

Volume 1

Development Scenarios for the Principal River Ports

Part 3

Selection of the Priority Ports

5. PRELIMINARY STUDY ON THE SOCIO ECONOMIC FRAMEWORK

5.1 Socio-economic Framework of Indonesia for Forecasting

5.1.1 Purpose and Requirements for the Socio-Economic Framework

The purpose of the socio-economic framework is to provide a national development framework for forecasting in this Study.

In particular, the framework helps in considering national goals from an economic perspective such as development of poorer areas, assistance to Eastern Indonesia and so on, thus ensuring that study recommendations are consistent with the country's macroeconomic objectives.

The framework will assist in ensuring that priority port selection is consistent with national objectives. The socio-economic framework also forms the basis for traffic forecasts.

5.1.2 Macro Economic Forecasts and Sources

(1) GOI / Bappenas

GOI / Bappenas produced a short-term forecast of the economy in January 2001 (and this was updated in second half 2001). This described recent relevant economic events and the political background.

Based upon various internal and external assumptions, this report indicated a base scenario for GDP growth of 5-6 % in 2001 and of 6-8 % if policies (and external events) turned out to be more successfully implemented than anticipated.

A number of risks were identified including exchange rate, oil price, etc. that would affect the projected macro economic performance. In addition to the short term forecast for 2001, PROPENAS 2000-2004, which was previously summarised, indicated the growth rate forecast shown in the following table.

Table 5.1.1 Macro Economic Projections to 2004

Indicator	Actual	Projection				
	1999	2000	2001	2002	2003	2004
GDP % pa	0.3	4-5	4.5-5.5	5-6	6-7	6-7
Exchange Rate	7809	7000-8000	7000-8000	6500-7500	6500-7500	6500-7500
Real GDP per Capita Rp. 000	4,785	4,929	5,111	5,328	5,583	5,873
Contribution to Economic Growth						
Consumption	2.6	0.9	1.0	2.6	3.0	3.8
Investment	-5.3	0.4	2.0	2.6	3.6	3.1
Net Exports	3.0	3.2	2.2	0.5	-0.2	-0.2

Source: Propenas, 2000

(2) World Bank

World Bank (WB) in February 2001 published its Country Assistance Strategy for Indonesia. This makes somewhat gloomy reading. It assumes three economic scenarios with a middle scenario called Base Case or ‘muddle through’, and two others ‘crisis’ and ‘high case’. WB considers that the base case is the most likely, although not discounting the strong possibility of either of the other two scenarios.

Table 5.1.2 Macro Economic Projections from World Bank

GDP GROWTH	FY 98/99	FY99/00	FY00/01
Projection % pa	-13.0	-1.0	3.0
Actual % pa	-14.1	3.5	4.0

Source: BPS and WB

On the one hand WB indicates that recovery from the crisis has been faster than expected in the past year. It shows that GDP growth has been faster than expected with a higher current account surplus and with a broader based recovery. Consumption led growth is now accompanied by growth in investment and exports. Inflation remains under control.

However, the recovering economy was not reflected in financial markets where problems of corporate debt, exchange rate fluctuations and private capital flows show a net outflow of US\$9 billion. GDP is still below pre-crisis levels. Government debt increased to 100% of GDP, up from 23% pre-crisis.

A number of risks impact the making macro-economic forecasts. For example, oil prices, depreciation of the Rupiah, real interest rates and decentralisation all pose risks, and of these, higher real interest rates could cause the most havoc.

Therefore, the forecasts reflect the fragile political climate and risks, and the more realistic lower growth rates apparent in Indonesia and globally in the second half of 2001.

Table 5.1.3 Macro Economic Growth Scenarios

		Base Case			High Case		
	FY 00	2001	2001	2003	2001	2001	2003
GDP % pa	4	4	4	4	4	5	6

Source: World Bank

A high case would result from greater economic and political stability and faster implementation of the reform programme. Unfortunately, there is also the real possibility of a crisis scenario resulting from both internal and external problems.

World Bank Infrastructure Policy: WB has commented that when a recovery takes place, more infrastructure bottlenecks are going to appear and restrain economic growth. This is especially so for infrastructure where maintenance has been deferred and lead times are long. Decentralisation is also expected to complicate infrastructure issues. WB is seeking to:

- a) Provide assistance for essential maintenance and rehabilitation through ongoing and proposed projects, especially in roads and irrigation
- b) Improving the policy and legal framework
- c) Facilitating GOI reforms
- d) Contributing to joint financing with JBIC, ADB, USAID
- e) IFC to seek opportunities to co-finance

World Bank is linking much of its Country Assistance Strategy to the agreed reform programme in Indonesia which, to date, has been slow.

(3) ADB

ADB has similar macro economic concerns to WB and its programme for country assistance and predictions for macro economic growth are also similar.

It had predicted a 4-5% increase in GDP in 2001 and indicates that recent growth in 2000 was driven by consumption, which is now being replaced by increased export demand. This estimate is now downgraded due to the world recession, the events of September 11th and the domestic uncertainties in Indonesia after the successful election process.

Faster recovery remains hampered by political instability affecting the Rupiah/Dollar exchange rate and the slow debt restructuring process.

(4) Economic Indicators

Table 5.1.4 Key Economic Indicators

KEY ECONOMIC INDICATORS							
	Fiscal Year				Calendar Year		
	1997/98	1998/99	1999/00	2000 (9 months)	2001	2002	2003
Real GDP Growth							
(% pa 1993 Base)	2.1	-14.1	3.5	4.0	4.0	4.0	4.0
Per Capita GDP	0.6	-15.3	2.0	2.5	2.6	2.6	2.6
(% pa 1993 Base)							
US\$ billions							
Exports	62.3	52.7	60.0	52.5	72.3	74.7	78.3
Exports-Merchandise- FOB	56.2	48.4	55.2	48.4	66.7	68.7	72.0
Percent (latter of total)	90%	92%	92%	92%	92%	92%	92%
Imports	57.6	41.1	43.3	38.3	57.3	61.3	66.6
Imports-Merchandise- FOB	42.7	30.7	32.6	29.1	43.5	46.3	50.2
Percent	74%	75%	75%	76%	76%	76%	75%

Source: ADB

Table 5.1.5 GRDP Projection by Province

GRDP (Rp Billions) at 1993 constant prices-Including Oil and Gas				
	1998	1999	2010	1999-2010 % pa
Riau	19,645	20,311	29,029	3.3
Jambi	3,092	3,181	5,272	4.7
South Sumatra	13,239	13,659	22,638	4.7
West Kalimantan	6,879	7,066	11,959	4.9
Central Kalimantan	3,993	3,987	6,269	4.2
East Kalimantan	20,515	21,384	35,070	4.6
Indonesia	375,949	380,763	658,089	5.1

Source; TSSS Intermediate Scenario and Consultants

(5) Population

Population forecasts are based on assumptions about fertility, mortality, migration and economic development. Current forecasts from sources such as UNDP, World Bank and GOI suggest that the longer term growth in population may be around 1.4 percent per year between 1995 and 2009. Regional growth is likely to remain higher in Sumatra and Kalimantan. Table 5.1.8 shows the projected growth rates by economic sector in Indonesia.

Table 5.1.6 Population Forecasts by Region to 2009

Region	Population			1995-2009
	1995	2004	2009	% Per Year
Sumatra	41.0	47.6	51.2	1.6
Kalimantan	10.5	12.5	13.6	1.9
Java	115.0	129.1	136.5	1.2
Sulawesi	13.8	16.0	17.2	1.6
Other	14.2	16.5	17.8	1.6
Indonesia	197.5	221.7	236.4	1.4

Source: BPS and TSSS

Table 5.1.7 Population Growth Forecasts By Province

Province	Year			Growth Rate (in % pa)
	1999	2004	2009	
Riau	4.3	4.8	5.2	2.0
Jambi	2.6	2.9	3.1	1.9
South Sumatra	7.7	8.4	9.0	1.4
West Kalimantan	3.9	4.3	4.7	1.6
Central Kalimantan	1.8	1.9	2.1	1.7
East Kalimantan	2.6	2.9	3.3	2.3

Source: BPS and TSSS

Table 5.1.8 Projected Growth Rates by Sector

Sector	Assumed Growth Rates in Sectoral GDP 1999/2009
	(% per year)
Agriculture	2.3
Mining/Quarrying	3.1
Manufacturing-Oil	6.3
Manufacturing-Non Oil	7.5
Utilities	4.4
Construction	4.5
Trade/ Commerce	5.3
Transport	5.0
Finance/ Business	5.0
Government	4.0
Other Services	5.9

Source: TSSS

5.2 Economic Prospects for Indonesia's Major Trading Partners

World Bank indicates that Indonesia's external environment is likely to become less favourable with world growth predicted to slow from 4% to 3 % by 2003. Further, the growth in the economies of Indonesia's largest trading partners is likely to slow or remain modest.

Indonesia's largest markets are:

- 1) North America
- 2) Japan
- 3) Europe and
- 4) Asia

Recent reports on the US economy indicate that a hard landing will be avoided and that there are signs of weak recovery at end 2001. The Japanese economy also remains relatively weak, with its own financial sector restructuring programme being only slowly implemented.

The European economy also shows signs of slowing but is likely to have a soft landing.

Asia remains among the world's fastest growing regions, although regional growth is predicted to slow to 5.3 % in 2001 from 7.1 % in 2000. This could rebound in 2002 to about 6.0 %, but this is dependent on various global factors and masks considerable variation according to Asian country. China, for example, is likely to continue its rapid growth of over 7 % in 2000 and 2001. India has also remained somewhat immune from the global crisis, but the countries most affected by the financial crisis which started in 1997 (i.e., Thailand, the Philippines, Malaysia and Korea, as well as Indonesia itself) all were subject to export constraints in 2000 and 2001 due to a variety of factors.

