 and Appendix A, were based on unsustainable and large-scale exploitation of natural resources and land resources.

What happens to Kalimantan if the past development patterns are continued?

(1) What can be obtained or achieved by fully developing the region's development potential (especially natural resources and land resources)?

Even if Kalimantan follows the existing development policies of modernization and formalization, it is not possible for the formal sector (resource-based industries, urban sector and plantation sector) of Kalimantan to provide its population with enough job opportunities. That is, the modern sectors, which are not based on nature's power, cannot absorb all the population of Kalimantan. The rest of the population outside the formal sector will be dependent on the Kalimantan System's natural power. For example, swidden-based livelihoods, such as rubber groves, Tembawang (fruit tree groves) and rattan gardens and inland fisheries are among this kind.

(2) What happens if an excessive concentration of oil palm plantations takes place in a region?

Unlike industrial development or urban development, the scale merit does not work in the case of oil palm plantation development. There are some merits of concentration, if downstream industries are attracted to the massive output of crude palm oil from the region. However, in many cases, the excessive concentration of oil palm plantation makes the regional economy more subject to fluctuation of the international prices. Moreover, such concentration of oil palm plantations tend to reduce the other types of economic activities relying on the same land resources. Due to the excessive expansion of oil palm plantations, the regional economy would become fragile and less diversified.

Threats to the oil palm plantations are also derived from social dissatisfaction due to the deprivation of the traditional livelihood means. In Kalimantan's case, the oil palm plantation development is based on the same land resources as those on which the majority of upland people's extensive farming relies. The excessive expansion of plantations without adequate social considerations easily results in social problems first concerning land, and second the loss of the existing livelihood means, such as rubber groves and swidden lands.

(3) What kind of future awaits the region if its natural resources and land resources are fully utilized or exploited?

If logging operations and oil palm plantation development are continued at the present pace, Kalimantan's natural power on which the local people rely for economic activities would be broken. That is, the Kalimantan System would start collapsing. If this happens, even the oil palm plantations based on chemical inputs would be threatened with collapse due to the failure of the regional water system.[5]

The above three analyses reveal that it is necessary to avoid excessive plantation development and resource-based industrial development based on the unsustainable and large-scale exploitation of natural resources and land resources in the past, which will seriously threaten both the nature power and social power of the Kalimantan System. For sustainable regional development of Kalimantan, it is essential to preserve the Kalimantan System, while accepting dynamic new development waves, such as oil palm plantation development and other types of resource-based industries. This oil palm plantation case can be applied for setting the goals of the overall regional development for Kalimantan, as shown in the next section.

4.6 GOALS OF SUSTAINABLE REGIONAL DEVELOPMENT FOR KALIMANTAN

The above discussion leads us to the following core/primary goals of regional development:

(1) To seek the state of a self-sustaining regional economy and society

(2) To contribute economically and socially to sustainable national development

This combination of the two goals means to reduce economic dependency on the central government and other regions, while contributing to other regions, as well as to the nation as a whole.

The secondary goals for guiding development efforts to achieve these core goals are also identified as follows:

(3) To promote ecologically sound and renewable natural resource-based development

(4) At the same time, to seek other types of development, which are not exclusively based on high-volume natural resource use or large-area land resource use

[5] See Discussion Paper No. 8 "Environmental Impact of Large-Scale Oil Palm Plantation Development" and Discussion Paper No. 14 "Hydrological Significance of the Upper Kapuas Basin" compiled in JICA-SCRDP-Kaltengbar's Technical Report (1) and Technical Report (2).

(5) To secure social stability of the region by seeking equitable development

The primary goals reflect the needs and roles derived from the future situations surrounding Indonesia and Kalimantan. The secondary goals respond to the salient natural and social features of the Kalimantan System.

The secondary goals are set in order to base the development efforts on the natural and social power of the Kalimantan System by controlling the development patterns of excessive exploitation of natural resources and land resources and, at the same time, by promoting other types of development patterns.