A.10 TRANSMIGRATION SETTLEMENT DEVELOPMENT

(1) Past and Present Trends

1) Achievements by Repelita

Although transmigration was limited during Repelita I and II, the number of settlers participating rose rapidly during Repelita III. Further expansion was planned during Repelita IV, but budgetary constraints reduced the number of settlers sponsored by the government, although there was a considerable increase in the proportion of unassisted spontaneous transmigrants.

During Repelita III, the Eastern provinces began receiving increasing numbers of settlers while the number of settlers to Sumatra peaked and have since decreased. Kalimantan especially, has increased its share of the total amount of transmigrants to over 27% in Repelita VI (Table A.10.1). Comparing Central Kalimantan and West Kalimantan, the larger number of transmigrants were settled in West Kalimantan.

Table A.10.1 Number of Transmigrants by Repelita

(Unit: households)

Region	Replita I	Replita II	Replita III	Replita IV	Replita V	Replita VI (Plan)	Total
Sumatra	23,163 (58.8%)	33,953 (54.4%)	326,032 (60.9%)	452,802 (60.4%)	155,829 (58.7%)	278,131 (46.4%)	1,269,910
Kalimantan	5,378 (13.6%)	13,160 (21.1%)	104,902 (19.6%)	199,236 (26.6%)	60,631 (22.9%)	164,533 (27.4%)	547,840
West Kalimantan	925	4,120	28,598	8,050	23,962	67,400	133,055
Central Kalimantan	1,252	1,200	18,757	15,255	9,545	36,478	82,487
South Kalimantan						17,500	
East Kalimantan	2,812	4,000	12,672	17,263		43,155	
Sulawesi	10,444 (26.5%)	14,380 (23.1%)	67,051 (12.5%)	63,287 (8.4%)	29,166 (11.0%)	69,646 (11.6%)	253,974
Nusa Tenggara & Timor Timur	0	0	2,352 (0.4%)	3,073 (0.4%)	2,751 (1.0%)	20,480 (3.4%)	28,656
Maluku & Irian Jaya	451 (1.1%)	871 (1.4%)	35,137 (6.6%)	31,752 (4.2%)	16,882 (6.4%)	67,210 (11.2%)	152,303
Total for Eastern Provinces	16,273 (41.3%)	28,411 (45.6%)	209,442 (39.1%)	297,348 (39.6%)	109,430 (41.3%)	321,869 (53.6%)	982,773
Total for Indonesia	39,436	62,364	535,474	750,150	265,269	600,000	2,252,693

Source: Ministry of Transmigration and Forest Squatter Settlement (1997)

The government has tried to diversify the models of the program and emphasis has moved from the food crop model to PIR-Trans, HTI-Trans, fishery and livestock models, etc. However, except for PIR-Trans and HTI-Trans, most of them have not been well developed. The government has also encouraged increasing spontaneous transmigration without government

support and the local participation. The plan shows that in West Kalimantan 82% of all transmigrants are following PIR-Trans and in Central Kalimantan 68% are involved in the food crop model while 20% are involved in HTI-Trans.

2) Impact of the Programs on Regional Development

The transmigration program in West and Central Kalimantan has made a considerable contribution to population growth especially during the period of accelerated migration during Repelita III. The transmigrant share from outside Kalimantan of the total provincial population of West and Central Kalimantan has been increasing gradually reaching 6.6% and 12.8% in 1995 respectively. However, analysis the number by subdistrict, the transmigrants have more influence on population growth (Figures A.10.1, A.10.2, and A.10.3).

The other thing that should be considered is that the share of the local participation in transmigration sites has also been increasing, accounting for 35.4% of total transmigrants in West Kalimantan and 14.9% in Central Kalimantan in 1996 (Table A.10.2).

Table A.10.2 Local Participation in Transmigration

(Unit:persons)

	West Kalimantan		Central Kalimantan	
	Transmigration	Share of Total	Transmigration Settlements	Share of Total
	From West Kalimantan	Total Transmigrants	From Central Kalimantan	Total Transmigrants
Pre-Pelita	0	-	0	-
Pelita I	0	0.5%	0	1.2%
Pelita II	2,008 (11.3%)	-	266 (5.1%)	-
Pelita III	23,967 (19.6%)	6.1%	5,828 (7.4%)	8.2%
Pelita IV	12,819 (38.6%)	6.0%	8,447 (13.5%)	11.5%
Pelita V	50,120 (49.6%)	8.6%	10,906 (29.4%)	13.1%
Pelita VI *	41,664 (48.9%)	10.1%	7,025 (20.7%)	15.0%
Total	130,578 (35.4%)	10.1%	32,472 (14.9%)	15.0%

Source: Kanwil Department Transmigrasi dan PPH, West Kalimantan, Central Kalimantan, 1997.
* 1994-1996 in West Kalimantan, 1994-1995 in Central Kalimantan

The target share of the local participation of 50% has not been achieved yet in either province. In addition to the population growth and population density, since almost all available land in West Kalimantan has already been developed, the additional transmigration will be a burden on the environment in West Kalimantan.

Different ethnic groups have migrated and mingled with the local people. The government and plantation and timber companies have also influenced the local people. Some transmigration sites have been established by sacrificing the lands and lifestyles of the local people. This has contributed to increasing ethnic tension which leads to destabilizing economic and cultural growth.

West Kalimantan's share of inter-provincial transmigrants was small by the end of Repelita III but it increased to nearly half by the end of 1995. Resettlement locations were primarily centralized in the district of Pontianak later changing to the district of Sintang in West Kalimantan and the district of Kapuas in Central Kalimantan. Recently, other districts have been included, such as Ketapang and Sanggau in West Kalimantan and Kotawaringin Barat and Kotawaringin Timur in Central Kalimantan.

At the early stage, the settlements were located mainly in the coastal and downstream areas. They have been constructed along the roads and the remote areas in mid-stream areas without regard to soil conditions due to road development (Figure A.10.1).

(2) Policies and Programs Underway

1) Repelita VI and VII and PJP II

The main policies in Repelita VI are directed towards a) encouraging transmigration to the eastern part of Indonesia, b) supporting regional development, c) alleviating poverty, d) stimulating spontaneous migration, e) developing agro-business, agro-industries and other enterprises in transmigration areas, f) strengthening the institutional framework of the transmigration program, and g) developing quality of human resources. They cover most of the targets of PJP II. The quantitative target number of transmigrants in West Kalimantan is the placement of a total of 54,400 families, in Central Kalimantan with a total of 30,478 families.

In addition to the transmigrants from outside Kalimantan, indigenous people doing shifting cultivation have also been encouraged to follow the schemes and practice sedentary farming in cooperation with the Ministry of Forestry. The government policy for the settlement of shifting cultivators is based on administrative, environmental and social objectives. However, the actual number of shifting cultivators who have joined the program has not been calculated yet.

2) PLG Project in Central Kalimantan

The one million hectare (PLG: Pengembanga Lahan Gambut) project plans a resettlement of 316,000 families in Central Kalimantan during the period 1996/97-2001/2002. For the increase of local participation, priority is given to 3 groups, namely, a) forest squatters and illegal goldminers, b) the poor, and c) people who will be affected by this project. The local participation rate is fixed at 60%. The study for land suitability and project feasibility has been conducted along with the project implementation. Under the circumstances of economic recession, the revision of the plan may be considered. Also, with another consideration of a large number of unemployment, this project may have a significant role.

(3) The Future of the Transmigration Programs in West and Central Kalimantan

West Kalimantan has been planning that the number of transmigrants will still increase during Repelita VI and VII focusing on PIR-Trans. However, the population capacity to be supported by agriculture including oil palm plantation, calculated by our team based on the present conditions, has found that it is impossible to support even the present rural population in West Kalimantan (Table A.10.3).

Table A.10.3 Population and Estimated Capacity of Agricultural Population

(Unit:1,000 persons)

	West Kalimantan	Central Kalimantan
Capacity in Agriculture in 2018	2,820	2,226
Upland	1,319	1,021
Lowland	1,389	1,076
Swidden-agroforestry	113	129
Rural Population in 1995	2,848	1,261
Target in 2018	3,672	2,311

Source: SCRDP, Discussion Paper No.12, Goal of Regional Development for Kalimantan: Back to the Basics, the Sustainability of the 'Kalimantan System', 1998

The food crop model has been criticized since it is mostly located in infertile soils and cannot increase the incomes of the transmigrants. PIR-Trans is dependent largely on both soil condition and the quality of the companies. According to the target of Repelita VII, about 60,000 households are planned to be settled under the PIR-Trans in West Kalimantan. However, the new land development for transmigration programs cannot be implemented in West Kalimantan because most of the available land has already been developed and occupied by human settlements. The population density is 25 persons per km² and still increasing. On the other hand, Central Kalimantan with its low population growth and population density still has possibilities for transmigration development.

The typical scheme of transmigration consists of about 2,500 families (5 units of 500 houses constitute one settlement), which occupies more than 10,000ha of land. Since the existing village (dusun) is usually formed of 50-100 households, the impact of transmigration on the local villages is excessive. The size of the transmigration settlement should be reduced according to the local conditions/capacities such as natural resources. The large scale scheme implanted in and around the existing communities is problematic from socio-cultural and environmental aspects. Also, considering the burden and capacity of the local government after transference, the effects of the size should be taken into consideration during the planning stage.

Figure A.10.1

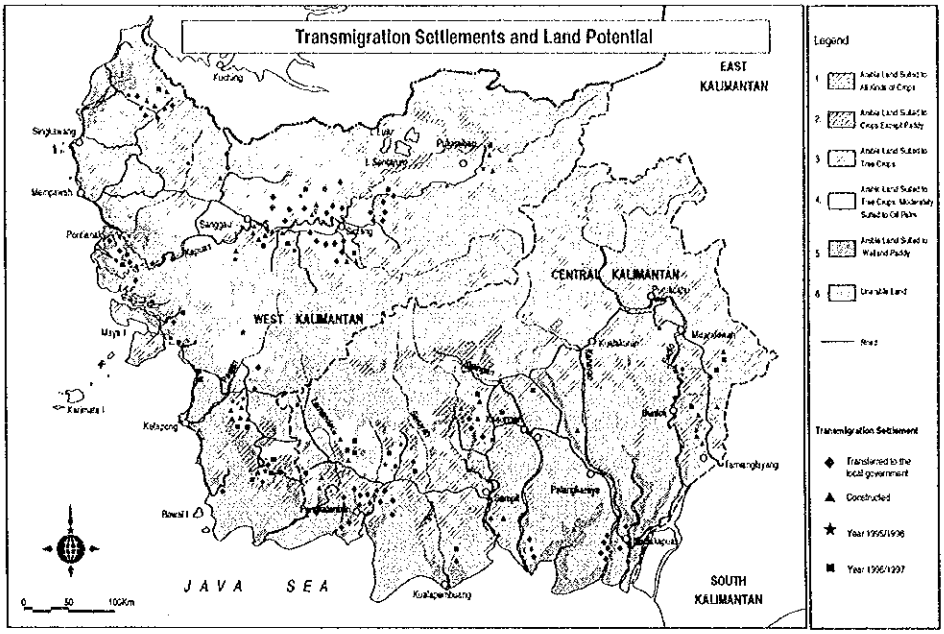


Figure A.10.2

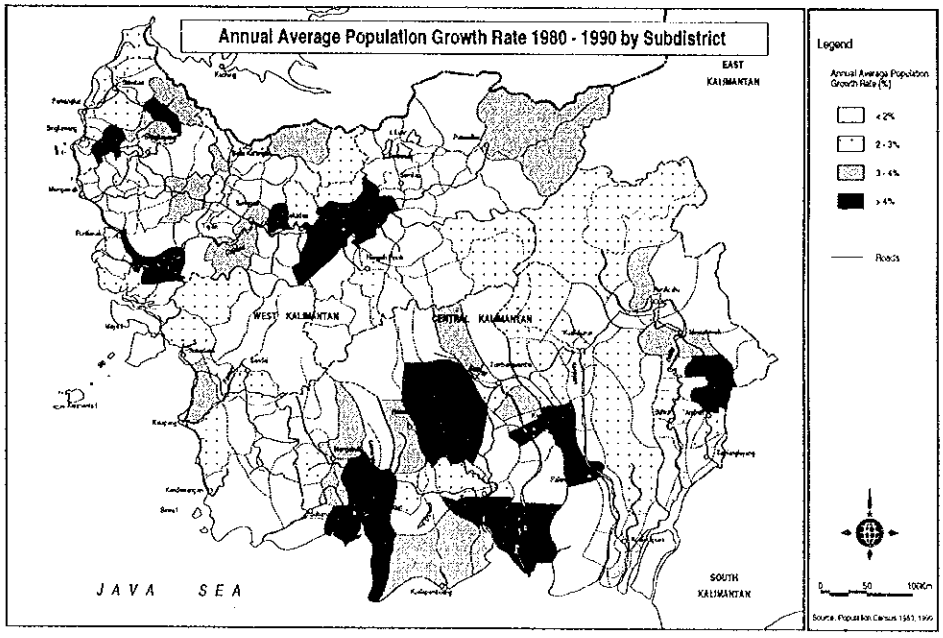
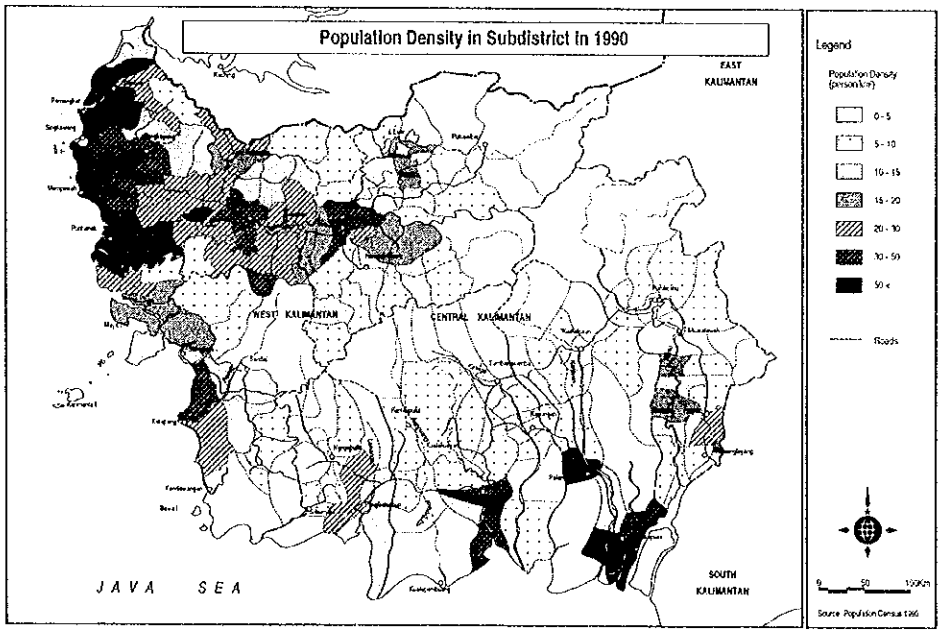


Figure A.10.3



A.11 RURAL DEVELOPMENT / POVERTY ALLEVIATION

The poverty situation in Indonesia has changed in the last twenty years. In particular, the regional distribution of the poor has greatly changed. Twenty years ago, two thirds of Indonesia's poor lived in rural Java and one fifth was in the rural outer islands.