Although Asian markets are expanding, some of the developing countries in Asia have similar but not as serious structural problems as Indonesia. The Newly Industrialised Countries (NICs) in Asia have generally recovered strongly from the regional crisis that started in mid 1997. In 2000, the GDP growth in some of the NICs was strong (10% and 14% in Korea and China respectively) and this is expected to continue, as mentioned above, albeit at more moderate levels.

Except for Indonesia and Thailand, GDP levels in Asia will likely recover to pre crisis levels by end 2000. Developing Asia GDP as a whole is likely to reach 6.0 % in 2001.

6. DEVELOPMENT ENVIRONMENT FOR THE PRINCIPAL RIVER PORTS

6.1 Interaction between the Port and the Region

Infrastructure development has promoted local economic growth, led to the improvement of living conditions in cities and helped decrease regional economic disparities. Generally speaking, transportation infrastructure development contributes to economic development by providing a region with smoother, safer, more reliable and cheaper transportation means. In particular, for industries handling bulky raw materials and products such as coal, oil, wood products and so on, transportation by vessels is considered essential from the view point of saving costs and energy.

Moreover, since containerization prevails in general cargo transportation, the ports capable of handling containers are essential to transport goods produced and consumed in the region. This means that port development is helpful in improving the living standard of the region.

Each province is trying to invite foreign and domestic investment by developing industrial estates. In such a case, port development offers one of the strategies to attract investment in the region. Infrastructure development as well as industrial development will generate demands for construction materials, labor, equipment, fuels and so on, which is known as “the multiplier effect”.

As financial resources for investment are limited in developing countries, the expenditure for construction, administration, management and maintenance of infrastructure should be covered by the revenues from the users of infrastructure unless government subsidies can be expected. In order to increase the cargo throughput at port which generates the revenues necessary for port development, it is vitally important to promote industrial development in the region. Infrastructure to provide access to the port such as roads and railways connecting the port with cities and industrial estates in the hinterland is also indispensable.

When necessary investment is made, industries will come, operate and generate the bulk of cargo transportation demand which produces revenues for the part of the port and also promotes economic development in the region. This concept of mutual prosperity is very important to the port development.

As infrastructure has a long life span and continues to impact inhabitants and industries in the region, it is important to decide the most appropriate time, location and kind of infrastructure to develop in the region considering its effect on regional economy and the welfare of inhabitants.

6.2 Outlook of the Regional Development

6.2.1 General

As stated in the previous section, port development requires a steady increase of cargo throughput, which comes from further industrial development and the improvement of peoples' living standard. In this section, the possibilities of further industrial development both in the whole country and the six provinces where the targeted ports are located are examined.

In the six provinces, natural resources to be exploited for industrial development and export are considered as the land suitable for plantation, the forests for logging and the mines of coal, oil and gas.

Trends of industrial activities observed in the region which seem to have a close relation to the port development are described as follows.

(1) Palm Oil

The production of palm oil in Indonesia amounts to 5.3 million tons, of which 3.3 million tons were exported in 1999 (Fig. 6.2.1).

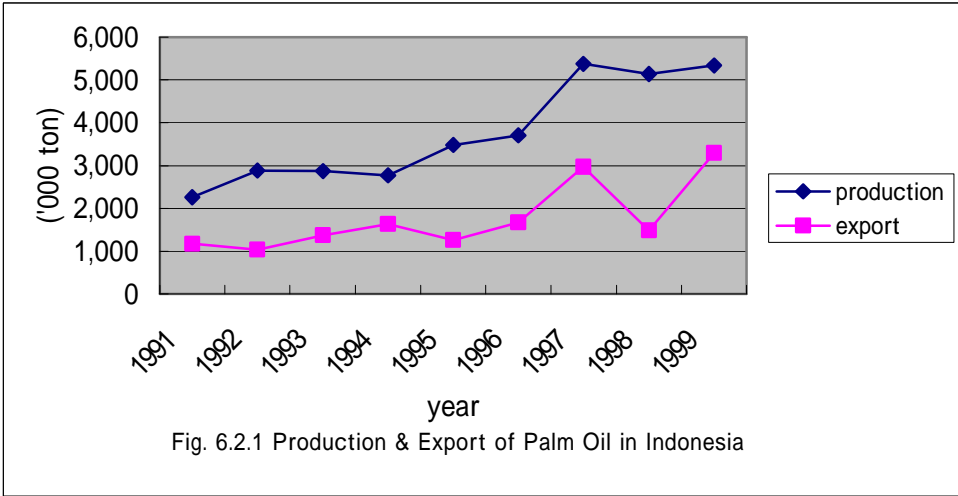


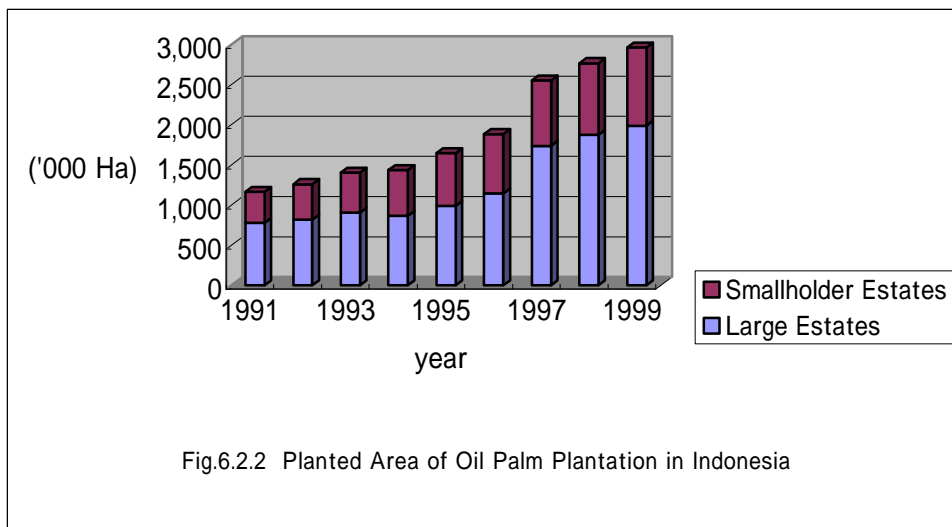
Fig. 6.2.1 Production & Export of Palm Oil in Indonesia

Source: Statistic Indonesia 1995 & 1999, BPS

Palm oil plantations have eagerly been developed since oil prices soared in 1994, and consequently the production has gone up. It is forecast that the production will increase to a level of 10 million tons because more and more land is being cultivated for the plantations.

As for domestic consumption, Indonesia, with a population of more than 200 million, will come to consume at least 10 million tons in a year in the near future, because Malaysia with a population of 21 million consumed 1.2 million tons in 1996. Major importing countries at the moment are EU countries, China, India and Pakistan and the demand in these countries will keep increasing as their economies develop. Moreover, Indonesian Government estimates the potential land development for additional plantations as 9.1 million ha (the current area is about 3 million ha, see Fig.6.2.2).

Therefore, palm oil production in Indonesia is expected to increase greatly in the future.

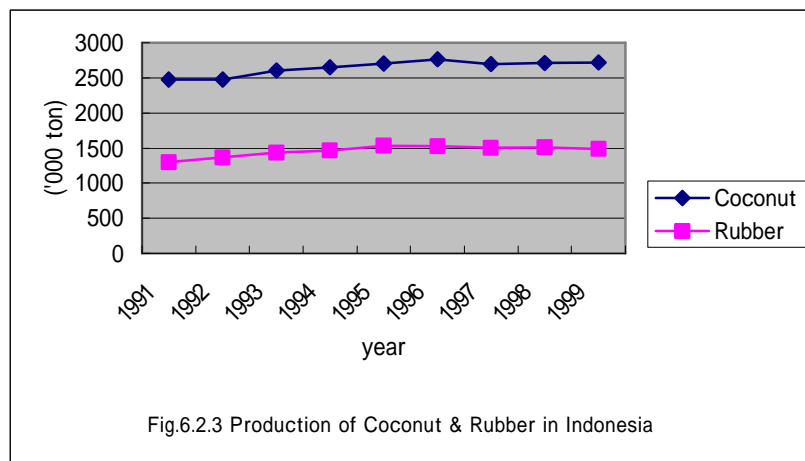


Source: Statistic Indonesia 1995 & 1999, BPS

(2) Coconut and Rubber

The production volumes of rubber and coconut are the second and third largest of all crops in Indonesia.

Fig.6.2.3 shows the production trend of both crops. As can be seen, the production of both crops has remained almost unchanged in the last decade.