Now one third of the poor live in rural Java and another one third of the poor are in the rural outer islands. There has been a general decrease of poverty in Indonesia, especially in rural Java. However, the number of rural poor in the outer islands has decreased slowly while the overall poverty rate has stagnated at around 30%. One fifth of the total of Indonesia's poor is in urban Java and is increasing.

Indonesia has achieved a remarkable reduction in the overall poverty incidence in the last twenty years. In the first ten years, the poverty rate dropped rapidly, from 40 % in 1976 to 17 % in 1987. In the second ten years from 1987, the decreasing speed of the poverty rate slowed down. In 1996 the poverty rate became 11 %. This trend shows that it becomes more and more difficult to alleviate the remaining poverty. In Java, the poor are scattered in remote areas, which are difficult to be reached by government programs.

On the other hand, the poverty incidence in the outer islands statistically has not shown clear trends of decrease in terms of the population and percentage of the poor. In West and Central Kalimantan, the statistics show that both the population and percentage of the rural poor greatly increased between 1980 and 1993(See Table A.11.1).

Table A.11.1 Trends in Rural Poverty

	Indonesia		West Kalimantan		Central Kalimantan	
Year	Rural Poor (in million persons)	Rural Poverty (%)	Rural Poor (persons)	Rural (%)	Rural Poor (persons)	Rural (%)
1976	44.2	40.4				
1978	38.9	33.4				
1980	32.8	28.4	261,882	13.8	71,942	13.0
1981	31.3	26.5				
1984	25.7	21.2	420,120	n.a.	241,226	n.a.
1987	20.3	16.1	373,659	15.4	133,915	28.6
1990	17.8	14.3				
1993	17.2	13.8	743,725	27.0	269,755	22.0
1996	15.3	12.3	725,885	25.0	162,998	12.7

Source: Most of the data in this table is from BPS, "Peta dan Perkembangan Kemiskinan di Indonesia", Seminar Paper on 16th of July, 1997. Only the data of West Kalimantan and Central Kalimantan in 1980, 1984, and 1987 are from Table 10.18 of The Oil Boom and After, edited by Anne Booth (1992), Oxford University Press

Note 1: The population in poverty is calculated by using BPS's official poverty lines. Note 2: n.a.=not available

Table A.11.2 compares the regional distribution of poverty with the GRDP per capita. This comparison reveals an interesting pattern in regional incomes and poverty. The Kalimantan provinces have a much higher GRDP (excluding oil and gas) than that of the Sulawesi and Nusa Tenggara provinces. However, the Kalimantan provinces' poverty rates are double compared with the Sulawesi provinces and at the similar levels to the Nusa Tenggara provinces. This can be interpreted that the GRDP of Kalimantan does not contribute to poverty reduction by creating enough employment in the natural extraction sectors such as forestry.

Table A.11.2 Regional Distribution of Poverty and GRDP per Capita

Province / Island	GRDP per capita 1990	Urban +Rural 1993	Rural Poverty Rate
Aceh	737	13.5	14.2
North Sumatra	1,063	12.3	12.7
West Sumatra	829	13.5	14.9
Riau	907	11.2	13.5
Jambi	709	13.4	14.4
South Sumatra	1,304	14.9	13.0
Bengkulu	684	13.1	14.0
Lampung	540	11.7	11.6
SUMATRA		**12.9**	**13.2**
DKI Jakarta	2,481	5.6	-
West Java	917	12.2	10.0
Central Java	763	15.8	15.1
DI. Yogyakarta	654	11.8	8.9
East Java	769	13.3	11.7
Bali	1,090	9.5	8.4
JAVA+BALI		**12.8**	**12.0**
West Nusa Tenggara	383	19.5	19.0
East Nusa Tenggara	361	21.8	22.7
East Timor	364	36.2	37.7
NUSA TENGGARA		**22.3**	**22.7**
West Kalimantan	860	25.1	27.0
Central Kalimantan	998	20.9	22.0
South Kalimantan	887	18.6	20.5
East Kalimantan	2,383	13.8	16.6
KALIMANTAN		**20.2**	**22.7**
North Sulawesi	593	11.8	13.0
Central Sulawesi	581	10.5	11.2
South Sulawesi	610	9.0	7.5
Southeast Sulawesi	616	10.8	11.4
SULAWESI		**9.9**	**9.6**
Maluku	809	23.9	28.5
Irian Jaya	742	24.2	28.2
MALUKU/IRIAN JAYA		**24.0**	**28.3**
INDONESIA TOTAL	**956**	**13.8**	**13.8**

Source: BPS, "Peta dan Perkembangan Kemiskinan di Indonesia", Paper Presented at a Training Seminar of Statistics for Journalists on 16th of July, 1997

Indonesia's poverty reduction has been based on the economic growth and the generation of job opportunities. However, the Kalimantan's case of relatively high poverty rates despite relatively high GRDP per capita suggest that Kalimantan's rural poverty will not be reduced by simply seeking economic growth. The persistence of rural poverty suggests that past development efforts have had a limited trickle-down effect.

Most of the indigenous people's livelihood means have not attracted the government policy's attention, except for smallholder rubber plantations. Moreover, the following negative conditions have emerged against the indigenous people's livelihood:

- Monopolization of timber exploitation rights by timber companies. Local HPHs have not been allowed.
- The export ban of raw and semi-processed rattan canes. Now the export ban has been replaced by high export taxes.
- Indigenous people's swidden agriculture has been regarded as a primitive and backward practice. They have been encouraged to convert to intensive and sedentary types of agriculture by the Ministry of Agriculture and other government agencies.
- Very little government resources have been devoted to the improvement of the indigenous swidden agriculture. If any, ready-made projects, which are not suitable for their conditions, have been allocated to them.
- The recently emerging factor is the oil palm plantation development and industrial tree plantation development. Both plantation developments require exclusive landuse, which is different from selective logging operations. In the case of present oil palm plantation development, the local people are asked to surrender their lands to plantation companies, in order to participate in plantation development as smallholders.

On the other hand, in Repelita VI, the government agencies started to devote much of the budget to poverty alleviation programs as follows:

- Inpres Desa Tertinggal Program and Infrastructure Development Program of Backward Villages (P3DT) by Bappenas and the Ministry of Home Affairs
- Isolated Community Program (Program Masyarakat Terasing) by the Ministry of Social
- Small-scale credit programs by BPKM

However, since these anti-poverty programs have not paid attention to the specific local conditions or livelihood situations, they have had little effect in improving their livelihood means.

As described in Section A.4, the extensive agriculture in inland Kalimantan has produced substantial amounts of rubber, rattan and upland rice. Moreover, the secondary forests, formed through extensive agriculture, have the potential as lands for future development, because they contain rich forest species and have fostered the accumulation of local knowledge on forests. In-situ development is really needed for rural development in Kalimantan. The following two points are essential:

- To preserve secondary forests as lands and resources for future development
- To improve extensive agriculture based on more suitable models for local conditions

A.12 ROAD DEVELOPMENT

The essential feature of the transport system in the region was a domination of river transport. The settlements in the region have developed along rivers and the existing town centers have emerged as distribution centers of goods and commodities at the confluence points of the major rivers. The administrative boundaries have also been based on the river system.

Road development in the study area is a relatively new phenomena. Road density in the study area is 0.031 km/km^2, which is far below the Indonesian average of 0.126 km/km^2 in 1995.

Table A.12.1 Comparison of Road Density

	Type of Surface	1985		1988		1992		1995	
		Length km	Density km/km^2	Length km	Density km/km^2	Length km	Density km/km^2	Length km	Density km/km^2
Sumatera	Asphalt	24,647	0.0520	33,375	0.0705	43,676	0.092	49,449	0.104
	Asphalt & Gravel	39,908	0.0843	51,354	0.1084	64,490	0.136	72,607	0.153
Java	Asphalt	36,605	0.2782	41,819	0.3178	53,649	0.408	59,480	0.425
	Asphalt & Gravel	44,626	0.3391	51,321	0.3900	66,521	0.505	73,752	0.517
Bali	Asphalt	2,803	0.5040	3,249	0.5842	4,433	0.797	4,655	0.837
	Asphalt & Gravel	5,947	0.1242	6,097	0.1273	8,281	0.173	5,341	0.960
Nusa Tenggara	Asphalt	4,044	0.0594	4,912	0.0722	7,048	0.104	7,484	0.110
	Asphalt & Gravel	8,663	0.1273	9,319	0.1369	12,013	0.177	12,727	0.188
Timor Timur	Asphalt	387	0.0260	387	0.0260	1,905	0.128	2,572	0.173
	Asphalt & Gravel	1,645	0.1106	1,645	0.1106	2,837	0.191	3,990	0.268
Kalimantan	Asphalt	4,262	0.0080	5,504	0.0100	11,365	0.021	13,200	0.024
	Asphalt & Gravel	8,709	0.0060	9,342	0.0170	16,900	0.031	19,731	0.037
Sulawesi	Asphalt	9,515	0.0503	14,074	0.0744	17,277	0.091	20,311	0.107
	Asphalt & Gravel	19,991	0.1057	27,233	0.1439	29,946	0.158	32,822	0.173
Maluku	Asphalt	1,312	0.0180	2,250	0.0300	3,185	0.043	3,882	0.052
	Asphalt & Gravel	2,730	0.0370	3,642	0.0490	4,098	0.055	4,999	0.067
Irian Jaya	Asphalt	861	0.0020	1,459	0.0030	2,709	0.006	3,421	0.008
	Asphalt & Gravel	1,815	0.0040	2,726	0.0060	4,815	0.011	7,173	0.017
Indonesia	Asphalt	84,436	0.0440	107,029	0.0560	145,247	0.076	172,695	0.090
	Asphalt & Gravel	131,791	0.1080	160,611	0.0840	206,697	0.108	241,527	0.126
Study Area	Asphalt	1,983	0.0070	2,761	0.0090	5,192	0.017	5,192	0.021
	Asphalt & Gravel	3,878	0.0130	4,176	0.0140	7,412	0.025	7,412	0.031

Source: Statistik Indonesia

Road construction in the study area started in the 1970s, when logging companies established logging camps in the upper stream areas of river basins to extract timber. Logs are transported by truck from forest to river and floated to downstream cities. However, logging road development has limited area and usage with minimum impact on regional development activities. In 1981, West Kalimantan had 3,782.5 km of road network of which 12% was classified as a national highway. Central Kalimantan had 2,250 km of road network, including logging roads, with 16.4% classified as national highway. During the period of 1985 to 1995, road development in the region accelerated to reach a growth rate of 7.4% in West Kalimantan and 9.6% in Central Kalimantan. In 1996, the national highway reached 1,468 km in West Kalimantan and 2,505 km in Central Kalimantan. However only 16% of the national highway is paved in Central Kalimantan.

Despite two decades of road construction efforts, there is no road connection among the four provinces of Kalimantan. However, the governments of Kalimantan intend to construct three routes of the Trans-Kalimantan highway. They agree that priority should be given to the southern route which connects the major city centers of Kalimantan, yet some parts of the highway have not yet finished construction, especially near the border of West and Central Kalimantan. They also are faced with the difficulties of constructing on soft soil areas and lacking construction material.

Road development in the region has always been questioned whether it is economically viable. The traffic demand in the region is less than 500 vehicles/day along most sections. Maintenance in soft soil areas require the high costs of frequent repair. However, in the long run, road transport will be a dominant mode of transport in the region because river transport has the weaknesses of reliable services during the dry season and high transportation costs. Recent road network development facilitates the shift of transport mode from a river-based one to a road-based one.

Economic Development

Road-based transport system will change regional economic activities in two ways: land use and spatial structure.

Oil palm plantation development has become a booming economic activity in the area. It has progressed along roads by changing land use from forestry to plantation. In West Kalimantan itself, some 1.3 million ha of land will be converted to oil palm plantations. It means that 2.7 million tons of crude palm oil will be produced by 2018 sharing 10 % of the regional economy in West Kalimantan. A similar development will happen in Central Kalimantan. Oil palm plantations need road and ports in order to transport fertilizer from port, to plantations and to transport FFB from plantations to processing sites. Pavement is often damaged because of heavy axle loads.

A river-based spatial structure is transforming to a road-based one. Roads would have a large impact on the transportation patterns as well as urban and rural linkages of the region. As major cities of each river basin are connected by roads, the distribution of population and commerce has shifted from rivers to roads, changing regional spatial structure as well as economic linkages. Urban functions are forced to change based on road-based spatial structure. Therefore, the road network should be reviewed in line with recent development activities and spatial linkages in the region.