Source: Statistic Indonesia 1995 & 1999, BPS

(3) Forestry Products

Log production in Indonesia has fluctuated widely in the range between 20 and 30 million m³ in the last fifteen years. On the other hand, the production of plywood and sawn timber stayed within the

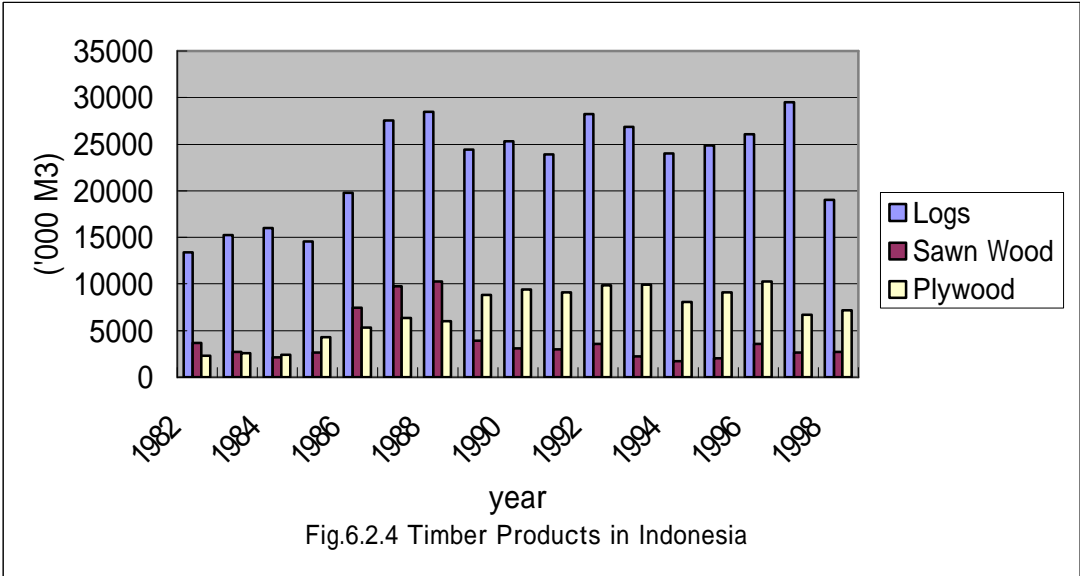
narrow range of 7 - 10 million m³ and 2 - 3 million m³ respectively.

Table 6.2.1 shows the timber production and the exploitable forestry resources area in each province. Comparing log production per exploitable forestry resources area of each province with the national average, all provinces show higher values with the exception of South Sumatra. This means that the forest development in these provinces has reached advanced level.

Fig 6.2.5 - 6.2.8 show the forest land use and exploitable volume of log per ha in Sumatra and Kalimantan. Central and East Kalimantan have wide forestry resources area with large exploitable volume, whereas Riau has wide but less exploitable forestry resources area.

Although the production of plywood in Indonesia was the largest in the world, it has decreased recently due to the increase of production in China, Malaysia and Taiwan following the abolishment of the ban on log export in Indonesia in 1998. Furthermore, the central government is granting no more log concessions. Under these circumstances, increased production of plywood and sawn timber can not be expected.

The production of pulp increased from 3.7 million tons in 1999 to 4 million tons in 2000 and it is projected to increase to 4.5 million tons in 2001 by the Ministry of Industry and Commerce. The Ministry also forecast that the production of paper will increase from 6.9 million tons in 2000 to 7.6 million tons in 2002.



Source: Statistic Indonesia 1995 & 1999, BPS

Table 6.2.1 Timber Production in Riau, Jambi, South Sumatra, West Kalimantan, Central Kalimantan and East Kalimantan

Province	Timber Production ('000M3)					Production Forest('000ha)	Production Activity (m3/Ha)		year
	Logs	Sawn Wood	Plywood	Pulp	Log Equivalent*		(5)/(6)	(1)/(6)	
	(1)	(2)	(3)	(4)	(5)	(6)			
Riau	NA	508	443	1,872	3336	4,770	NA	0.699	1998
Jambi	530	106	631	488	1691	727	0.729	2.326	1999
South Sumatra	284	NA	NA	NA	-	1,112	0.255	-	1998
West Kalimantan	1,004	NA	NA	NA	-	1,506	0.667	-	1998
Central Kalimantan	2,764	130	187	-	-	4,302	0.642	-	1999
East Kalimantan	5,534	189	1,197	-	-	5,192	1.066	-	1999
Indonesia	19,027	2,707	7,155	NA	-	36,702	0.518	-	1998

Assumed that yield rates of sawn timber, plywood and pulp from logs are 0.7, 0.6 and 1.0

Source: Statistic Indonesia 1999, BPS

Riau in Figures 1999, BPS of Riau

Jambi in Figures 1999, BPS of Jambi

South Sumatra in Figures 1999, BPS of South Sumatra

West Kalimantan in Figures 1999, BPS of West Kalimantan

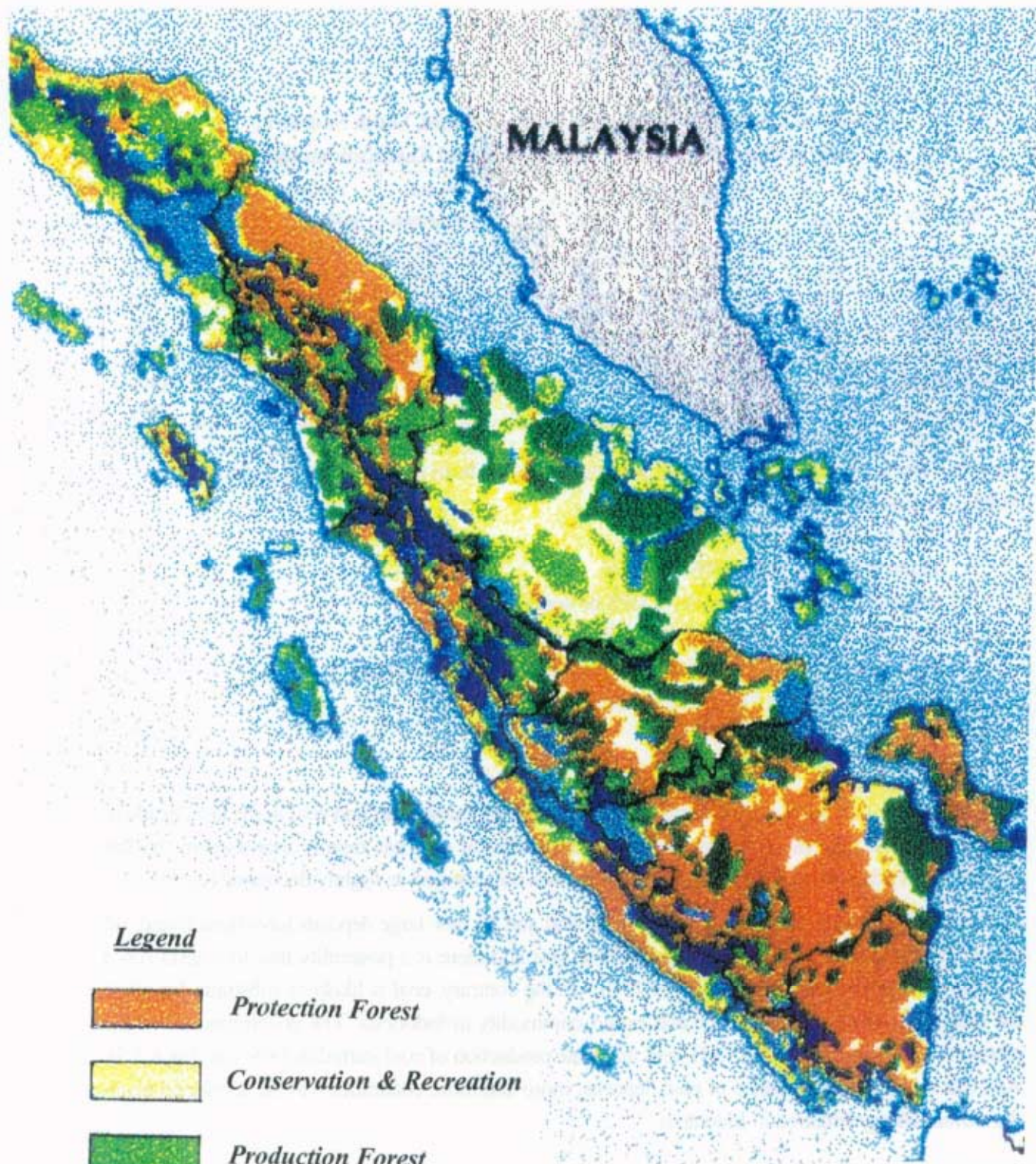
Central Kalimantan in Figures 1999, BPS of Central Kalimantan

East Kalimantan in Figures 1999, BPS of East Kalimantan






(4) Mineral Products

Figure 6.2.9 - 6.2.11 show the production trend of crude oil, natural gas and coal in the last decade in Indonesia. These figures show that while the production of coal has rapidly increased in the last decade, the production of crude oil and natural gas has not changed or slightly decreased recently.

As the oil deposit in Indonesia is considered limited and no new large deposits have been found, oil production is likely to stay at its present level at best and there is a possibility that Indonesia could become an oil-importing country before 2010. On the contrary, coal is likely to substitute for oil as the most important energy resource and export commodity in Indonesia. The government lifted the restraint on coal exploitation in 1981, and full-scale production of coal started in 1990 (see Fig 6.2.5). As Indonesia has an abundance of coal deposits, more and more coalmines will be developed given the current energy situation in Indonesia.



Legend

-  *Protection Forest*
-  *Conservation & Recreation*
-  *Production Forest*
-  *Limited Production Forest*
-  *Conversion Forest*
-  *Other Land Use*

Source: *Final Forest Resources Statistics Report 1996, Ministry of Forestry*

Figure 6.2.5 Forest Land Use in Sumatra

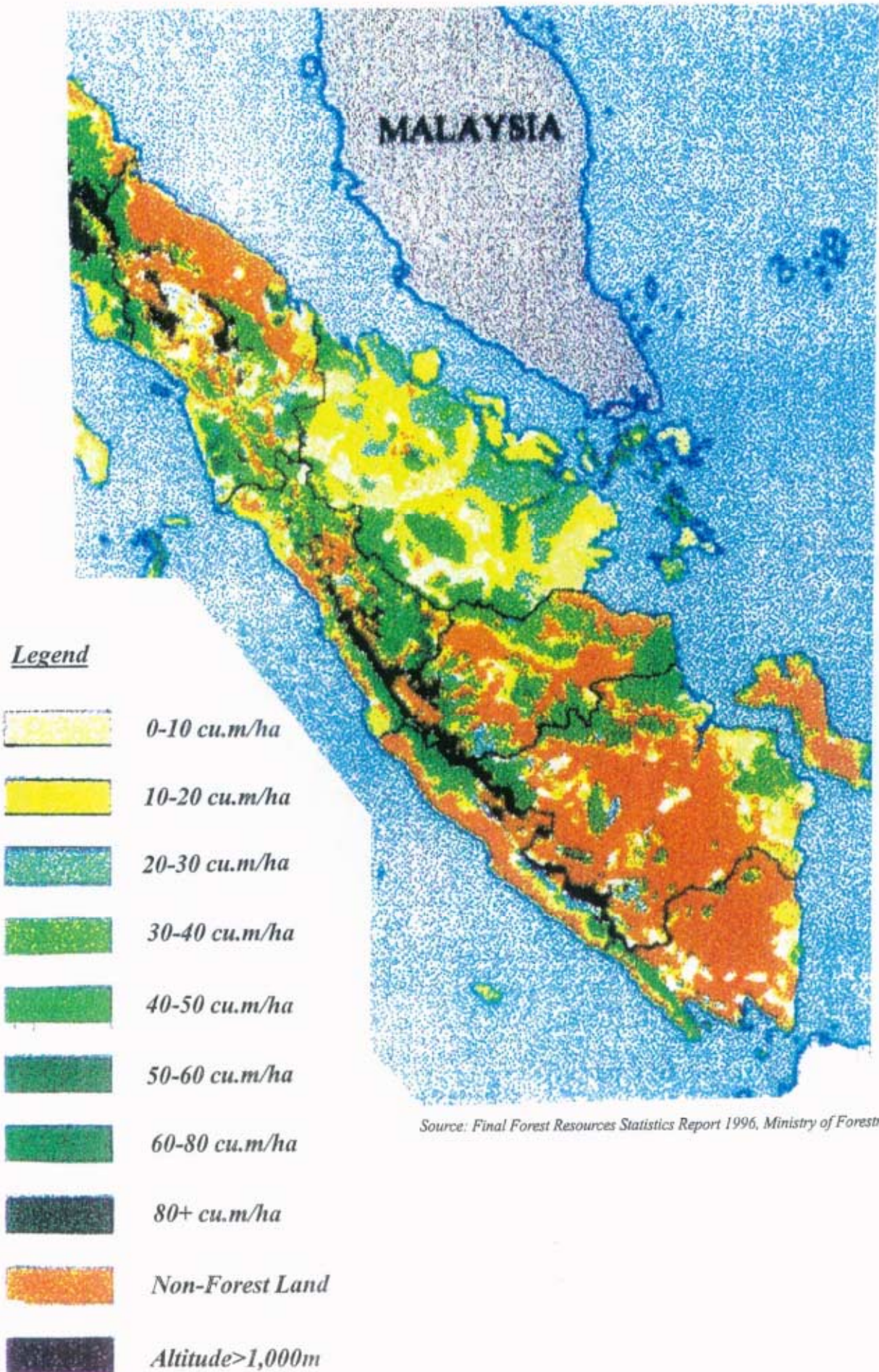
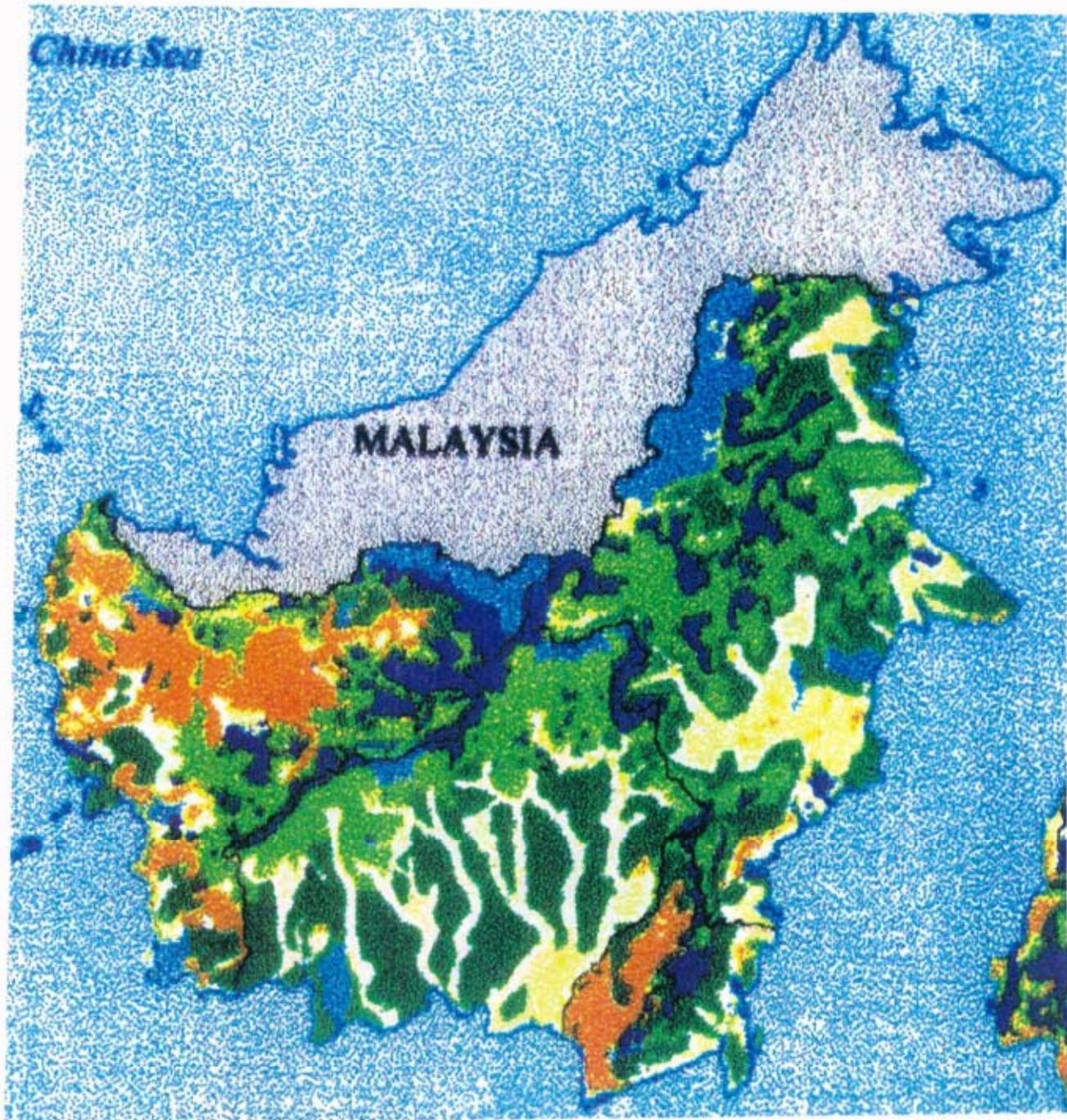


Figure 6.2.6 Exploitable Volume of Log per Ha in Sumatra



Source: Final Forest Resources Statistics Report 1996, Ministry of Forestry

Legend







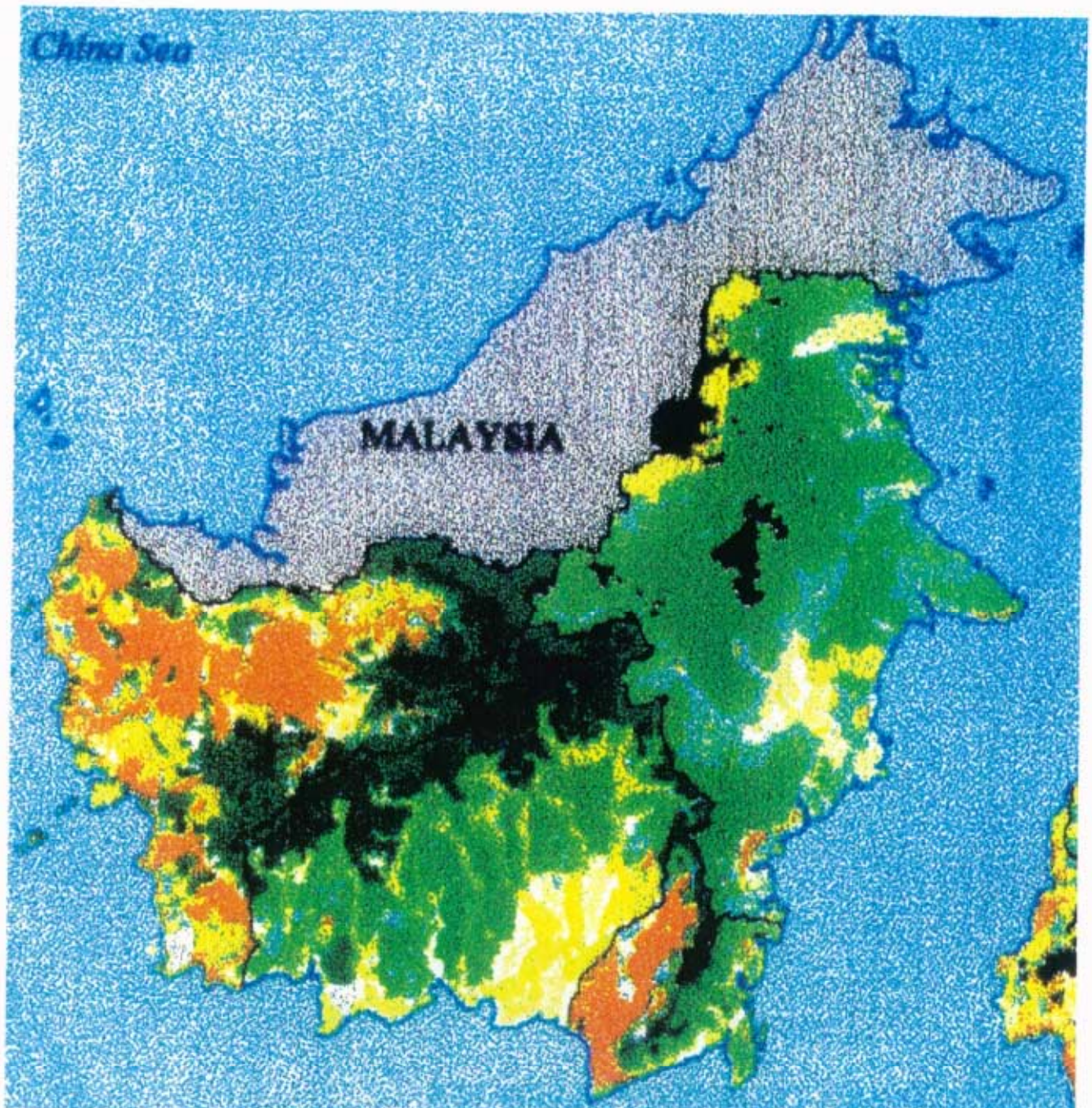
-  *Protection Forest*
-  *Conservation & Recreation*
-  *Production Forest*
-  *Limited Production Forest*
-  *Conversion Forest*
-  *Other Land Use*