Figure A.12.1 Existing Transportation Network in the Study Area

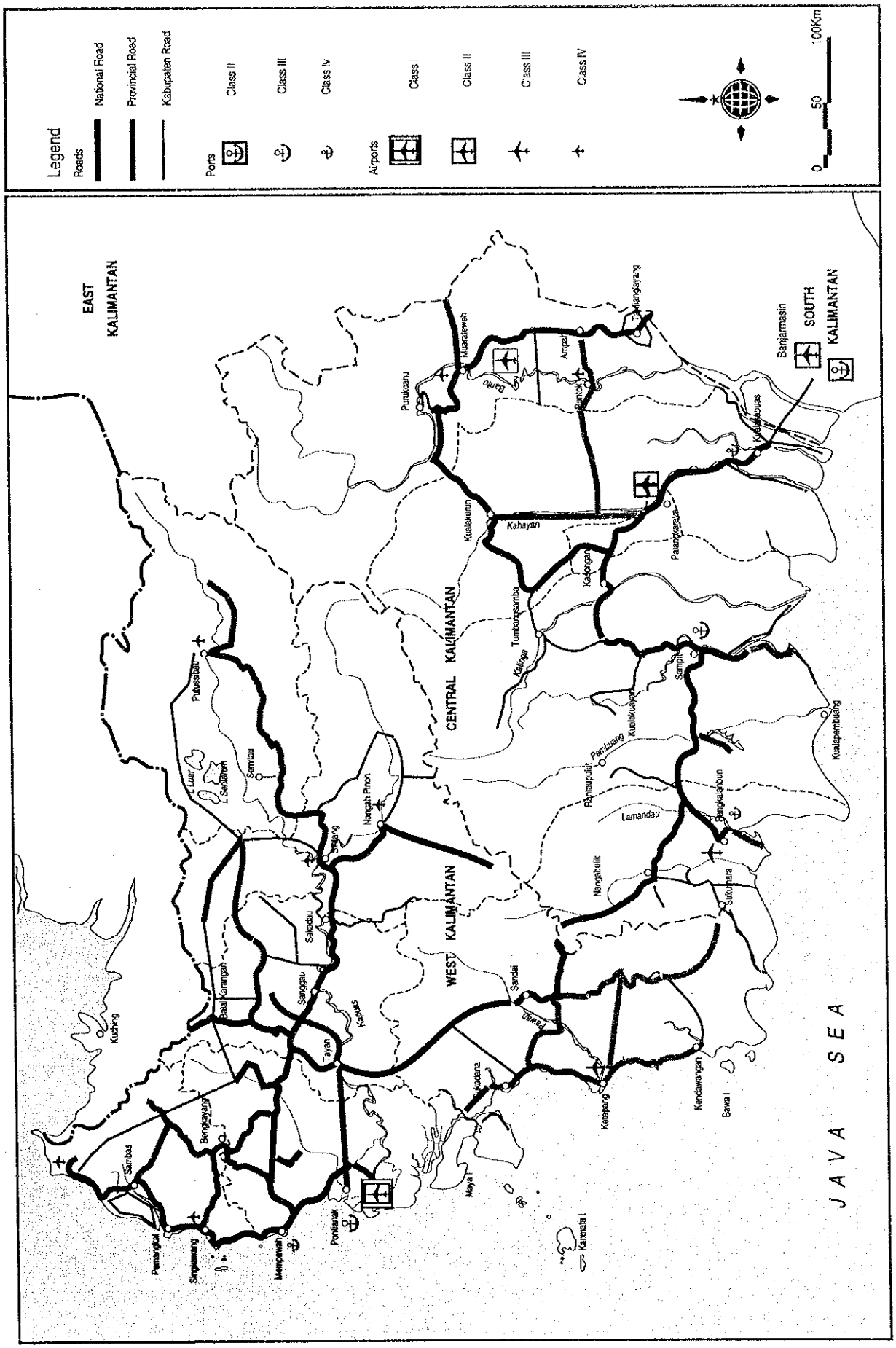
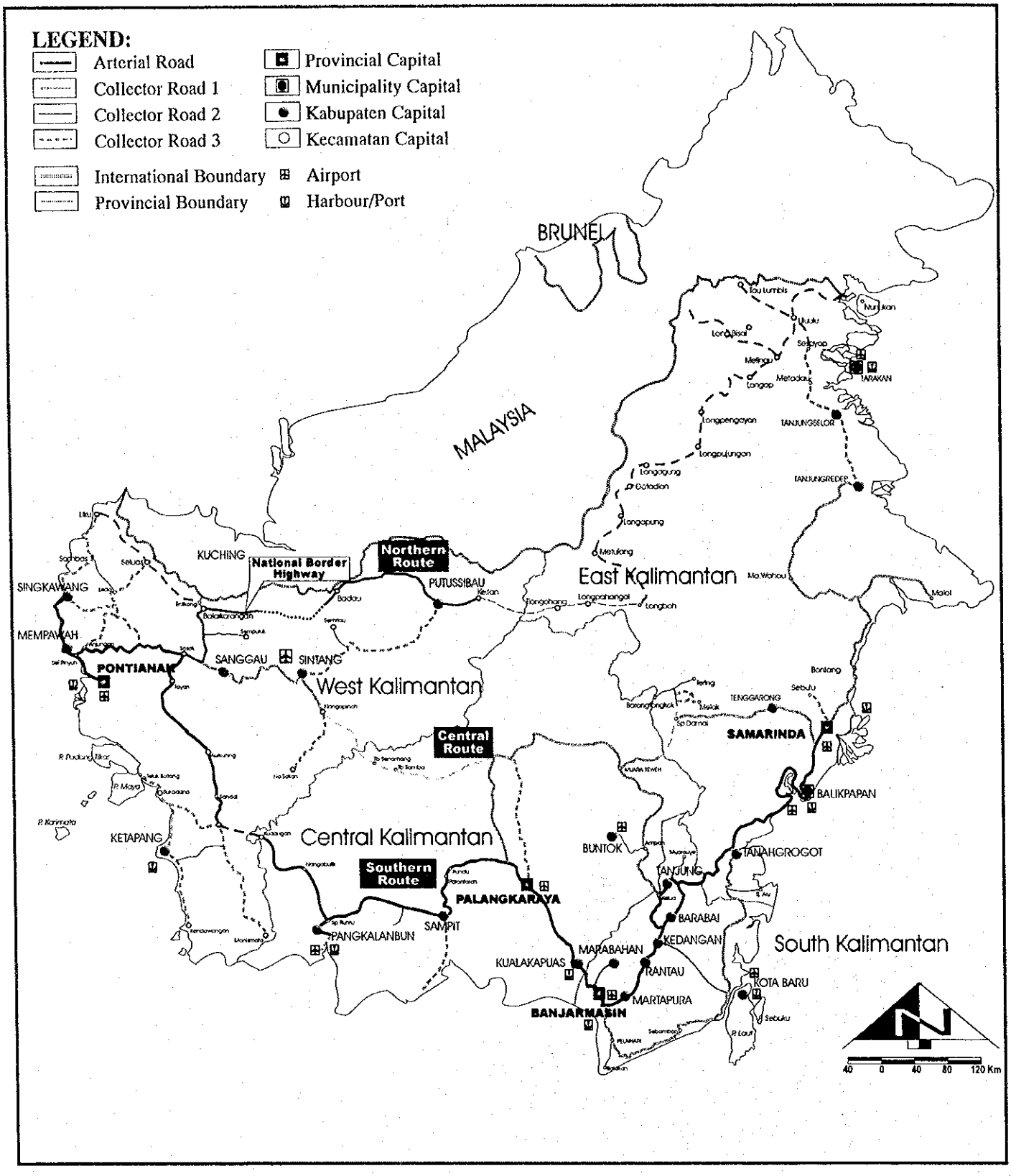


Figure A.12.2 The Existing Plan of the Trans-Kalimantan Highway System



Source: Bina Marga

Natural Resources and the Environment

Demands for flexible transport have increased the dependence on road transport. This dependence tends to raise aggregate energy consumption, generate air pollution and have other environmentally adverse effects. More importantly, road network expansion has increased accessibility to the areas where there are environmentally sensitive primary forests and peat swamp areas. This could damage natural habitats. In fact, illegal logging is frequently found in new road development areas. Protection of those areas is matter of a development policy to limit road construction. It is crucial that roads and other transport facilities should not be built unless there is a policy framework for mitigating a problem.

Social Development

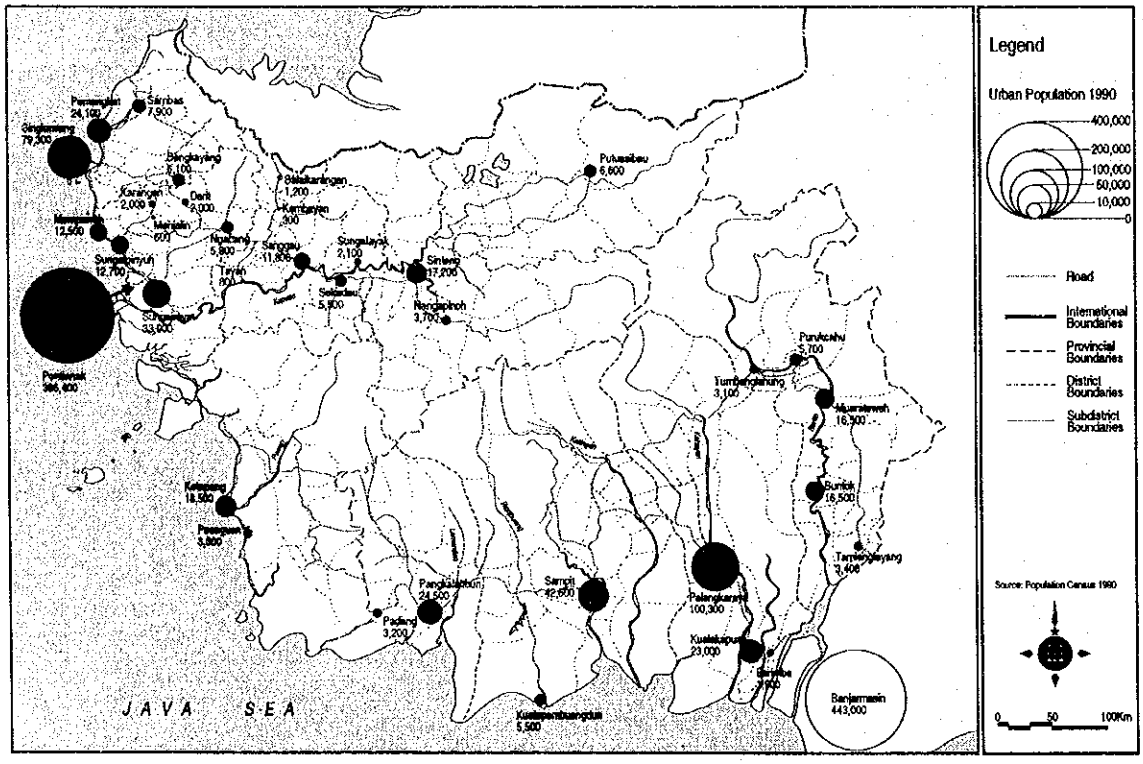
The primary concern for the development of rural roads is basic accessibility to health facilities, schools, jobs, markets and other local facilities as well as a primary road network. Road development also provides space for public utilities such as electricity and telecommunication. The rural road budgets should concentrated on core network maintenance. Participation of local communities to rehabilitate and maintain their roads is required.

A.13 URBAN SYSTEM IN THE REGION

River based Urban System Features in West and Central Kalimantan

Most of the urban centers in Kalimantan have developed primarily along rivers so that a river-based system where rivers are used as sources of water as well as transportation has been firmly established. Usually in Kalimantan, urban centers at the mouth of a river are larger in scale than those in middle and upper stream areas and have developed as major port towns which function as gateways from inland areas to out side the island (see Figure A.13.1).

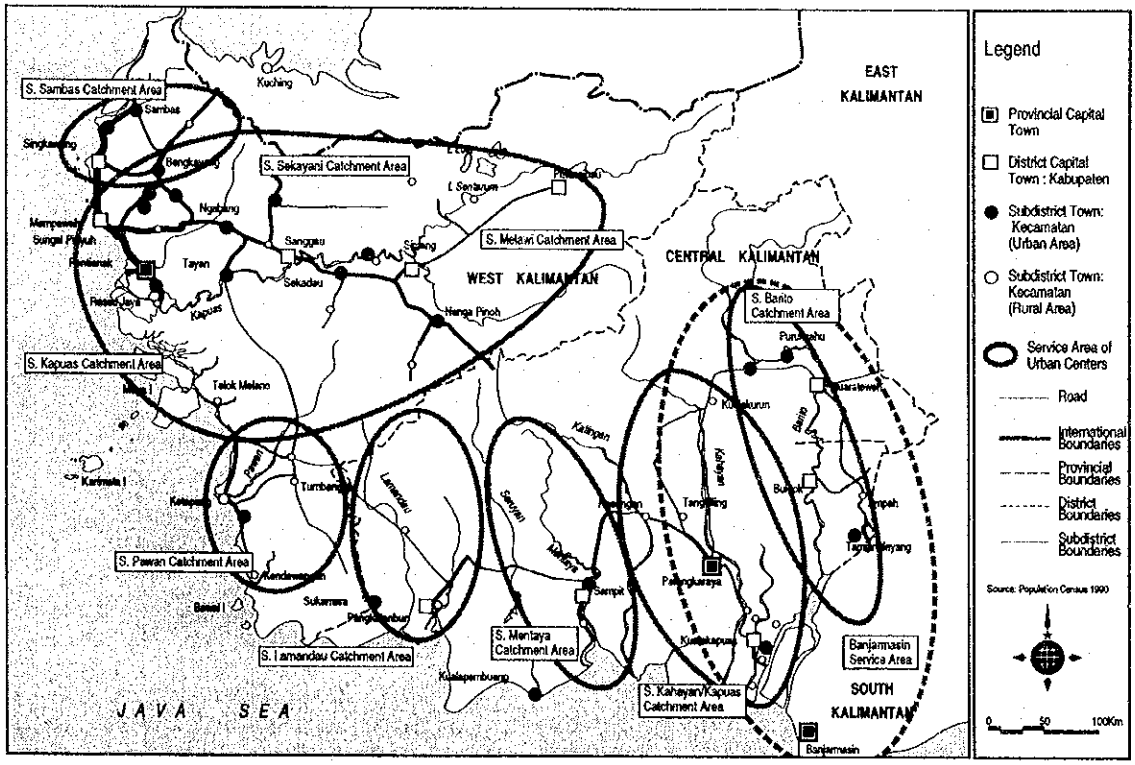
Figure A.13.1 Urban Population of Urban Centers, 1990



The differences among urban systems and features are clearly seen when comparing large and small rivers. In middle and upper stream areas of major large rivers such as the Kapuas River or the Barito River, there are relatively large commercial centers, which have developed at each confluence point. Most of the commercial centers have trading above the upper stream areas and some act as relay points between towns in main streams. The major commercial centers in middle and upper stream areas have been specified as Kabupaten towns or district centers. Comparatively larger commercial centers in middle and upper stream areas of the large rivers, which have administrative units of district level, specified as Kecamatan centers or provincial towns.

Meanwhile in the case of comparatively small rivers, commercial centers at mouth of the rivers have developed as port towns. It is possible the port town serve as distribution centers directly to towns and villages in middle and upper stream because river length is short (see Figure A.13.2). The towns are backward in development in middle and upper stream areas when comparing large and small rivers. Therefore the towns which are specified as kecamatan centers have not developed as commercial centers.

Figure A.13.2 Service Areas of Major Centers: The Present Pattern



The features of urban structure differ greatly between West and Central Kalimantan mostly due to the length of rivers of each province. There are two major rivers in the region. They are the Kapuas river (length: 1,100km) in West Kalimantan and the Barito river (length: 900km) in Central Kalimantan. Due to their lengths , these river basin shave commercial centers of various scales with features which include a developed urban structure hierarchy. However, the Kapuas river is unique in that it covers 70% of province, while the Barito river is located in eastern part of the province , which covers 28%. So that about 70% of Central Kalimantan is divided into several small parallel river basins. The small river basins have few small towns in their middle and upper stream areas with relatively developed port towns near mouth of each river.

The Influence of Road Development on Urban Centers

River-based transport is shifting to road-based transport resulting from road improvement, which connect with inland towns. In the case of large rivers such as Kapuas or Barito rivers, road improvements are weaving their way along the rivers and connect port towns and other towns in down stream and middle and upper stream areas (see Figure A.13.3). In case of small rivers, road improvement connects the down stream area of each river to the down stream area on the next river. (see Figure A.13.4)

Figure A.13.3 Introduction of Road-Based Landuse Pattern into River-Based Regional Spatial Structure: In the case of large rivers

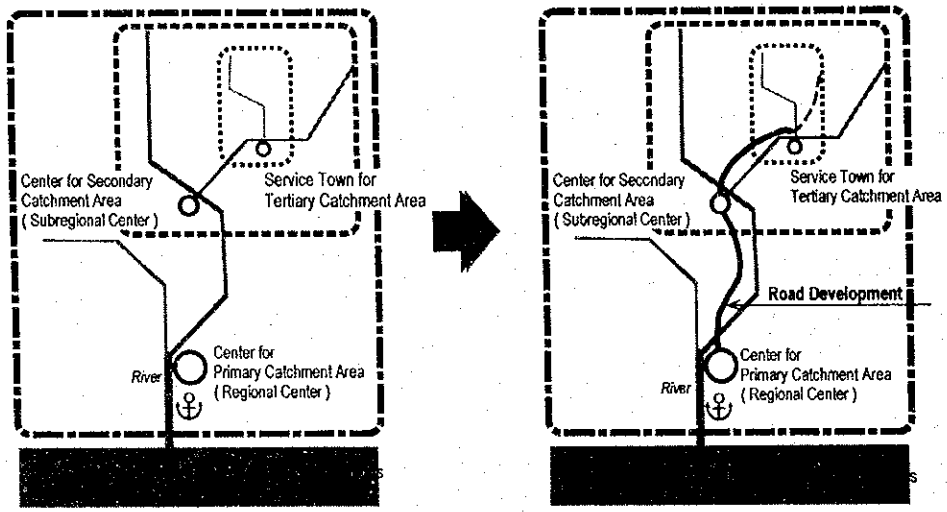
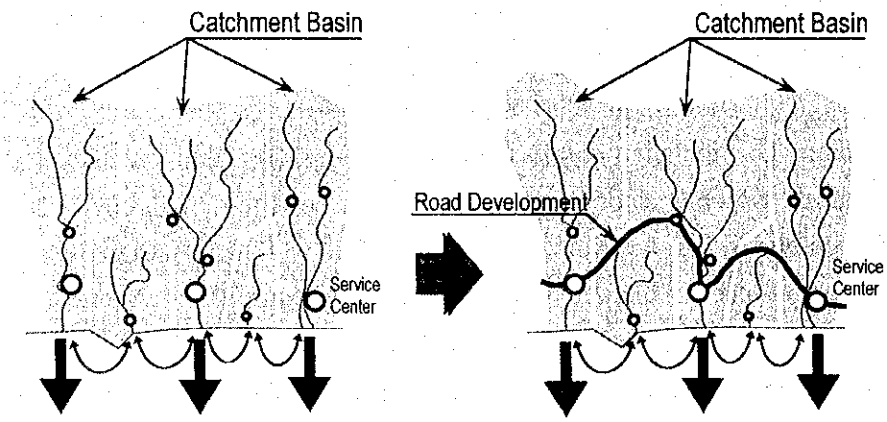


Figure A.13.4 Introduction of Road-Based Landuse Pattern into River-Based Regional Spatial Structure: In the case of small rivers



Existing towns in the large river basins are already beginning to shift their transportation of goods from river to road which is more economical because weather and river flow will have less of an influence on trade and services in the middle and upper stream areas. As roads

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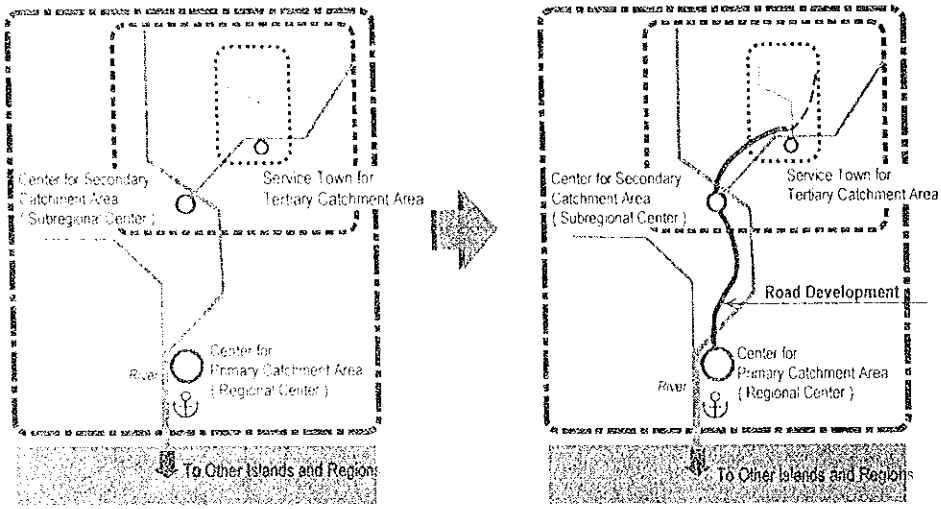

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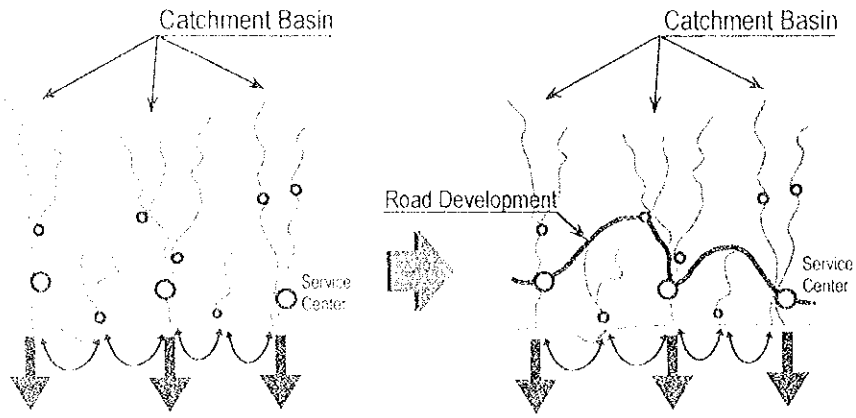
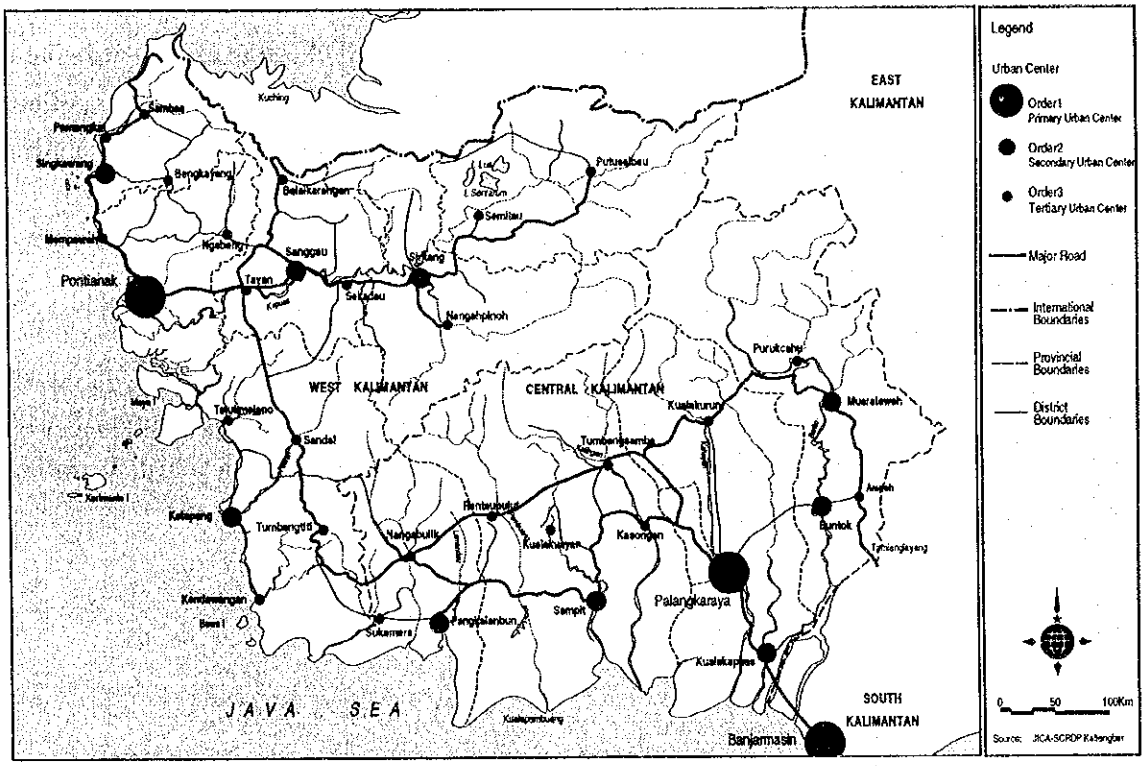


Existing towns in the large river basins are already beginning to shift their transportation of goods from river to road which is more economical because weather and river flow will have less of an influence on trade and services in the middle and upper stream areas. As roads

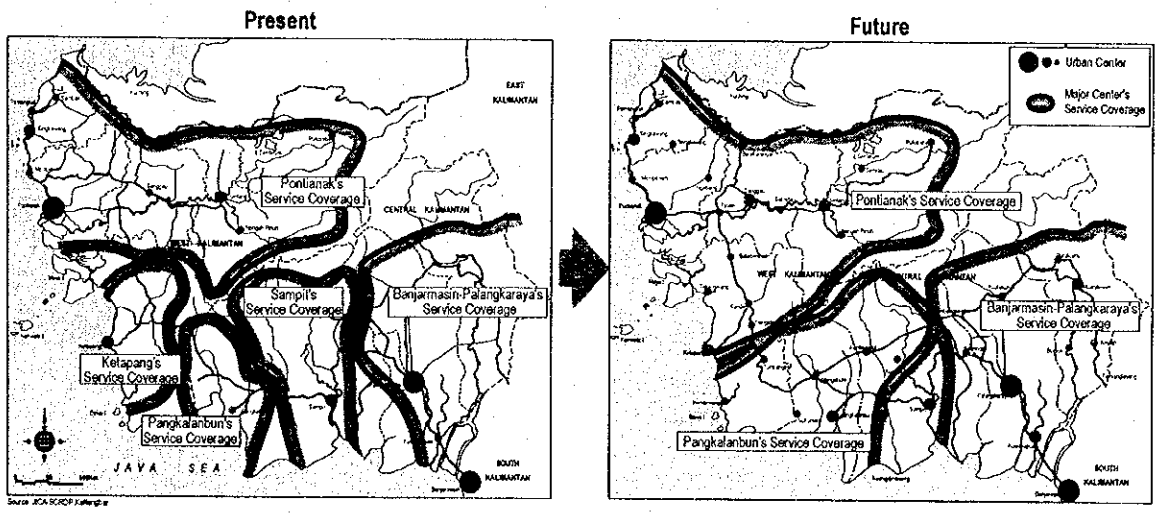
continue to be developed, it is likely that some of towns at confluence points will grow, but some of them will shrink (see Figure A.13.5).

Figure A.13.5 Future Service Area of Order 3 Urban Centers



Roads connect with each small river basin and reach to major town in middle and upper stream area of large river. Service area formed in each small river basin will expand. Because main commercial center will be change from at mouth of river to junction point with road networks (see Figure A.13.6). It is clear that road-based trading will make hierarchy of towns in small river basin.

Figure A.13.6 Changes in the Service Coverage or Regional Centers



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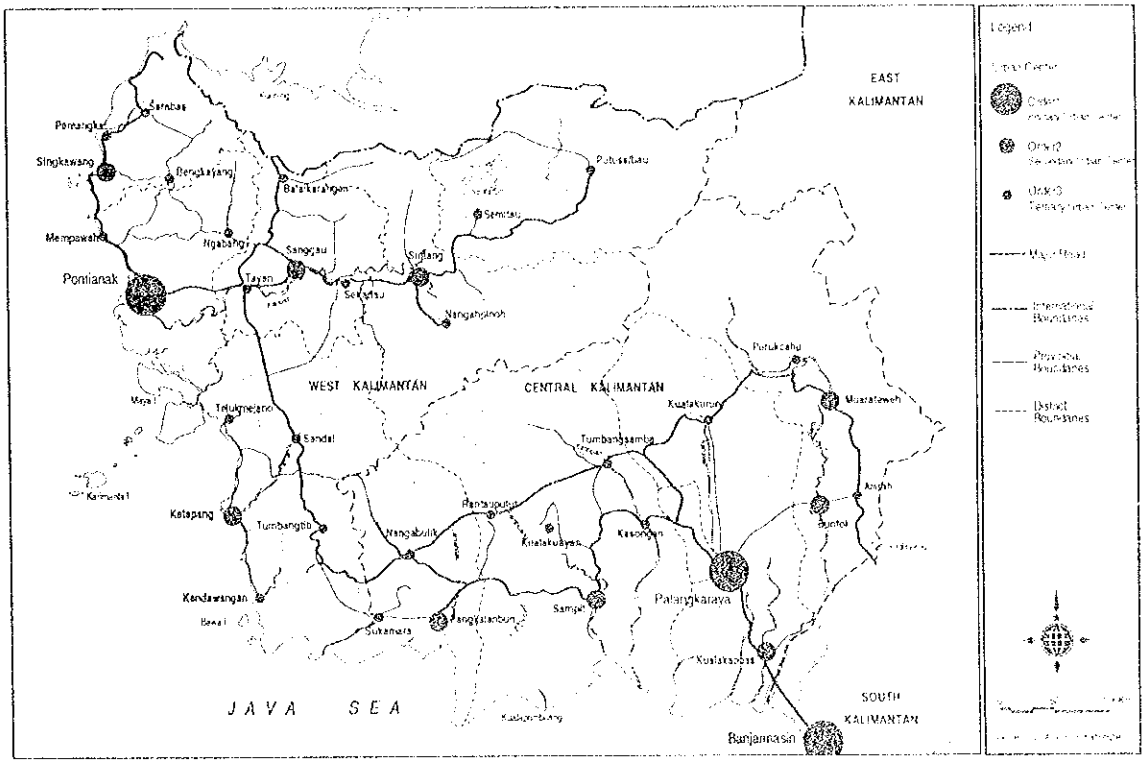

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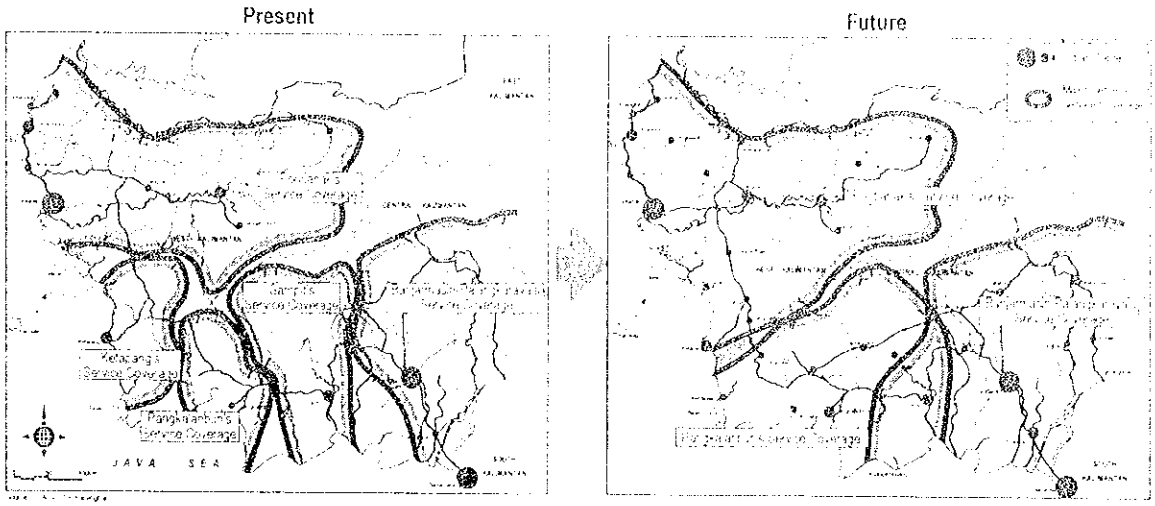


Although urban structures and hierarchy are in the process of shifting and the population is increasing rapidly, present provincial urban structure plans are still river based. These plans should be revised in order to respond to the rapid changes now taking place and to minimize the negative impacts in urban development on the river.

Rivers in the region are used as sources of water for drinking and cleaning as well as being used as sewers. With the present space population, the rivers are able to handle pollutants. However, as the population is rapidly increasing and urban centers shift to middle and upper stream areas, the river capacity will be in adequate to handle increasing pollution loads. This will be a serious problem for all people in Kalimantan us they relay on rivers as sources of drinking water with the problem especially acute in the lower stream areas.