Figure 6.2.7

Forest Land Use in Kalimantan



Source: Final Forest Resources Statistics Report 1996, Ministry of Forestry

Legend

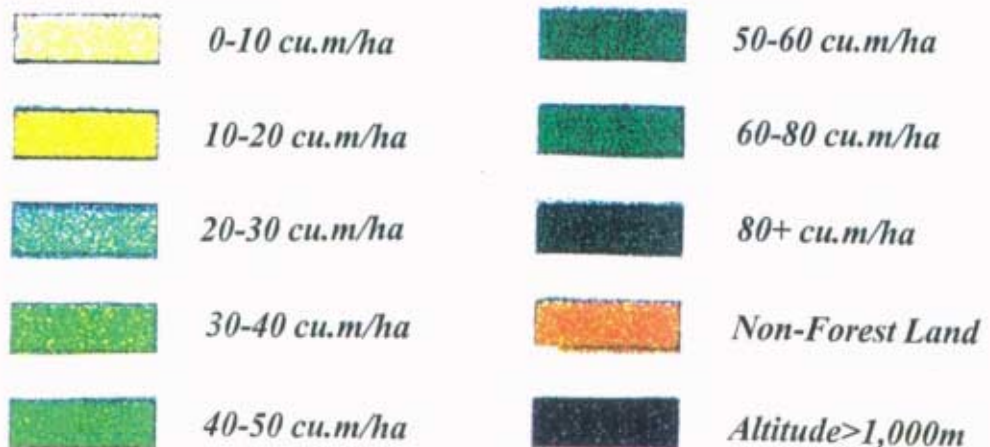
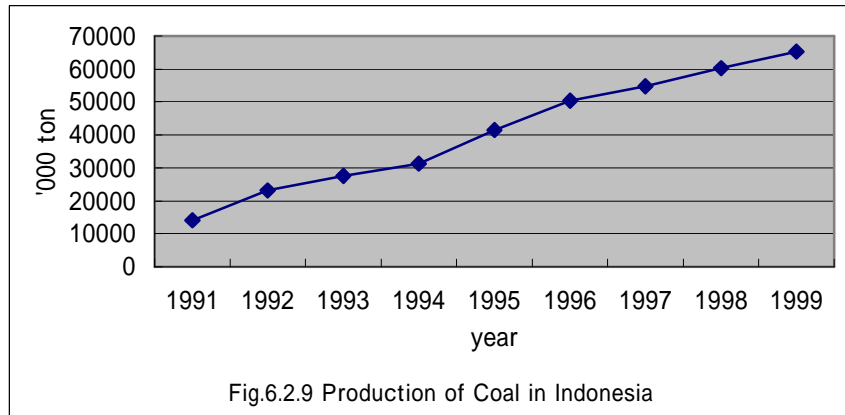
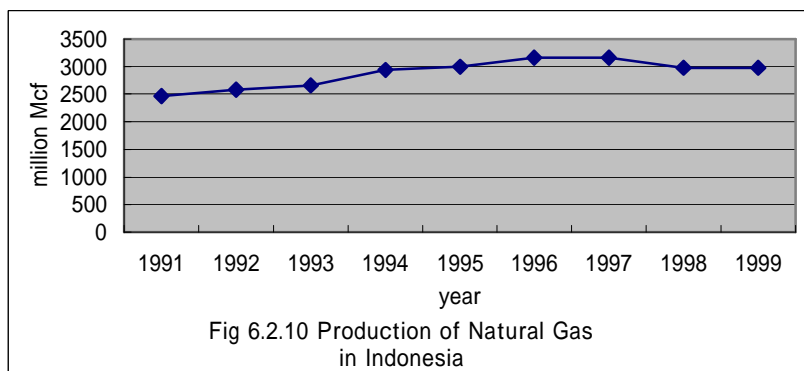


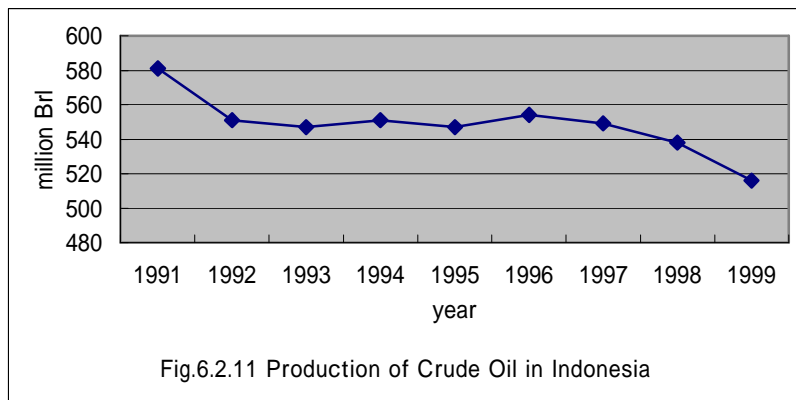
Figure 6.2.8 Exploitable Volume of Log per Ha in Kalimantan



Source: Statistic Indonesia 1995 & 1999, BPS



Source: Statistic Indonesia 1995 & 1999, BPS



Source: Statistic Indonesia 1995 & 1999, BPS

6.2.2 Development Tendency of the Each Provinces

(1) Riau

1) Spatial Plan

“ Spatial Plan” was formulated based on “the Act for Harmonious Development of the Land” designating protection areas, cultivation areas and special areas. The special areas where a high priority is put on the management of spatial land use are given the developmental priority. The concept of special areas is to clarify the potential sector for development and particularly the possibility of industrial development in the hinterlands of the targeted ports.

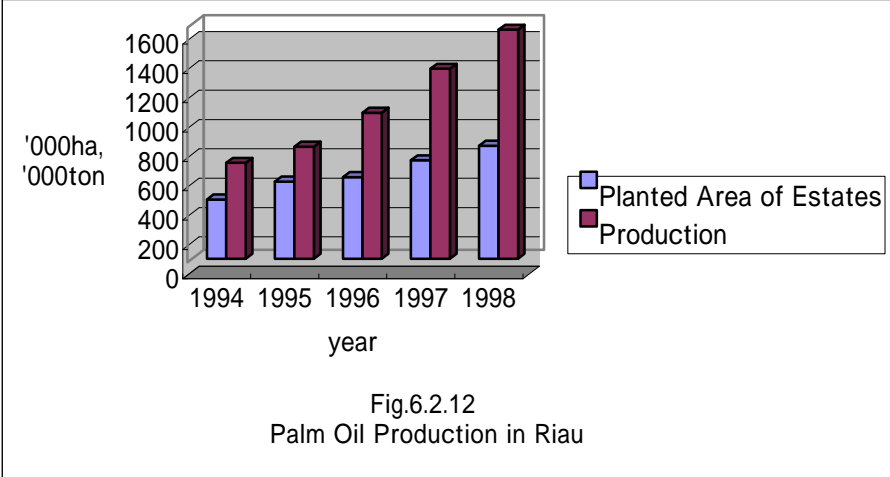
In Riau, Pekanbaru, Dumai and Rengat-Kulua Enok are designated as “Spatial Areas” for the development in the following sectors/sub-sectors.

Pekanbaru	Industry, Estate, Food Crops and Mining
Dumai	Industry, Estate and Fishery
Rengat-Kuala Enok	Estate, Food Crops and Mining

Pekanbaru and Dumai areas are considered to be influenced by the development of Pekanbaru Port.

2) Plantation Development

Riau, one of the largest CPO producing provinces, has steadily increased production of palm oil as shown in Fig 6.2.12. Moreover, Riau has sufficient land suitable for developing palm oil estates and possibility of expanding the total estate area up to 1.2 million ha.