In conclusion, in order to anticipate the coming urban systems shifts and expansions, comprehensive road based spatial structure plans must be developed by each province with an emphasis on infrastructure development so that development needs are adequately met while environmental impacts are minimized.

A.14 SCHOOL EDUCATION

Human resources development is one of the great concerns of the Indonesian government toward sound and sustainable national development in PJP II. Education is considered as one of the major tools to achieve human resources development.

(1) Basic Education

a. Policies and the Situation

The implementation of a nine-year compulsory education for universal basic education is the main challenge for the government of Indonesia during Repelita VI. In line with this program, improvement of education quality is also addressed. In order to achieve this objective, the minimum educational requirements for teachers have been upgraded: two-year post senior secondary school diploma (D2) for primary school (SD) teachers and three year post-senior secondary school diploma (D3) for junior secondary school (SLTP). The main actions taken by local authorities in West and Central Kalimantan are: new school and classroom construction and rehabilitation, and an increase of the number of teachers for both SD and SLTP.

Despite much input, pupil / student enrollment is still low: Net Enrollment Ratio (NER)[11] of SD and SLTP in 1997 / 98 are at 88% and 45% in West Kalimantan and 85% and 49% in Central Kalimantan. Moreover, a significant ratio of children drop out from school. The present situation in remote areas illustrates the factors which prevent universalization of basic education.

At small-scale SDs in remote areas, the teachers are isolated from the link with government authorities which supervise and provide necessary services to them and their schools. This isolation induces their de facto autonomy. In addition, some of teachers from outside are reluctant to be posted in remote areas and try to find a chance to move to a town area as soon as possible. They sometimes do not stay in the villages but commute to schools from the nearest towns if possible. Such situations deprive teachers of dedication and sense of responsibility toward local education. It results in the fact that curriculum is not implemented in a proper manner, instructional time is decreased and textbooks and readers are lacking. Moreover, very few teachers have to handle more than a one grade-class as well as school management. Consequently, the pupils are poor in their performance, drop out, repeat same grade, and have difficulty to continue learning through their successive schooling while the school management is inadequate.

[11] NER for a level of education is drawn by the total number of pupils/students in the specific schooling age enrolled at that level divided by the total population in that age bracket to that level of education.

Most parents want to give their children the best education possible but they admit to their economic difficulties which is one of the reasons preventing children from going to school. The economic problem can not be solved by efforts of the education sector alone. However, it is possible that some pupils / students do not need to give up school if their SD teachers do their own duties.

Moreover, the recent change of the minimum educational requirement tends to worsen this situation because: (1) it narrows opportunities to become an SD teacher for rural people who are willing to become teachers and work in their locality but cannot afford the cost of higher education, and (2) high educational attainment is rewarded by a low salary in return for heavy duties and responsibilities which SD teachers have to undertake.

b. Implication

In order to achieve universal basic education in Kalimantan, improvement of SD education is essential to enable children to proceed to SLTP smoothly. Therefore, the role of SD teachers is very important and their quality cannot be measured simply by educational qualification. The most important points are: (1) how to encourage or oblige teachers to devote themselves to their own jobs and; (2) how to get rid of the discouraging factors to them. The current policies do not pay enough attention to these points but put more emphasis on quantitative expansion. In order to make an SD in a rural area function efficiently, community participation should be further emphasized.

(2) Senior Secondary Education and Employment

a. Policies and the Situation

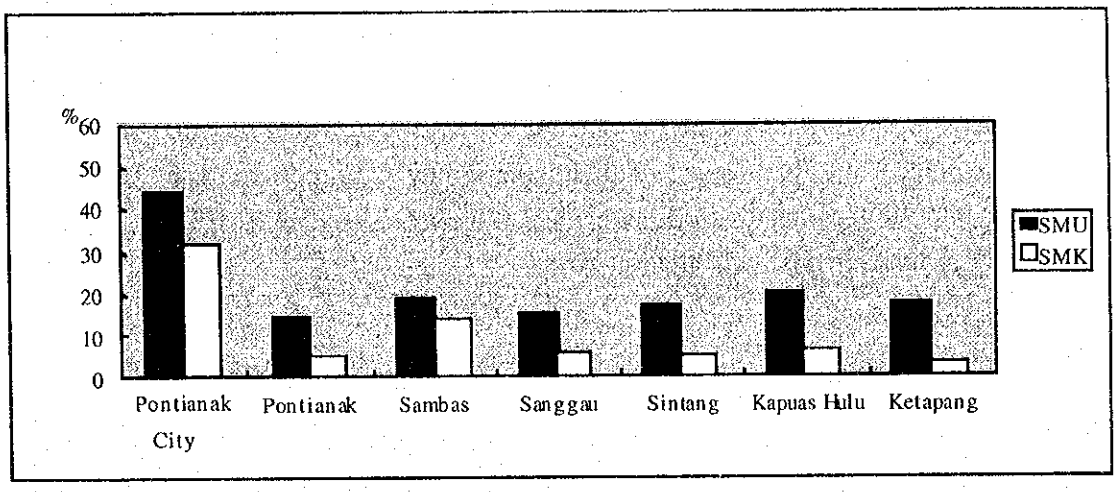
In reference to senior secondary education, Repelita VI puts strong emphasis on vocational training. The government considers that human resources must be sufficiently trained to respond to the demands of a rapidly growing national economy so as to keep the country's competitive position in the world economy. Senior secondary education, therefore, will play an important role in imparting the appropriate skills and knowledge to the young who will undertake the country's economic development.

Within West and Central Kalimantan, student enrollment in senior secondary schools (SLTA) varies among regions. The gap of the overall Gross Enrollment Ratio (GER)[12] between the two provincial capitals and other districts is very wide. Comparing the GER of general senior

[12] GER is calculated by the total number of pupils/students of all ages enrolled at that level divided by the total population falling into the schooling age bracket for that level of education.

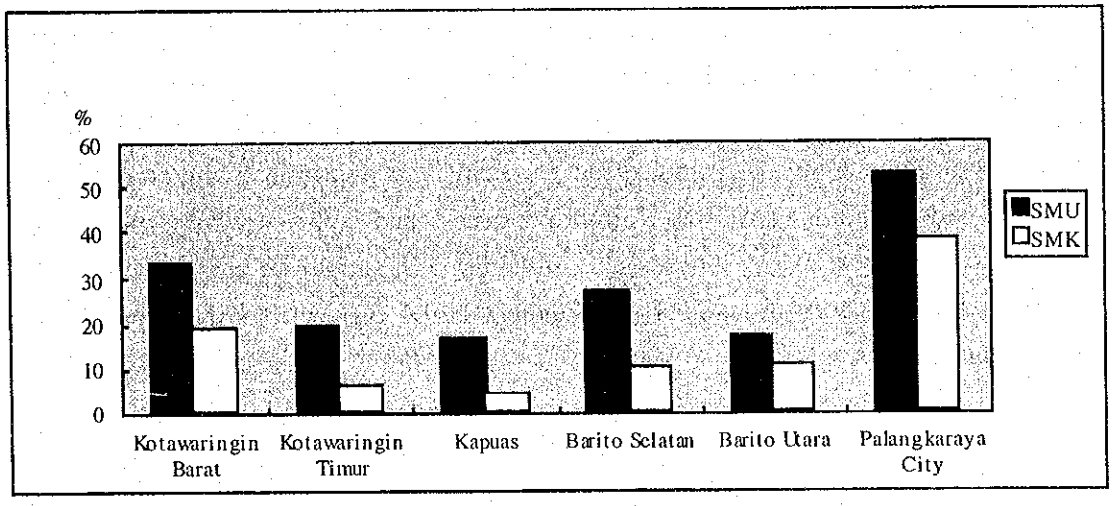
secondary schools (SMU) to that of vocational senior secondary schools (SMK), the gap between these two is not so remarkable in the provincial capitals while there is quite an obvious gap in the case of other districts. In both regions, however, SMU enrollment is larger than SMK (Figure A.14.1 and A.14.2). This situation is reflected in the following facts.

Figure A.14.1 Gross Enrollment Ratio(GER)of General (SMU) and Vocational (SMK) Senior Secondary School by Districts in West Kalimantan



Source: Kandep, *Laporan Profil Pendidikan Tahun 1997/98,* Kalimantan Barat (District level education statistics)

Figure A.14.2 Gross Enrollment Ratio (GER) of General (SMU) and Vocational (SMK) Senior Secondary School by Districts in Central Kalimantan



Source: Kandep, *Laporan Profil Pendidikan Tahun 1997/98,* Kalimantan Tengah (District level education statistics)

There is a larger number of SMUs more evenly distributed among most of the sub districts while limited numbers of SMKs are located in only a few sub districts or only in a district town. Therefore, children in rural areas have no choice other than going to the nearest SMU even if they want to continue at an SMK because they cannot afford the cost for transportation or boarding or the school fee. Even if they can afford the cost, they have to pass competitive exams to enter SMK because senior secondary education is not compulsory and the capacity of

SMKs are quite limited. In urban areas, such as provincial capitals, on the contrary, a number of both public and private SMKs are available so that children from well-off families in rural areas also come in order to go to school as well as those from the urban area.

Employment situation of SLTA graduates is not so sound. The ratio of population whose education attainment is SMU is considerably large among those who have no jobs and are looking for jobs in the urban areas of both West and Central Kalimantan. If added with those of SMK, the ratio is very large. In rural areas, to become a government employee at the sub district or district level, or a teacher was the expected path of SLTA graduates in the past. At present, however, employment opportunities are far more scarce than before. The young just stay at their villages and are engaged in traditional family farming activities. Otherwise, for instance in some villages, males work as manual wage laborers such as in gold mining while females work as housemaids in the towns.

b. Implication

In Indonesia, as a whole, only a very few number of people can proceed to higher education institutes such as university and can successfully complete their schooling. Therefore, such limited numbers of "elite" cannot satisfy the growing demand for highly qualified manpower on the labor market. It means that SLTA graduates are greatly expected to work not only as skilled labor but also as technicians, specialists, or management staff in future. In West and Central Kalimantan, however, present employment opportunities for SLTA graduates are low since development of the modern formal sector is still slow and limited. Therefore, underemployment is not an unusual phenomena. In order to break through this situation, enhancement of vocational education should be promoted more to provide a well-trained and competitive work force to the labor market as well as to improve access and equity toward senior secondary education in rural areas. More substantially, in addition, it should be strategically planned in response to the direction of regional development based on each of the region's specific potentials and features.

A.15 THE HEALTH SECTOR DEVELOPMENT

(1) Overview

In the last 25 years Indonesia has been able to improve the health status of the nation. The Infant Mortality Rate (IMR) has fallen approximately from 90 per 1000 livebirths in 1970 to 57 in 1994 while the Child Mortality Rate (CMR) has dropped from 166 to approximately 80 per 1000 livebirths. The prevalence of malnutrition has decreased significantly. There has been an increase in the number and the improvement of public health facilities.

Although there have been significant increases of the total expenditure on health, which increased from 0.2% of GDP in 1970 and to 2% in 1990 of GDP, 70% of which come from private sources. It is still considered low as compared with the ASEAN countries such as Thailand, 5.4% (1992) and other ASIAN countries such as China, 2.9% (1993). Table A.15.1 shows the level of funding.

Table A.15.1 The Structure of Health Expenditures
(Rp. Billions, in 1993/1994 price)

	1984/85	1987/88	1992/93	1993/94	1994/95	Growth of Spending[1]
Government	**1188.0**	**1076.8**	**2030.4**	**2010.1**	**2062.7**	**7.8**
Center	1014.3	874.6	1704.7	1687.9	1702.1	8.0
Level I	125.4	120.7	137.9	136.4	150.9	1.4
Level II	48.2	81.5	187.8	185.8	209.6	12.4
Aid donors	66.1	45.2	318.3	215.0	348.8	31.5
Private	**2872.0**	**3336.2**	**4011.2**	**3910.0**	**4158.0**	**1.3**
Out of Pocket	2226.5	2605.3	3023.0	2954.0	3128.0	0.8
Corporate	158.8	230.8	386.8	375.3	405.5	6.4
Parastatal	289.5	347.7	420.5	407.9	440.8	1.6
Insurance	197.2	152.5	180.9	172.8	183.8	0.9
Total	4126.1	4458.2	6359.8	6135.1	6569.5	3.8

Real per capita, in % per annum ; 1987/88 to 1994/95
Source: Private Data files Dr. A. Ridwan Malik. LITBANKES, Department of Health.

Despite of these tremendous achievements, there are significant differences in the health status and utilization of health services among the region of Indonesia. There are also differences in IMR and CMR between provinces in the region (Table A.15.2).

Table A.15.2 IMR and CMR in the Provinces of Java/Bali and Kalimantan

Regional/Province	IMR 1995	CMR 1995
Java/Bali		
Jakarta	30	36
West Java	66	91
Central Java	52	68
Jogjakarta	36	44
East Java	50	66
Bali	38	47
Kalimantan		
West Kalimantan	62	85
Central Kalimantan	43	54
South Kalimantan	72	100
East Kalimantan	43	55
West Nusa Tenggara	105	146
INDONESIA	55	73

Source: Indikator Sosial Wanita Indonesia, 1995

Among provinces in Java/Bali, West Java has the highest IMR than the other provinces (IMR of 30, 36 and 38 for Jakarta, Jogjakarta and Bali as compared with 66 in West Java in 1995). Similar disparities are also found in Kalimantan (IMR of 43 and 43 for Central Kalimantan and East Kalimantan respectively and 62, and 72 for West and South Kalimantan respectively in 1995). Maternal mortality remains high in parts of the country and the national figures (4.5 per 1000 life-birth) is higher as compared with International figure. The utilization of health services by poor has reached 54% by 1987 but then fell to 44% in 1992.

In addition, the recent trends show the increase of the health resources in hospital (42% of government expenditure in health in 1984 and 50% in 1991) and decrease of proportions allocated to health centers (from 40% of total government health spending in 1984 to 35% in 1991). However, over the last 5 years, the government has made steady progress in improving the composition of health spending. It has steadily decreased the proportion of the expenditure in hospital and increased the share of expenditures in primary health care (Table A.15.3)

Table A.15.3 Government Expenditure on Health by Function (% of total)

Function	1989/90	1994/95
Hospitals	51	41
Primary Health Care	19	26
Communicable Disease Control	2	5
Training	4	5
Other	24	23

Source: Ministry of Health, LITBANKES and Bureau of Planning

The focus of the health sector in Repelita VI is directed to decrease the IMR, CMR and Maternal Mortality Rate (MMR). The high MMR and IMR are associated with the low health status of

women in general and pregnant women in particular, low utilization of medical services especially by pregnant women, lactating mothers and for delivery and unhealthy environment. . The Assessment of Safe mother hood in Indonesia in 1990/1991 found that the social and economic factors influence the utilization services for the improvement of their health status. This has resulted in low accessibility to antenatal and postnatal care and low health status of pregnant women. In addition, the weakness in referral chains has aggravated the problem of maternal death.

The studies conducted in the period of 1992-1996 found that there are three "lateness" factors associated with maternal death namely: the lateness of decision making at family level, the lateness to get transportation to the health facilities and the lateness of receiving of health services in the hospital or health center.

The figure of maternal death in West Kalimantan is much higher compared with the national figure (5.2 per 1000 live birth). Besides the problem mentioned above, the geographical and economic problems have been the constraints for increasing the coverage of the services especially in the unreached and remote areas. In addition, the geographical problem also hinders the information dissemination especially in the very remote areas. From the above analysis, the policies should be made on how to increase the coverage and the quality of health services and how to eliminate factors (non medical) that prevent mothers from utilizing quality health services.

(2) Health Activities And Policies In Maternal and Child Health Program

The following are government activities and policies in increasing the coverage and the quality of health services in reducing maternal death:

Village Level

It is important to promote integrated health services (5 services) in posyandu (village based health services). The problem is that most of the posyandu are still limited, meaning only three health services are available such as weighing, limited consultation and food supplementary feeding. It is very difficult for the health center (puskesmas) staff to attend the posyandu every month due to lack of funding for the supervision and deliver the services.

To establish polindes (village maternal services) is an integral part of puskesmas that is managed by a Bidan desa (village midwife). Bidan desa is expected to provide information, education and consultation (IEC) in maternal and child health (MCH), ante and post natal care for pregnant and lactating women and assist in the delivery in the village. In Kalimantan, many pregnant women are still attended by a dukun (Traditional Birth Attendant, TBA) which are 31,72% for

West Kalimantan and 48,75% for Central Kalimantan respectively in 1996. The problem with Bidan desa is that they are mostly young people and culture bias sometimes prevent pregnant mothers to be attended by them. For example, there is the belief in Tumbang Terusan village, (Central Kalimantan) [13] that a pregnant mother is not allowed to be attended by unmarried or young women. In addition, pregnant women generally trust a dukun more than Bidan desa, because they are respected in the village. They also provide holistic services to the family that the Bidan desa can not, such as bathing the babies several days after delivery, washing clothes and cooking for the family. Moreover, with the scarcity of cash in the village, the TBA does not mind to be paid in kind. The Bidan desa charges the villagers 50 to 80 thousand rupiahs for delivery of which villagers can not afford to pay (case of Sebabas village, West Kalimantan) [14]

There is also a kind of friction between dukun and the Bidan desa regarding the access to patients. Many Bidan desa are reluctant to be assigned to remote areas. As part of the puskesmas, they are expected to be more proactive and able to mobilize the community in the village to participate in preventive and promotion activities. However, most of them do not have the capacity to do that, as the community development principle might not be included in the Midwife's Training Curriculum.

Although TBAs have received training from the government, there should be collaboration between TBA and the Bidan desa so that TBA will receive continuous education from the Bidan. This collaboration might rarely happen in reality. However, there are some Bidan desa who are accepted and able to work together with TBA (case of Tembaga village in Subdistrict of Nangamahap) [15]

Subdistrict Level.

The puskesmas combines all health services (18 activities) for the community. Maternal and child health is one of the essential programs. There are two kinds of puskesmas namely puskesmas with in-patient care and without in-patient care. In puskesmas with in-patient care the services for the basic obstetric emergency is one of the services. The staff of the in-patient care puskesmas are trained in the improvement of the capacity in managing emergency of obstetric neonatal basic services. The standard of procedures is provided too. This allows referral from puskesmas without care. However, the number of puskesmas with in-patient care is still a few in Kalimantan (33.1% for West Kalimantan, 22.5% for Central Kalimantan). The problems with most puskesmas seem to be many. Not all puskesmas have a general practitioner (1docter for 1.13 puskesmas in Central Kalimantan and 1 doctor for 1.31 Puskesmas in West Kalimantan). Many times, doctors are not available in the puskesmas (Bawan village in Central

[13] According the JICA Team field Study conducted in January 1998 in Central Kalimantan
[14] According the JICA Team field Study conducted in December 1997 in West Kalimantan

Kalimantan)[16]. The PTT system (3 years contract) seems to give disincentive for the doctors to be committed to his work. Lack of capacities in planning and management are common in Puskesmas. Lack of facilities, infrastructure and funding for maintenance, program monitoring and supervision are also problems in most puskesmas. The high burden of puskesmas activities has also affected the schedule for reporting and sometimes prohibits it to devote more time in the essential program like MCH program.

In addition to the above puskesmas, the government also provides Puskesling (puskemas keliling,), mobile puskemas by utilizing speedboats for transport to the remote areas or ambulance in areas accessible by road. The flying doctor program is also utilized in the effort to increase the coverage of the services especially in the very remote areas, and is conducted four times a year with the funding from INPRES (Village Development Fund).

District Level.

Hospitals at the district level are designed as the first layer of referral system. The utilization of the hospital in this level is low (Bed Occupancy rate (BOR) of 46.11% in West Kalimantan, 41.47% in Central Kalimantan in 1996). This may be caused by the low quality of the services. The economic reasons have also influenced the use of the services by the poor. The district hospital provides comprehensive emergency obstetric services. Starting from the Five Year Planning (Pelita) V the number of hospitals at the district level has been increased gradually to be C type hospitals. It means that the hospital should have 4 basic specialists provided, such as an Obstetrician Gynecologist, Pediatrician, Internist and Surgeon. Currently, not all type C hospitals deploy the 4 specialist yet, and only 4 district hospitals in Central Kalimantan have an obstetrician. The referral network sometimes does not work, because the hospital does not refer the patients back to a puskesmas in order to undertake the follow up action. Most of the hospital budget comes from the local government and the amount is not enough to cover recurrent costs.

Province Level.

The type B hospitals are provincial hospitals, which are the secondary hospitals for referral. They also receive referral from district hospitals and puskesmas.

[15] According the JICA Team field Study Conducted in December 1997 in West Kalimantan

[16] According to JICA Team Field Study conducted in January 1998 in Central Kalimantan

(3) Gerakan Sayang Ibu (Mother Care Movement)

In order to eliminate the non-medical factors (social economic and transportation factors) influencing the utilization of services by mothers, the Gerakan Sayang Ibu (GSI), a program to help pregnant women has been launched by the government in District of Sambas in West Kalimantan in 1997. This is an integrated program that is implemented at the subdistrict level. The activities include continual assessment of the number of pregnant women and mapping them, the mobilization of community resources to provide the means of transportation for high risk pregnant women if referral is needed (called village ambulance), and exploration of a "Bapak Angkat"(foster father) who can provide the funding for pregnant women from poor families so that they can receive safe delivery services.

(4) Conclusion

From the facts mentioned above, it could be concluded that basically there are three aspects that need to be strengthened in increasing the coverage and quality of services. Those are, the improvement of the standard of procedures in managing the obstetric emergency cases, the provision of equipment and facilities including the maintenance and the increasing of the capacity of the manpower involved in providing the services at all levels. In addition, the function of puskesmas and district hospital seems not to be integrated, meaning that the Puskesmas functionally is not responsible to the district hospital and district hospital is not responsible to assist puskesmas in improving the quality of manpower or services. The referral network sometimes does not work, because the hospital does not refer the patient back to pukesmas in order to undertake follow up action.

According to many studies, improving the quality of services at lower levels would result in greater efficiency in service use and is an appropriate long-term goal. Therefore, allocating more resources to the puskesmas and its periphery, as the primary source of basic health services and to the district hospital as a first layer of referral system seems to be more an effective goal reducing the maternal and infant death. In addition, there should be coordination between puskesmas and the district hospital in managing the referral network. The district hospital as the referral center in its area and as a resource center in terms of technology and human resources, is responsible to develop health services facilities in its referral network. It should be responsible for improving the knowledge and capacity of puskesmas staff. Training is a necessary condition for improving the quality of services in puskesmas but not a sufficient condition. Continuous education through regular supervision, and assistance from hospital specialists would be very beneficial in the long run. However, the puskesmas should be functionally responsible to the district hospital.

The puskesmas may have to focus their activities based on the need of the community so as to reduce the workload. Thus, puskesmas has to have the capacity to conduct community analysis for puskemas planning development.

(5) Related Projects

The H4 project, a World Bank sponsored 5 year project, is basically a quality assurance project aimed at improving the quality of services of the puskesmas. The project provides assistance in the three dimension aspects in puskesmas and a part of related maternal and child health services in the hospital. This project covers all the Puskesmas in West Kalimantan, and provides assistance for initiating the Community health insurance (JPKM) program as the measure to intervene the economic factor influence the decision of family to refer the mother to puskesmas or hospital in the district of Sambas in West Kalimantan. The government is expected to continue the project after it is terminated. With the monetary crisis, it seems to be very hard for the government to take over this project after five years.

A.16 DECENTRALIZATION

(1) Policies and the Situation

Indonesia has been long committed to decentralization. Law No. 5 (1974), which has laid down the foundation for the current system of local administration, clearly states that decentralization is the national policy. The law further stipulates that the ultimate target of decentralization be not will be the province but the district or municipality .

Despite this unambiguous commitment declared in the law, the Indonesian government has been slow to bring the policy into effect. One reason, naturally, has been the reluctance by the central government departments and agencies to delegate their tasks to regional governments. They fear that decentralization would only lead to strengthen the power of the Department of Home Affairs vis-à-vis other departments. Another reason has been that the regional governments (tingkat II, in particular) were ill prepared to handle the new tasks to be delegated to them.

In 1992, Government Regulation No. 45 (1992) once again indicated that the government was serious about the issue. The regulation stipulates: 1) that all matters except those like defense, judicial affairs, foreign affairs, etc. should be gradually delegated to the tingkat II governments from the central and provincial governments; 2) that once tasks are delegated from the central to the provincial governments, they should be further delegated to the tingkat II governments within two years; and 3) that the budget necessary to carry out the delegated tasks should also be secured.

Although the necessary legal framework was set out by the regulation, the overall progress toward decentralization has been a cautious one. Currently, nineteen government tasks have been officially delegated to provincial government, most of which are entrusted to the dinas. However, this apparent improvement conceals yet another problem: dinas, with all those tasks entrusted to them, are still under their counterpart's kanwil jurisdiction especially in planning and coordination.

Decentralization is also needed on the front of annual planning and budgeting. In 1982, the Department of Home Affairs institutionalized a comprehensive system in which government-funded projects are decided through a series of consultation meetings starting right from the village level and reaching up to the national level. This so-called P5D process has the main objective of injecting grassroots needs and aspirations directly into the budget deliberations and, in this way, encouraging people's initiative in development. Apart from its goodwill intention, however, this bottom-up approach, in fact, can be regarded as another indication of the very centralized nature of Indonesian local administration: in essence, village proposals can and

should reach the national level to be finally decided. Due to the very low rates of acceptance of village proposals and of the complete lack of interim feedback about the status of the proposals, the P5D process as it is, actually discourages people's active participation.

(2) Measures

Two notable measures are under way on an experimental basis: the Pilot Project for District Autonomy (PPOD) and the kecamatan fund scheme in the Kecamatan Development Program (KDP). PPOD, focusing on the tingkat II level, aims at abolishing kandep (representative offices of the technical departments) and cabang dinas (representative offices of some of the provincial dinas) and integrating them into dinas tingkat II. Started in 1995, the project has worked with 26 selected kabupaten/kotamadya nationwide and now plans to extend to include all kotamadya in the second phase. In the kecamatan fund scheme, a grant of Rp. 600 million each will be given to the subdistrict (kecamatan) for its discretionary use. It is hoped in this way more village proposals can be funded and the P5D approach becomes workable and meaningful. After a trial in six kecamatan, the KDP will start in 1998 covering 250 kecamatan across the country.

(3) Critical Implications

The previously mentioned 1974 law declares that the ultimate target of decentralization is the tingkat II government, which does not appear logical. Intuitively, it seems more natural and reasonable to decentralize government tasks to the province level (and later, if appropriate, to the kabupaten and kotamadya). If Indonesia takes this alternative course, it will entail various benefits among which is the raised morale of the provincial people will be the most important. Some may fear unwanted political consequences but they should realize that the conditions in and around the country are now totally different from those of the turbulent period a few decades ago.

For Indonesia the right direction should be decentralization to the province first. To pursue this direction to its full extent, three major reforms are necessary: popular election of the Governor; abolishment of kanwil and a substantial expansion of the provincial revenue base.

A popularly elected governor must be at the hard core of the notion of decentralization. Decentralization is to invigorate the regions. Since the governor is now held accountable to the voters, his or her primary objective should be how to satisfy their aspirations. The governor has to show bold, innovative initiative in every aspect of government administration to achieve that objective. Under such an active, dynamic leader, the whole apparatus ought to change and

will accelerate the pace of provincial development. This is exactly what decentralization should bring about.

A.17 WATER RESOURCES

(1) Present Conditions and Constraints

1) Natural Conditions

The dominant geographical feature of the watershed areas in the Western Part of Kalimantan are their flatness and extent. Therefore, these watersheds can not be controlled artificially. The study area was originally dominated by forest and swamp. However, deforestation and development of swamp areas have been proceeding rapidly. Therefore, low river flow has been decreasing while high river flow has been increasing.

Annual rainfall in West Kalimantan ranges from 2,500 mm to over 4,500 mm and in Central Kalimantan from 2,000 mm to over 4,000 mm. In recent years, a comparatively long drought has taken place during June and September over the entire study area.

2) Water Use

In the study area, generally the swamp and alluvial deposit areas coincide with the areas of moderate to high permeability from a hydro-geological viewpoint. Shallow groundwater can be expected because of sea water and iron ions. Therefore the shallow groundwater is not suitable for drinking water. The area, except the swamp and alluvial deposit areas, can be characterized as having poor to low permeability hydro-geologically. In this kind of area, shallow groundwater can not be expected.

The critical constituents for drinking water in the study area are Turbidity, Color, Iron ion and pH. The problem of saline water in lowland areas within 50 ~ 60 km from the sea in the dry season is also critical. The Ministry of Public Works has provided the water treatment plants however it is difficult to process saline water. The percentage of people who are provided with water services are low, because of insufficient water treatment plants. As a countermeasure, rainwater is stored, using polyethylene tanks, at the coastal lowland areas such as Pontianak and the Swamp Development Area, which are affected by saline intrusion in the dry season.

The critical constraint to irrigation in the study area is saline water. The amount of specific discharge itself can not lead to a shortage of irrigation water because the total irrigation area is small enough compared with the catchment size. The coastal swamp areas and the riverline areas in the middle basin are annually exposed to flooding. At present, there are no flood control projects. In the dry season, because of the extremely low flow discharge, the navigable lengths decrease to less than 50 % of those in the wet season.

(2) Watershed Management

The study area's watersheds can be grouped into 5 major watersheds, such as the Sambas River Basin, the Kapuas River Basin (divided into 3 sub-watersheds: Lower, Middle and Upper Kapuas Basin), the Pawan River Basin, the Seruyan River Basin and the Barito River Basin as follows (also see Figure A.17.1). The characteristics of each watershed are shown in Table A.17.1. The following describes in detail each basin.

1) Sambas River Basin

The shortage of water is a critical problem, because this Basin has irrigation areas in the upstream part of the Basin, and this Basin is small compared with the other Basins in West Kalimantan. Flooding occurs due to flatness, high tide and high intensity of rainfall. The development has been promoted because this Basin has a vast amount of land suitable for paddy, rubber, coconuts and tree crops. The low flow discharge in the dry season is a critical factor in the smaller basin. Therefore, countermeasures for water shortage in the dry season, flooding in the wet season and water quantity management is significant here.