Source: Riau in Figures 1999, BPS of Riau

CPO is processed for making products such as edible oil, margarine, detergent, soap and other chemicals. The location and production of CPO processing factories is shown in Table 6.2.2. The processing capacity of factories in Riau is so small that a large part of CPO is shipped out without being processed. Therefore, the expansion of CPO processing capacity is vital in Riau. The provincial government (DINAS) of Riau forecast that CPO production will increase from 1.8 million

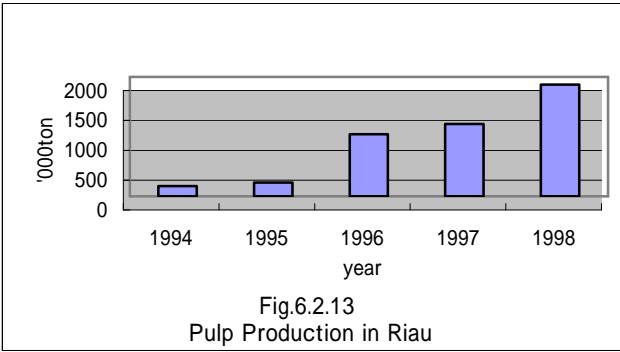
tons in 1999 to 2.7 million tons in 2002.

Table 6.2.2 CPO Processing Factories in Indonesia

Edible Oil		Margarine/Shortening	Soap/Detergent		
North Sumatra	22	17 companies	Jakarta	24	
Riau	3		Other	16	
Lampung	3				
Jakarta	12				
East Java	9				
West Java	3				
Other	5				
Total	57		Total	40	
Production	2,138,000 ton	Production	455,000 ton	Production	431,000 ton

3) Forestry Development

The production of pulp and paper is another main industry in Riau which has increased recently as shown in Fig 6.2.13. As the demand for pulp and paper is expected to keep increasing, the production is also expected to increase.



Source: Riau in Figures 1999, BPS of Riau

4) Mining Development

The production of crude oil and natural gas has almost been stable at the level of 300 million barrels and 120 million Mscf respectively.

Although coal mine development is proposed in Indragiri, the details are unknown. If the coal is produced there, it could be carried using Indragiri river waterway on which the ports of Rengat and Tambilahan are located. There is also a plan to develop a new port of Muara Enok.

5) Industrial Development

Following development is proposed in relation to the port Pekanbaru.

Riau: Dumai Industrial Estate Development (partly completed)

10 km north of Dumai
CPO processing and cement

Other industrial estate development is proposed at Pekanbaru, Perawang and Button.

6) Direction of Industrial Development

The prospect of regional development can be judged as follows based on provincial government's outlook and existing reports on several regional development projects.

- Further development of oil palm plantations
- Increase in CPO production
- Establishment of CPO processing factories
- Increase in pulp and paper production
- Coalmine development

(2) Jambi

1) Spatial Plan

In Jambi, Muara Bulian and Muara Bungo-Sarolangun are designated as special areas for the development in the following sectors/sub-sectors.

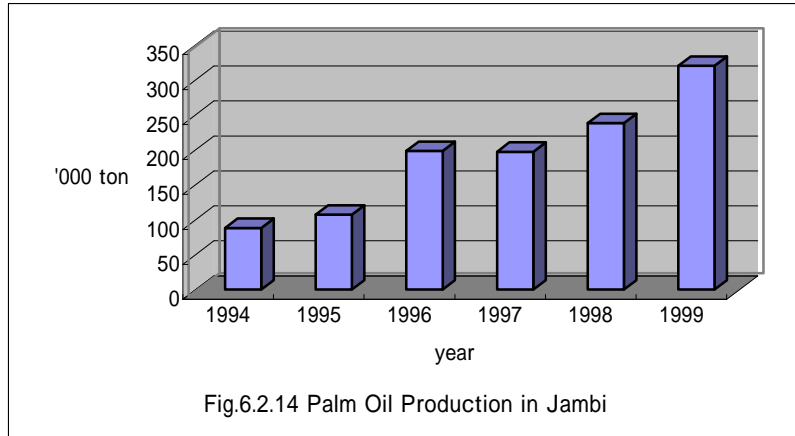
- Muara Bulian Industry, Estate, Food Crops, Fishery and Tourism
- Muara Bungo-Sarolangun Estate, Forestry and Food Crops

These two areas are considered to be influenced by the development of Jambi Port.

2) Plantation Development

The production of palm oil in Jambi has increased recently as shown in Fig 6.2.14.

The production of rubber and coconuts has leveled off at about 230,000 tons and 120,000 tons respectively whereas palm oil production has rapidly increased. The provincial government has a plan to expand the oil palm plantation from 0.3 to 1 million ha. Due to the shortage of the processing capacity of CPO, a large amount of CPO is transported to neighboring provinces for processing. It is very important for the province of Jambi to increase the processing capacity of CPO.



Jambi in Figures 1999, BPS of Jambi

3) Mining Development

The coalmine development is going on in Jambi as follows.

The development of coal mines in Sarolangan-Bangko reGENCY
 100 million ton deposit, 2 million tons of annual production
 Operation is to start in April 2001.

To be consumed at the Surabaya power plant or for export

Coal is considered a main commodity to be handled at Jambi Port.

4) Industrial Estate Development

In relation to Jambi Port, the following development is proposed.

Muara Sabak Port and industrial estates

Port facilities: 750 ha

Purit Culum Industrial Estate

CPO processing and petrochemical industry

Santa Fe Oil Field and Refinery

Processing capacity: 100,000 BPD

Crude oil import: 68,000 BPD (32,000 BPD from Santa Fe)

And a project to build a power plant is going on in the western region which is expected to ensure energy supply for the industrial development.

Lake Kerinci Hydroelectric Power Plant

Capacity: 350 MW

Green light given by a Norwegian Investor

Starting in Nov.2001 and scheduled to be completed 2008

5) Direction of Industrial Development

The prospect of regional development can be judged as follows based on provincial government's outlook and existing reports on several regional development projects.

- Further development of oil palm plantation
- Increase in CPO plantation
- Establishment of CPO processing factories
- Oil refinery
- Petrochemical industry in industrial estate near Muara Sabak
- Coalmine development

(3) South Sumatra

1) Spatial Plan

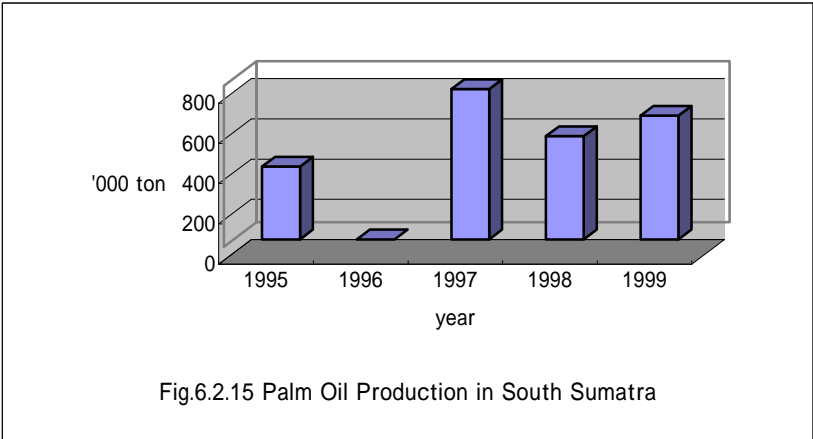
In the mainland of Sumatra, Palembang, Muara Enim and Lubuk Linggau are designated as the special areas for the development in the following sectors/sub-sectors.

Palembang	Industry, Forestry and Food Crops
Muara Enim	Estate, Food Crops and Mining
Lubuk Linggau	Industry, Estate and Food Crops

These three areas are considered to be influenced by the development of Palembang Port.

2) Plantation Development

The production of palm oil in South Sumatra has fluctuated in the last few years as shown in Fig 6.2.15.



Data for 1996 not available
Source: South Sumatra in Figures 1999, BPS of South Sumatra

The other main crops in South Sumatra are coffee and rubber. The production of these crops is around 140 thousand tons and 540 thousand tons respectively, both of which have increased gradually in the last few years.

3) Mining Development

South Sumatra is one of the provinces with the biggest production of coal as well as oil and gas. The main coal mine is Tanjung Enim Coalmine and its expansion is under consideration as follows.

Expansion of Tanjung Enim Coal Mine (PT. Bukit Asam, 200 million tons per year)

Currently producing about 10 million tons per year

Having a quite big deposit

PT. BA (Bukit Asam) has an expansion plan to produce as much as 20 million tons per year

Coal is transported by rail to Panjang Port to ship out to power plants and so on.

4) Industrial Development

In relation to Palembang Port, following development is proposed.

Tanjung Api-api Port and Industrial Estate Development

Provincial government has prepared 8,000 ha of land for development

CPO processing factory and other industries

Sungai Lais Industrial Estate Development

The area behind the Sungai Lais Port Terminal

The plan to develop a CPO terminal (on-going)

5) Direction of Industrial Development

The prospect of regional development can be judged as follows based on provincial government's outlook and existing reports on several regional development projects.

Further development of oil palm plantations

Increase in CPO production

Establishment of CPO processing factories

Coalmine expansion

(4) West Kalimantan

1) Spatial Plan

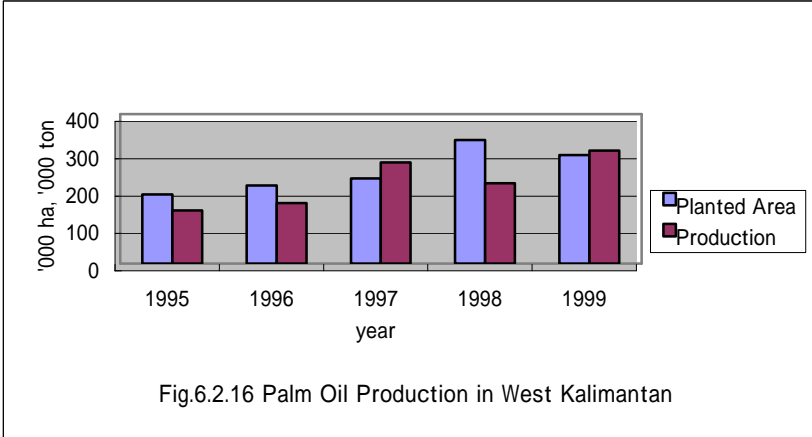
In West Kalimantan, Pontianak, Johar-Sanggau, Singkawang, Kapuas Hulu and Ketapang are designated as the special areas for development in the following sectors/sub-sectors.

Pontianak	Industry, Food Crops and Fishery
Johar-Sanggau	Industry, Estate, Food Crops and Mining
Singkawang	Industry, Estate and Food Crops
Kapuas Hulu	Estate and Food Crops
Ketapang	Industry, Estate, Forestry, Food Crops and Fishery

The four areas excluding Ketapang which is located outside Kapuas River System are considered to be influenced by the development of Pontianak.

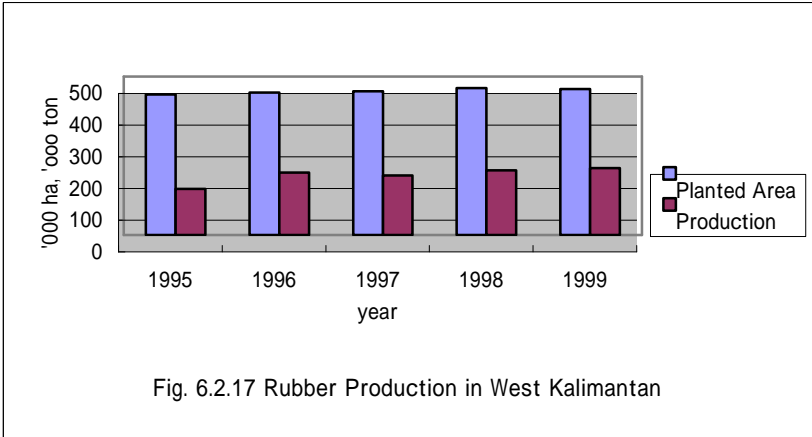
2) Plantation Development

The production of palm oil in West Kalimantan has increased recently after a decline from 1997 to 1998 as shown in Fig 6.2.16.



Source: West Kalimantan in Figures 1999, BPS of West Kalimantan

The second largest estate crop is rubber. The planted area and the production of rubber have changed little recently.



Source: West Kalimantan in Figures 1999, BPS of West Kalimantan

3) Forestry Development

Although the target of log production was set at 1,558,000 m3 in 1998/1999, the actual production was far less than that at 1,004,000 m3. It is unknown whether the reason for lowering production is insufficient road condition or a change in the international market condition.

4) Mining Development

Although a large scale of exploitation of coal, bauxite and so on is considered possible in West Kalimantan, there are neither current activities nor new plans for mining development.

5) Direction of Industrial Development

The prospect of regional development is judged as follows based on provincial government outlook and existing reports on several regional development projects.

- Establishment of timber processing factory
- Further development of oil palm plantation
- Increase in CPO production
- Establishment of CPO processing factory
- Exploitation of mineral deposits (coal mine development)

(5) Central Kalimantan

1) Spatial Plan

In Central Kalimantan, one area is designated for each port as the special area for the development in the following sectors/sub-sectors.

Sampit	Industry, Estate, Forestry, Food Crops and Fishery
Pangkalanbun (Kumai)	Industry, Estate, Forestry, Food Crops and Fishery
Kuala Kpuas	Estate, Forestry and Food Crops
Buntok	Estate, Forestry, Food Crops and Tourism
Muarateweh	Estate, Food Crops and Animal Husbandry

Sampit/Kuala Kapuas areas and Pangkalanbun area are considered to be influenced by the development of Sampit Port and Kumai Port respectively, because the other two areas are strongly connected with Banjarmasin Port through a highway and the Barito River system.

2) Plantation Development

Palm oil plantation was introduced into this area relatively recently. The production and planted area have increased rapidly and are likely to keep increasing in Central Kalimantan as shown in Fig 6.2.18. On the contrary, new rubber plantation development seems to be halted, and production has leveled off or began decreasing (Fig 6.2.19).

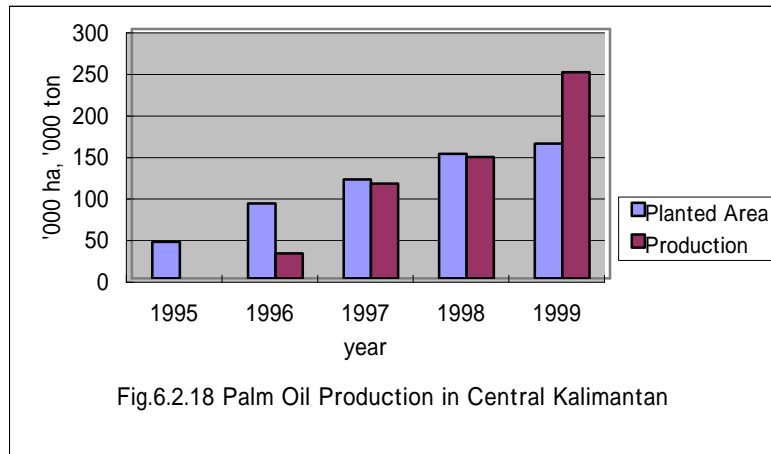
The construction of CPO/PKO sea terminal has already started at Kumai Port.

A terminal to handle CPO/PKO at Bumiharjo-Kumai

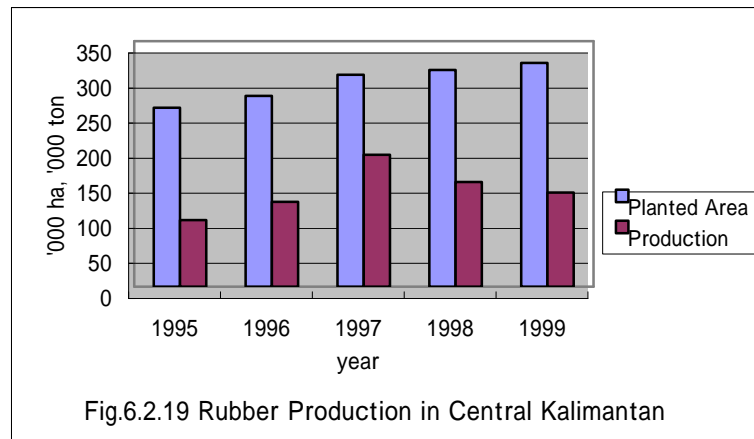
Area: 60ha

Storage Tank: 3,000ton x 5 units

Loading Dolphin: 1 unit



Source: Central Kalimantan in Figures 1999, BPS of Central Kalimantan



Source: Central Kalimantan in Figures 1999, BPS of Central Kalimantan

3) Forestry Development

Log production in Central Kalimantan amounted to 3.4 million m³ in 1998, and 2.8 million m³ in 1999. However, processed wood products such as sawn timber and plywood accounted for only 0.59 million m³ in 1998, and 0.40 million m³ in 1999. This means that 70% ~ 80% of logs were shipped out without processing.

4) Direction of Industrial Development

The prospect of regional development can be judged as follows based on provincial government outlook and existing reports on several regional development projects.

- Establishment of timber processing factory
- Further development of oil palm plantation
- Increase in CPO production

Establishment of CPO processing factory

(6) East Kalimantan

1) Spatial Plan

In East Kalimantan, Balikpapan-Samarinda, Tanjung Redep, Tarakan and Tanah Grogot are designated as special areas for development in the following sectors/sub-sectors.

- Further development of oil palm plantations
- Increase in CPO production
- Establishment of CPO processing factories
- Increase in pulp and paper production
- Coalmine development

These areas excluding Tarakan area are considered to be influenced by the development of Samarinda Port while Tarakan area has its own port of Tarakan.

2) Economic Growth Projection

The provincial development and planning board (BAPPEDA) of East Kalimantan projected its economic growth up to 2005 as shown in Table 6.2.3-5.

Table 6.2.3 Population Forecast in East Kalimantan

Year	Population (million)
1990	1.88
2000	2.55
2001	2.71
2005	2.97
Growth rate (2001-05, %/y)	2.34

Source: PROPEDA 2001-2005, BAPPEDA of East Kalimantan

**Table 6.2.4 Projection of GRDP Structure and Growth
by Sector in East Kalimantan**

Business Sector	Structure (2005), %	Av. Growth Rate (2001-05), %/y
Agriculture	7.71	6.41
agriculture	NA	7.72
forestry	3.09	4.90
fishery	NA	9.20
Mining and Quarrying	29.18	4.05
oil & gas	17.73	NA
non oil & gas	10.74	9.31
Manufacturing	39.07	5.27
oil & gas	29.85	4.49
non oil & gas	9.22	6.88
Electricity, Gas & Water Supply	0.23	7.57
Construction	3.00	8.42
Trade, Hotel & Restaurant	9.76	3.06
Transportation & Communication	7.72	5.08
Finance, Dwelling & Business Service	1.72	5.48
Services	1.62	4.78
TOTAL with Oil & Gas	100.00	4.87
TOTAL without Oil & Gas	NA	6.10

Source: PROPEDA 2001-2005, BAPPEDA of East Kalimantan

Table 6.2.5 Projection of GRDP and Income per Capita in East Kalimantan

(million Rp.)