2) Kapuas River Basin

a. Upper Kapuas Basin (Kapuas Hulu)

This Basin functions by providing flood control for the Middle and Lower Basins and keeping water in the dry season. When this Basin is further developed, the damage of flooding at Sintang, Sanggau, Pontianak and agricultural lands in riverine areas, and the increase of length of unnavigable areas will be unavoidable. Therefore, countermeasures for soil erosion in the northern part of the Basin and conserving the function of keeping water at peat swamp area are required. The silt area around Sentarum Lake has the function of a large water reservoir, and is vulnerable. Therefore, the conservation of the watershed of Sentarum Lake including the establishment of regulations is required.

b. Middle Kapuas Basin (Tayan ~ Silat)

The water quality in the Melawi River Basin and the area around Sanggau has been getting worse. The acidity has been increasing at Sintang which is located in a peat deposit area. However, the peat deposit area is not distributed in the Basin except in the area around Sintang, therefore water quality in this Basin is relatively clear, with the possibility of being used as a water supply for the Lower Basin. Conservation of water quality is required. Long duration and deep depth inundation at Sanggau and Sintang is due to the Kapuas River, therefore countermeasures for flood control are required. The areas in the Melawi River Basin and around Sanggau are suitable for tree crop agricultural development. However, the development

of industry and mining such as bauxite mining will be promoted in this area. Therefore water pollution by exhausted water pollutants will occur. The countermeasures for soil erosion and pollution control are required.

c. Lower Kapuas Basin (Pontianak ~ Tayan)

The Basin is generally lowland with vast peat deposit areas along the coast. The population in West Kalimantan is highly concentrated in this area. The surface water and groundwater are polluted by peat deposit, therefore not potable. The damage of saline water has been occurring in the dry season, rainwater tanks are used as a countermeasure in Pontianak. The improvement of water supply is required. In Pontianak, short duration and low water level flooding occurs, because of flatness, high tide and the high intensity of rainfall. The countermeasures for flood control are required. The development of the peat deposit area in this Basin would cause many kinds of environmental problems. Especially high acid water and saline content would directly affect drinking water in Pontianak.

3) Pawan River Basin

The situation in this Basin is the same as that in the Lower Kapuas Basin. In addition, most rivers in the Pawan Basin are small like the Sambas Basin. The only difference is the geological categorization of continental magnetite rock which does not hold water but drains rapidly. Generally, low flow discharge in the dry season is a critical factor in the smaller basin. Water quantity management is significant here.

4) Seruyan River Basin

The conditions in this Western Kalimantan Basin are almost the same as those in the eastern part of Central Kalimantan except that the western part does not have a podsol soil area in the upper part. This condition has resulted in comparatively non-polluted river water in western Kalimantan at present. There are also vast areas suitable for tree crops, food crops and large-scale plantations in the middle part. The upper part of the Basin is geologically categorized as continental magmatite rock. The podsol area is based on sedimentary rocks such as mudstone and silt stone. In the development of the upper part, this geological difference should be considered.

5) KAKAB River Basin

This Basin has a vast podsol soil area in the upper part. The deforestation, commenced in the 1970s, has provided high concentrations of silt in these rivers. The middle part of the Basin has a vast peat deposit area, which provides high acid water in the main rivers. The upstream area of the peat deposit area is suitable for tree crops and large scale plantations. The population is

distributed mainly along the main rivers in the middle part of the Basin. Regarding water supply in the populated areas in the middle part, protection of the podsol area and erosion control in which some large-scale land developments are expected, are necessary.

Figure A.17.1 Major Watersheds in the Region

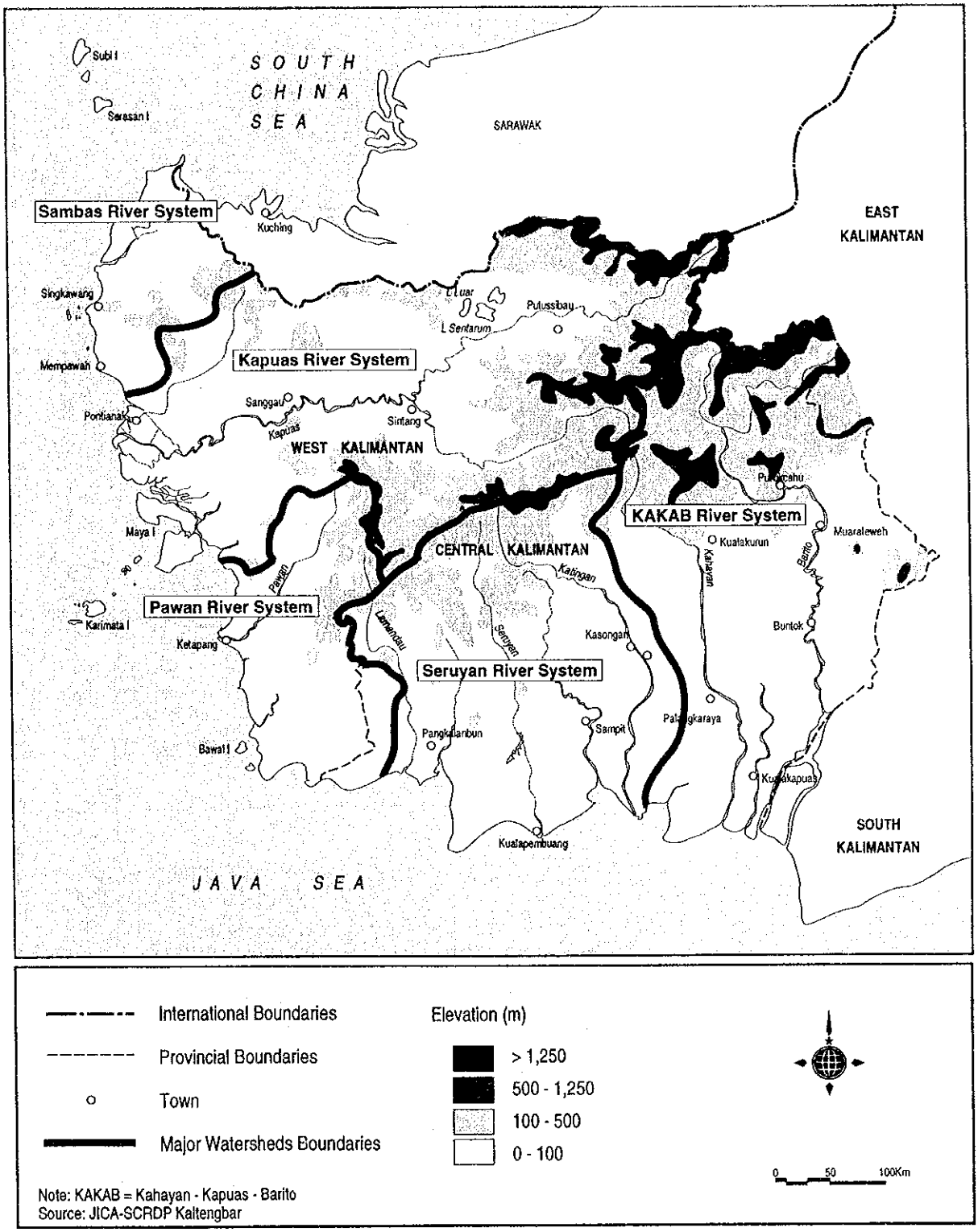


Table A.17.1 Characteristics Rivers by Major Watersheds

Province	Watershed Name		River Name	Area (km2)	Sub Total Area (km2)	Topography			Hydro-Geology		Climate (Annual Rainfall)	Specific Runoff (in m3/s/km2) (1994)	
						Elevation (m)	Length (km)	Slope				Annual	Minimum
West Kalimantan	Sambas		Paloh	770	13,530	0-50	135	1/2,700	Sedimentary rocks, sand in upland, Alluvium and peat deposits in lowland	Coastal swamp area with high permeability, brackish groundwater	3,100 mm at Sambas	0.05	0.01
			Sambas	7,740									
			Sebakau	420									
			Selakau	1,400									
			Raya	420									
			Duri	700									
			Mempawah	2,080									
	Kapuas	Lower Kapuas	Landak	8,650	22,240	0-10	120	1/12,000	Alluvium and peat deposits	Coastal swamp area with high permeability, brackish groundwater		0.04	0.01
			Lower Kapuas	5,020									
			Mendawak	2,950									
			Lida	2,530									
			Simpang	3,090									
		Middle Kapuas at Tayan	Middle Kapuas	50,900	50,900	10-40	320	1/11,000	Sedimentary rocks in upland	Low permeability	3,300mm at Sintang	0.08	0.01
		Upper Kapuas at Sisit	Upper Kapuas	29,280	29,280	40-50	460	1/46,000	Alluvium and peat deposits	High permeability, Groundwater Potential	4,400mm at Putussibau	0.09	0.02
	Pawan		Tulak	840	33,340	0-100	340	1/3,400	Old volcanic rocks in upland, Alluvium and peat deposits in lowland	Coastal swamp area with high permeability, brackish groundwater	3,100 mm at Ketapang, Dry season with less than 100 mm/month	0.05	0.01
			Pawan	13,400									
			Pesaguan	2,880									
			Tengar	280									
			Kendawangan	3,380									
			Simbar	630									
			Air Hitam Kecil	980									
			Air Hitam Besar	1,900									
			Jelai	5,840									
Central Kalimantan			Jelai	3,210									
	Seruyan		Lamandau	11,400	67,110	0-100	500	1/5,000	Sedimentary rocks,sand in upland, Alluvium and peat deposits in lowland	Coastal swamp area with high permeability, brackish groundwater	3,000 mm at Pangkalanbun	0.05	0.01
			Kumai	4,030									
			Seruyan	17,940									
			Mentaya	16,700									
			Katingan	17,040									
	KAKAB		Sebangau	5,970	83,500	0-100	1050	1/10,500	Sedimentary rocks,sand in upland, Alluvium and peat deposits in lowland	Swamp area from coast to middle reach with high permeability, groundwater potential	2,200 mm at Muarateweh, 2,400 mm at Palangkaraya, Dry season with less than 100 mm/month	0.04	0.01
			Kahayan	17,890									
			Kapuas	16,820									
			Barito	42,820									
Total				299,900	299,900								

A.18 NATUNA ISLAND DEVELOPMENT

(1) General

Natuna Island, it is hoped, is where West Kalimantan can take advantage of its geographical proximity to supply goods and services to this new market. It was approved as a KAPET (Integrated Economic Development Zone) by Presidential Decree No. 14 in October, 1996, though it belongs to the Riau province in Western Indonesia. With the core project of the famous natural gas development north of the island, the development of the island itself was decided by the government. The island has some 30 thousand inhabitants and the area of 160,000 ha which is four times larger than that of Batam Island. It would provide a good opportunity for business and employment for the study area, once the development plan is brought into practice.

The development of the largest natural gas reserve located in 230km north of the island is planned to start in 1999. The project is expected to supply natural gas to Java, Thailand and Japan. The contract with Thailand was under negotiation in July, 1997, however, it suddenly became suspended because of the currency crisis which first started in Thailand. It is said that even if the natural gas project is postponed for some years, the island's development would be implemented in the near future as a KAPET.

The development committee of the island (BP3-Natuna) was set up in BPPT when it was approved as a KAPET, the secretariat of which is headed by the executive director Mr. Maryono of the Navy and has 25 planning staff. The masterplan study is now being conducted and will be finished by the end of the fiscal year 1997/98. The final year of the plan is supposed to be 2020.

(2) Basic Concept

Along with the development of the offshore natural gas project, Natuna Island is planned to be developed with some strategic industries, such as LNG plant, basic chemical industries and natural gas utilizing industries, ship building and maritime industries, and electronics industries. Accordingly, the supporting infrastructure is to be planned such as power plants which utilize the natural gas, industrial and commercial harbors, roads and an airport. The development budget for road construction in 1998/99 is to be prepared by the Ministry of Public Works.

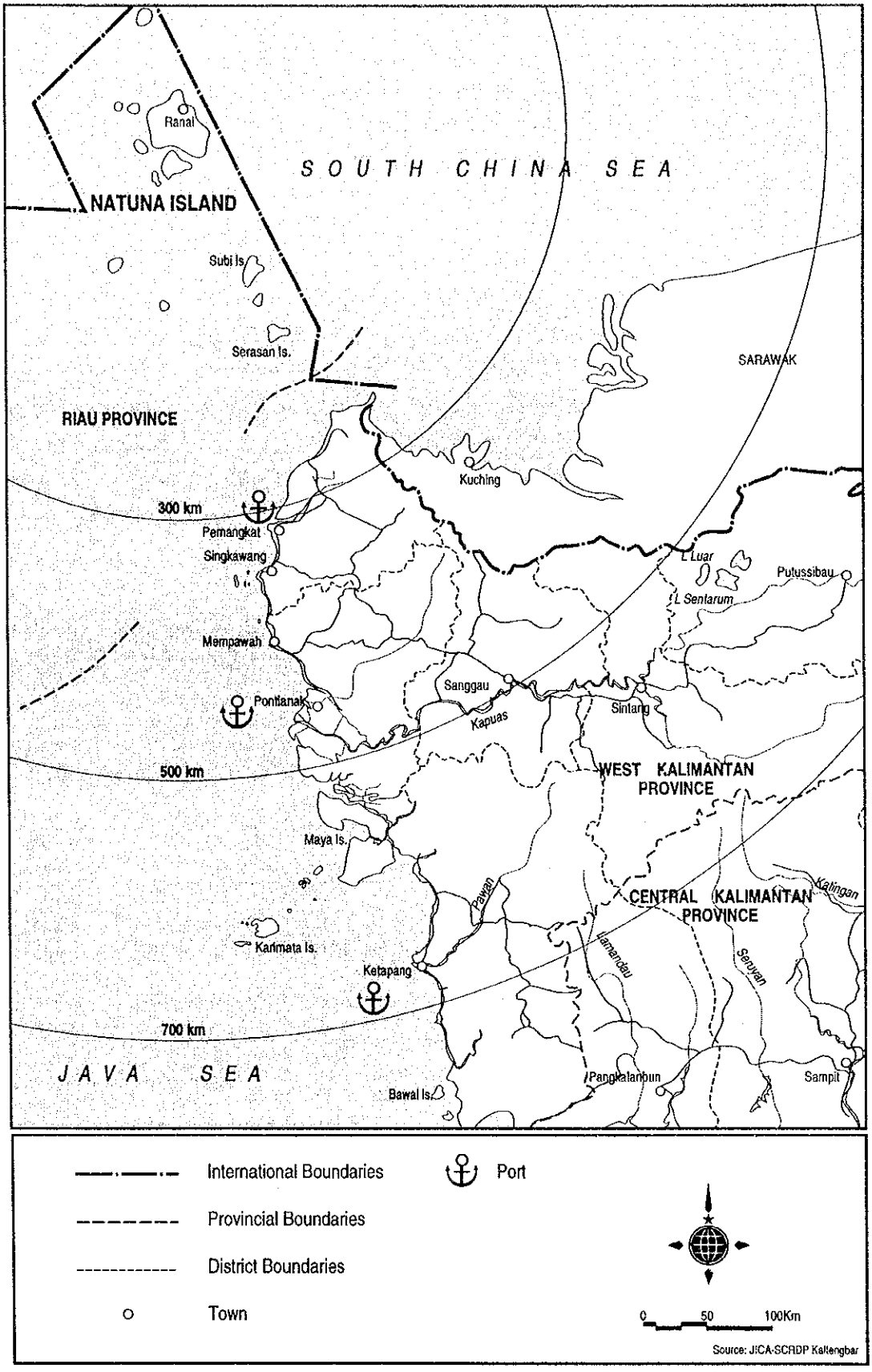
At present, the island has some 30 thousand inhabitants, and their major income source is from fisheries. The offshore area around Natuna Island is a rich fishery zone and many fishing boats from neighboring countries are also operating in this zone. Another important economic activity

is the newly started oil-palm plantation. Some plantation projects with transmigration have already started independently of the KAPET assignment. Thus the agro-industries which process the produce from food crops, plantations and others are also involved as a pillar of the economic activities in the island.

(3) Expected Impacts on West Kalimantan

Due to the geographical proximity of West Kalimantan, Natuna island development as a KAPET will offer the people and business society of the study area several opportunities to participate in the island's development activities. West Kalimantan will be expected to supply the logistics for the island. The demand for foodstuff is inevitable and will encourage the food processing industry in the north-western part of West Kalimantan where horticulture is well developed in the province. There will be many types of services such as trade, transport, health service and education, etc. which will be in demand to support the economic and social activities on the island and the new communities. Also, in the phase of infrastructure construction on the island, materials and services of construction work will be in demand. The construction sector of West Kalimantan will have a good field of work but should be competitive with contractors from other parts of the country.

Figure A.18.1 Location of Natuna Island and Major Ports of West Kalimantan



A.19 THE ENVIRONMENT

(1) Present Condition of Pollution

In the study area, the measurement of pollutants of the air, water and noise/vibration have been almost totally ignored. This section will examine the possibility of water pollution as data on the other forms of pollution are not available.

1) Water Pollution

a) Water Pollution of Surface Water

The following describes water pollution in the study area based on limited data. The most recent water quality test of river water in the Kapuas River of West Kalimantan was carried out in the dry season of 1995. Table A.19.1 and Figure A.19.1 show the results and the sampling stations. As this table shows, the values of all items, except Coliform, at all sampling stations, do not satisfy the water quality standards for drinking water. Therefore this river water is not suitable for drinking.

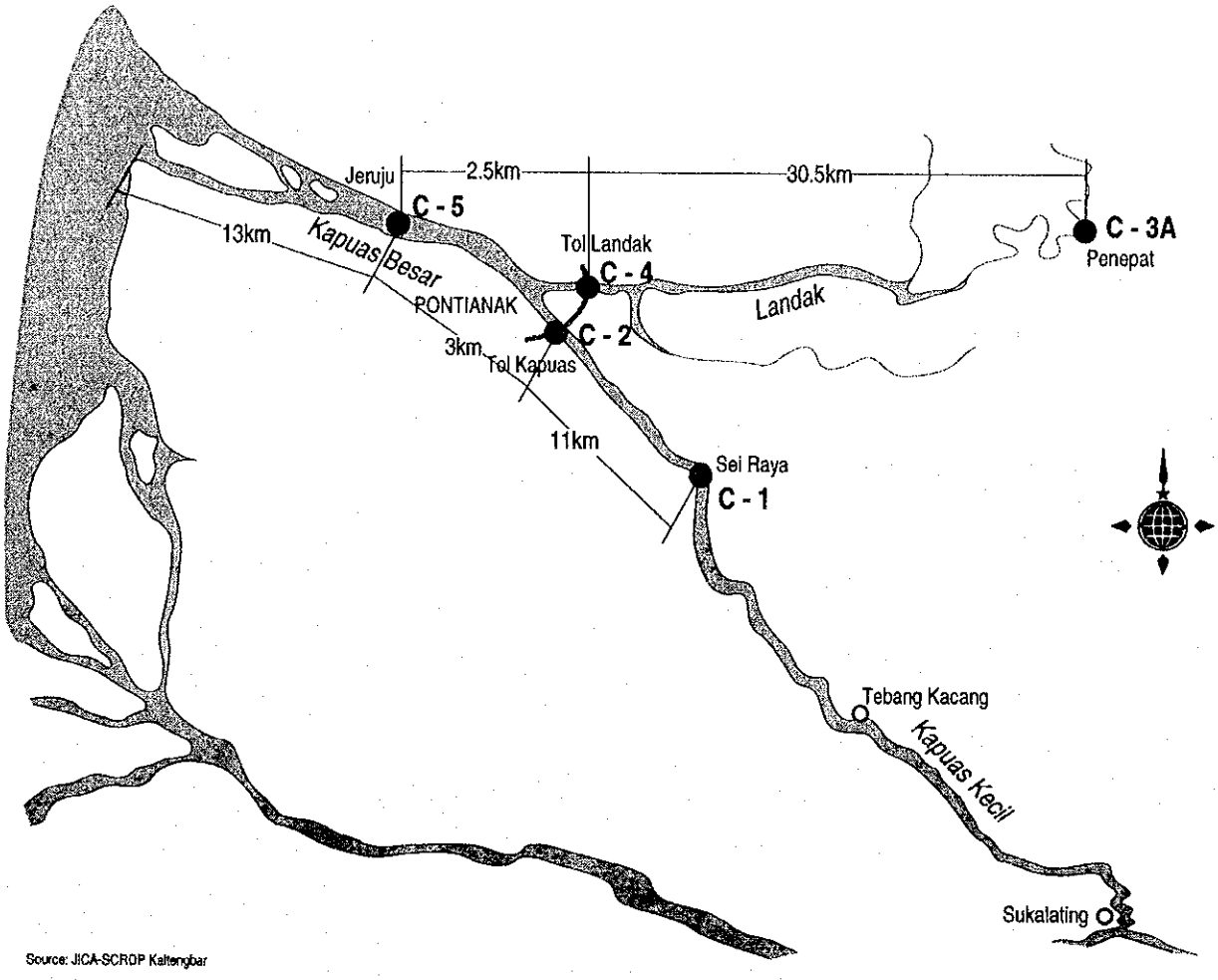
The Kapuas River is the largest river with the largest watershed in the study area, resulting in the largest water volume. Therefore, it can be concluded that the water quality of other rivers in the study area are also not so good in the dry season.

Table A.19.1 Results of Water Quality Tests of River Water in the Kapuas River

	Sampling Station	DO (mg/l)	BOD (mg/l)	COD (mg/l)	pH	Coliform (MPN/100ml)
C-5	**Jeruju, 13 km from mouth of Laut Natuna**	4.13	**5.23**	49.14	**5.35 ~ 5.97**	**2,400**
C-4	**Tol Landak, 2.5 km upstream of Jeruju, Sta. C-3**	3.10	8.02	74.00	4.13 ~ 5.30	**2,400**
C-3a	**Penepat, 30.5 km upstream of Tol Kapuas, Sta. C-4**	4.20	10.85	74.95	**5.42 ~ 5.76**	**2,400**
C-2	**Tol Kapuas, 3 km upstream of Jeruju, Sta. C-3**	4.00	**4.95**	40.00	4.94 ~ 5.96	**2,400**
C-1	**Sei Raya, 11 km upstream of Tol Kapuas, Sta. C-2**	3.87	6.78	51.00	4.98 ~ 5.80	**2,400**
	Water Quality Criteria *1	**more than 6.00**	**less than 6.00**	**less than 10.00**	**5.00 ~ 6.00**	**less than 10,000**

* : Bold-faced number is the value satisfing the standards
* : Samples were taken on 22 & 24 August, 1995
*1: Water Quality Criteria for Class "B" Waters(Raw Material for Drinking Water)
Source: Implementation of the Pollution Monitoring and Control Systems in North Sumatra and West Kalimantan (PMCA-II Extension), 1995

Figure A.19.1 Locations of Water Quality Test Stations of River Water in the Kapuas River



b) Water Pollution by Wastewater Exhausted from Factories

The following will describe water pollution by factories in the study area. Table A.19.2 shows the results of water quality test of wastewater exhausted by some factories. As this table shows, most of the values of all items except Total Phenol at all sampling stations do not satisfy the effluent standards. Especially the values of all items, except NH3-N, at sampling stations at factories of oil palm industry are not satisfied.

Concerning the crumb rubber industry, the samples of wastewater discharged into the river are at four sampling stations: No. 1-2, 1-3 4-2 and 4-3. Within these samples, only the sample at sampling station No. 1-3 satisfies the effluent standards on all items. The remaining three samples do not satisfy the effluent standards on some items, however the items which do not satisfy the effluent standards are only one or two items like COD, TSS or pH for each sample. The treatment of these items in wastewater is not so technically difficult.

Concerning the plywood industry, the samples of wastewater discharged into the river are at four sampling stations: No. 6-2, 6-3, 7-3 and 7-4. Most of the values of all items except Total Phenol at all sampling stations do not satisfy the effluent standards. Within these samples, the sample at sampling station No. 6-3 does not satisfy the standards on most items. The remaining three samples also do not satisfy the effluent standards on some items. However the items which do not satisfy the effluent standards are only one or two items of BOD, COD, TSS or pH for each sample. The treatment of these items in wastewater is not so technically difficult.

Concerning the metal industry, the sample of wastewater discharged into the river is from only one sampling station: No. 8-3. The values of zinc and pH do not satisfy the effluent standards at all sampling stations. The removal of zinc might not be so difficult.

Concerning the palm oil industry, the samples of wastewater discharged into the river are at three sampling stations: No. 9-1, 9-2 and 10-2. All samples, except NH3-N, far exceed the effluent standards on all items. However, the countermeasures for those items are without difficulty.

As mentioned above, this data shows only part of the present condition on pollution in the study area in the dry season. However, the wastewater exhausted from factories in the study area might not satisfy the effluent standards judging from this data.

Table A.19.2 Results of Water Quality Tests for Wastewater from Factories

Industry		No.	Sample	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	Oil & Fat (mg/l)	NH3-N (mg/l)	Total Phenol (mg/l)	Cr+6 (mg/l)	Zinc (mg/l)	pH
Crumb Rubber Industry *1	PT. Sumber Alam	1-1	Raw Wastewater	**220.8**	**359.1**	114.0		2.20				6.63
		1-2	Direct Discharge to River	73.2	1,016.0	**158.0**		2.00				6.60
		1-3	Effluent from Rubber Trap (Discharged to River)	62.6	241.4	86.0		2.64				6.48
	PT. Sumber Djantin	2-1	Raw Wastewater	141.5	**345.4**	116.0		2.66				6.33
		2-2	Effluent	107.3	268.8	127.0		1.70				6.20 ~ 6.90
	PT. New Kalbar Processors	3-1	Raw Wastewater	**169.5**	**301.9**	**581.0**		1.60				6.38
		3-2	Effluent	**201.1**	**320.6**	**338.0**		1.25				6.94
	PT. Giat Usaha Dieng	4-1	Raw Wastewater	**237.8**	**662.3**	**334.0**		3.80				6.13
		4-2	Direct Discharge to River	15.3	308.4	74.0		1.40				5.70 ~ 6.15
		4-3	Effluent from UPL (Discharged to River)	38.1	237.6	49.0		1.68				5.47 ~ 5.96
	PT. PD. Hok Tong	5-1	Raw Wastewater	44.1	268.0	133.0		0.94				5.80
		5-2	Effluent	20.3	227.0	**864.0**		1.12				5.60 ~ 6.30
Effluent Standards for Crumb Rubber Industry *4				150.0	300.0	150.0		10.00				6.00 ~ 9.00
Plywood Industry *2	PT. Batasan	6-1	Raw Wastewater to UPL	**778.0**	**2,900.0**	97.0			0.01			4.40 ~ 5.38
		6-2	Effluent from UPL (Discharged to River)	40.7	932.5	93.0			0.03			5.20 ~ 5.73
		6-3	Washing from Glue Speader (Discharged to River)	**881.4**	**26,507.0**	**541.0**			0.02			5.42
	PT. Benuah Indah	7-1	Washing from Glue Speader (influent to UPL)	**881.4**	**30,710.0**	12,000.0			0.81			6.71
		7-2	Sample from Last Basin of UPL (No Discharge)	**322.0**	**781.6**	54.0			0.17			5.64
		7-3	Discharge into River (Mixed Domestic/Industrial Wastewater)	**118.8**	227.9	12.0			0.12			6.45
		7-4	Effluent from Boiler (Discharged into River)	**122.0**	218.9	13.0			0.01			7.06
Effluent Standards for Plywood Industry *4				100.0	250.0	100.0			1.00			6.00 ~ 9.00
Metal Planting Industry *3	PT. Kalimantan Steel Co.	8-1	Raw Wastewater (Influent to UPL)			19.0				**0.8**	12.10	2.90 ~ 3.30
		8-2	Effluent to River (Effluent from UPL)			8.0					10.54	5.30
		8-3	Cooling Water (Direct Discharged)			4.0					11.63	3.40 ~ 3.90
Effluent Standards for Metal Planting Industry *4						60.0				0.3	2.00	6.00 ~ 9.00
Palm Oil Industry	PTP VII - Ngabang	9-1	Effluent from Deoiling Pond (Discharged to River)	10,300.0	20,590.0	4,000.0	1063.00	14.20				3.78
		9-2	Effluent from Cooling Pond (Discharged to River)	780.0	4,510.0	10,480.0	704.00	8.40				4.90
	PTP VII - Parindu	10-1	Raw Wastewater	7,000.0	14,006.0	104,000.0	1231.00	38.20				4.75
		10-2	Effluent from Water Hyacinth Pond to River	320.0	723.0	4,100.0	0.05	2.40				8.36
	PTP VII - Gunung Meliau	11-1	Raw Wastewater	7,618.0	15,237.0	84,100.0	1529.00	31.00				4.13 ~ 6.06
		11-2	Sample from Anaerobic Pond (No Discharge)	1,378.0	2,757.0	5,200.0	42.70	8.80				6.36
Effluent Standards for Palm Oil Industry *4				250.0	500.0	300.0	30.00	20.00				6.00 ~ 9.00

* Double underlined number is the sample discharged into river, Bold-faced number do not satisfy the standards

*1: Samples were taken on 15 ~ 16 and 22 ~ 23 June, 1995, *2: Samples were taken on 22 & 25 June, 1995, *3: Samples were taken on 22 ~ 23 June, 1995, *4: SK Men KLH-03/Men KLH/II/1991

Source: Implementation of the Poilution Monitoring and Control Systems in North Sumatra and West Kalimantan (PMCA-II Extension), 1995

2) Other Pollution

It is possible that other pollutants such as air quality and noise/vibration etc. might be generated in highly populated areas and the surrounding areas of some factories. However, there are no data on these items, therefore data collection is required.

(2) Protection from Pollution

As mentioned above, the water quality of rivers in the study area might be not so good, in the dry season. In the dry season at least, some treatment of river water is required in order to drink raw water. In highly populated areas such as Pontianak, the improvement of water services by the public sector is required. In rural areas, the spread of a simple treatment system and hygiene education for local people is required. In the case of developments of new urban areas, water supply system must be considered at the planning stage.

According to the results of wastewater exhausted from factories, the effluent standards might not be kept in the study area. The developments of some industries, which are planned in the study area, are many in the near future. The treatment of these items in wastewater is not so difficult technically, therefore adequate countermeasures for wastewater is required. However, the problem to implementing treatment is budget constraints. The establishment/improvement of a pollution control unit for the authorities concerned, the establishment/enforcement of regulations, and the establishment of funds are required.

About other pollution, the present condition is not clear, because of a lack of environmental monitoring systems in the study area. Therefore, the establishment of monitoring systems for environmental items, especially air and water qualities is required.