Year	GRDP Per Capita		Income Per Capita	
	with O&G	without O&G	with O&G	without O&G
2005	28.58	21.34	15.31	11.22

Source: PROPEDA 2001-2005, BAPPEDA of East Kalimantan

3) Plantation Development

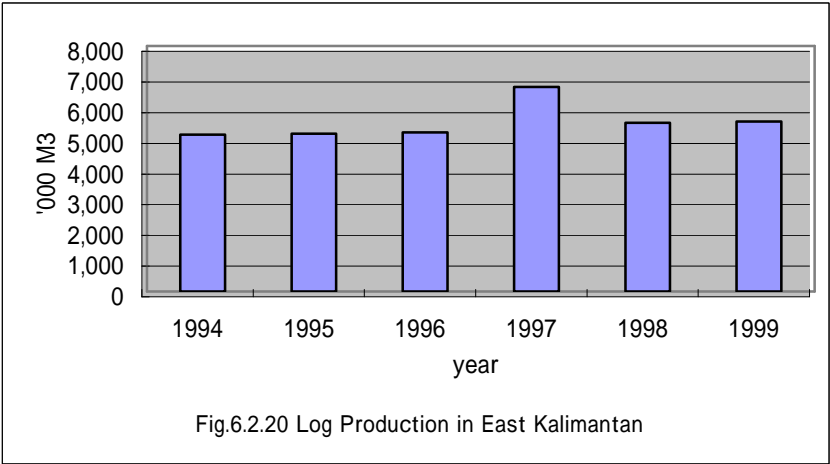
Major plantation crop in East Kalimantan is palm oil. The planted areas increased from 92,000 ha in 1998 to 117,000 ha in 1999, which yielded 227,000 tons and 356,000 tons of palm oil respectively. Oil palm plantations are located in Pasir and Kutai Regencies in the southern area of the province, which are included in the hinterland of either Balikpapan Port or Samarinda Port. Considering the growth of planted area, the production is also expected to grow.

4) Forestry Development

Annual log production in East Kalimantan has been almost stable as shown in Fig 6.2.20.

Wood processing is the most active industry in Samarinda area, which produces 70% of plywood, 60% of sawn timber, 80% of block board and 70% of molding of the whole production in the

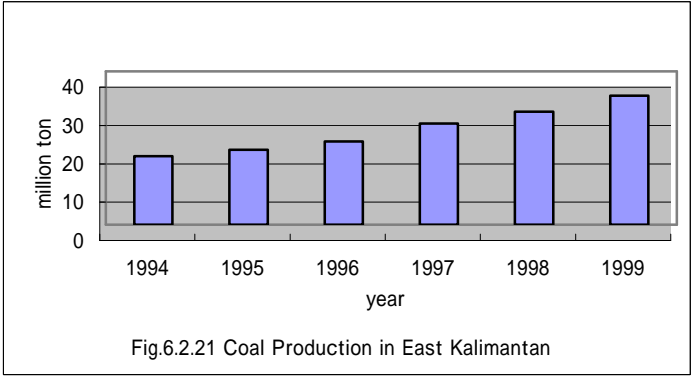
province. The production of each product remains stable. In 1999, the total production of processed wood was 1.57 million m³. This means that about half of the logs produced in East Kalimantan was shipped out without processing.



East Kalimantan in Figures 1999, BPS of East Kalimantan

5) Mining Development

Production of coal in East Kalimantan has rapidly increased recently.



East Kalimantan in Figures 1999, BPS of East Kalimantan

Production of oil and natural gas in East Kalimantan slightly decreased in 1999 after an abrupt increase from 1997 to 1998 (Table 6.2.6).

Table 6.2.6 Mining Productions in East Kalimantan

Products	(unit)	1997	1998	1999
Oil	(MMSTB)	10,870	78,275	70,205
Natural Gas	(MMSCF)	468,962	1,785,885	1,561,679
LNG	('000 M3)	34,376	36,913	NA

East Kalimantan in Figures 1999, BPS of East Kalimantan

Deposits of oil, natural gas and coal are estimated as shown in Table 6.2.7.

Table 6.2.7 Deposits of Mineral Resources in East Kalimantan

Crude Oil (MMSTB)		Natural Gas (MMSCF)		Coal (million ton)
Land	Off Shore	Land	Offshore	
450,000	740,000	11,000,000	27,000,000	5,400

PROPEDA 2001-2005, BAPPEDA of East Kalimantan

6) Industrial Estate Development

At Kariangau (Balikpapan) in East Kalimantan, an industrial development was planned using ADB loan, and then canceled. The project is still moving forward very slowly.

7) Direction of Industrial Development

The prospect of regional development can be judged as follows based on provincial government outlook and existing reports on several regional development projects.

- Establishment of timber processing factories
- Further development of oil palm plantations
- Increase in CPO production
- Establishment of CPO processing factories
- Expansion of coal mining
- Industrial estate development

(7) Conclusion

Each province plans to develop further oil palm plantations and increase CPO production capacity. Since some provinces still have a huge undeveloped area suitable to plantation, it is expected that further development will proceed and CPO production will greatly increase. Location of existing palm oil plantation and development plans are shown in Fig 6.2.22-27.

CPO processing capacity should be expanded to produce more value-added products in every province. This is one of the purposes of industrial estate development.

Deforestation is likely to continue keeping a balance with conservation of forest resources. Further, it is preferable to establish more timber processing factories to produce more value-added products in every province.

Production of oil and gas is likely to maintain present levels. Some provinces have plans to establish petrochemical industries and others have plans to develop or expand coal mines. Location of mineral resources is shown in Fig 6.2.22-27.

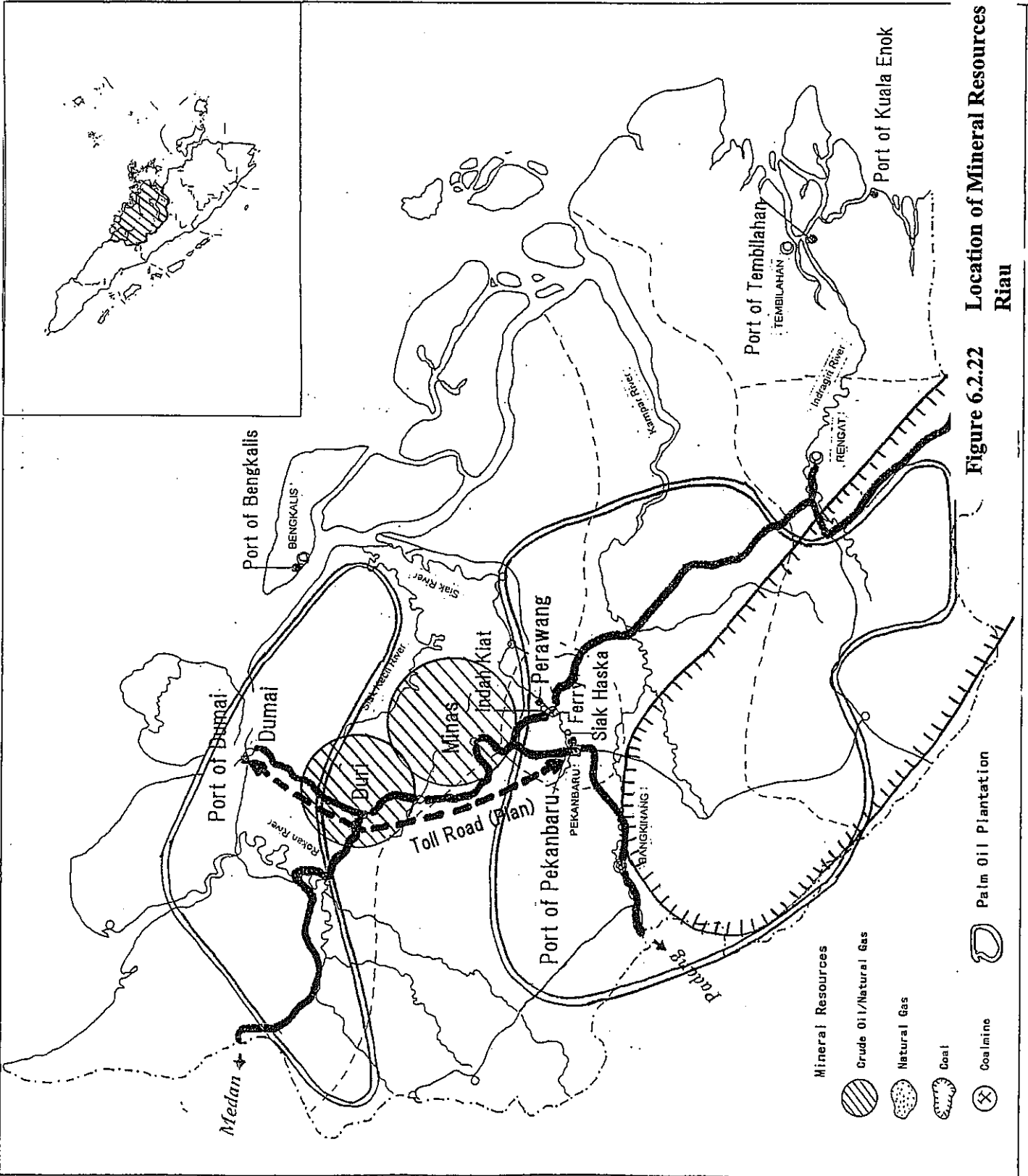


Figure 6.2.22 Location of Mineral Resources and Palm Oil Plantation in Riau

RIAU PROVINCE

LEGEND

- Border of Nation
- Border of Province
- Border of Regency
- Province Capital
- Regency Capital
- Municipality
- Another Cities
- Highways
- Provincial Road
- Railway
- River

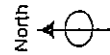
North

Scale 1: 2,000,000

JAMBI PROVINCE

LEGEND

- Border of Nation
- Border of Province
- Border of Regency
- Province Capital
- Regency Capital
- Municipality
- Another Cities
- Highways
- Provincial Road
- Railway
- River



Scale 1: 2,000,000

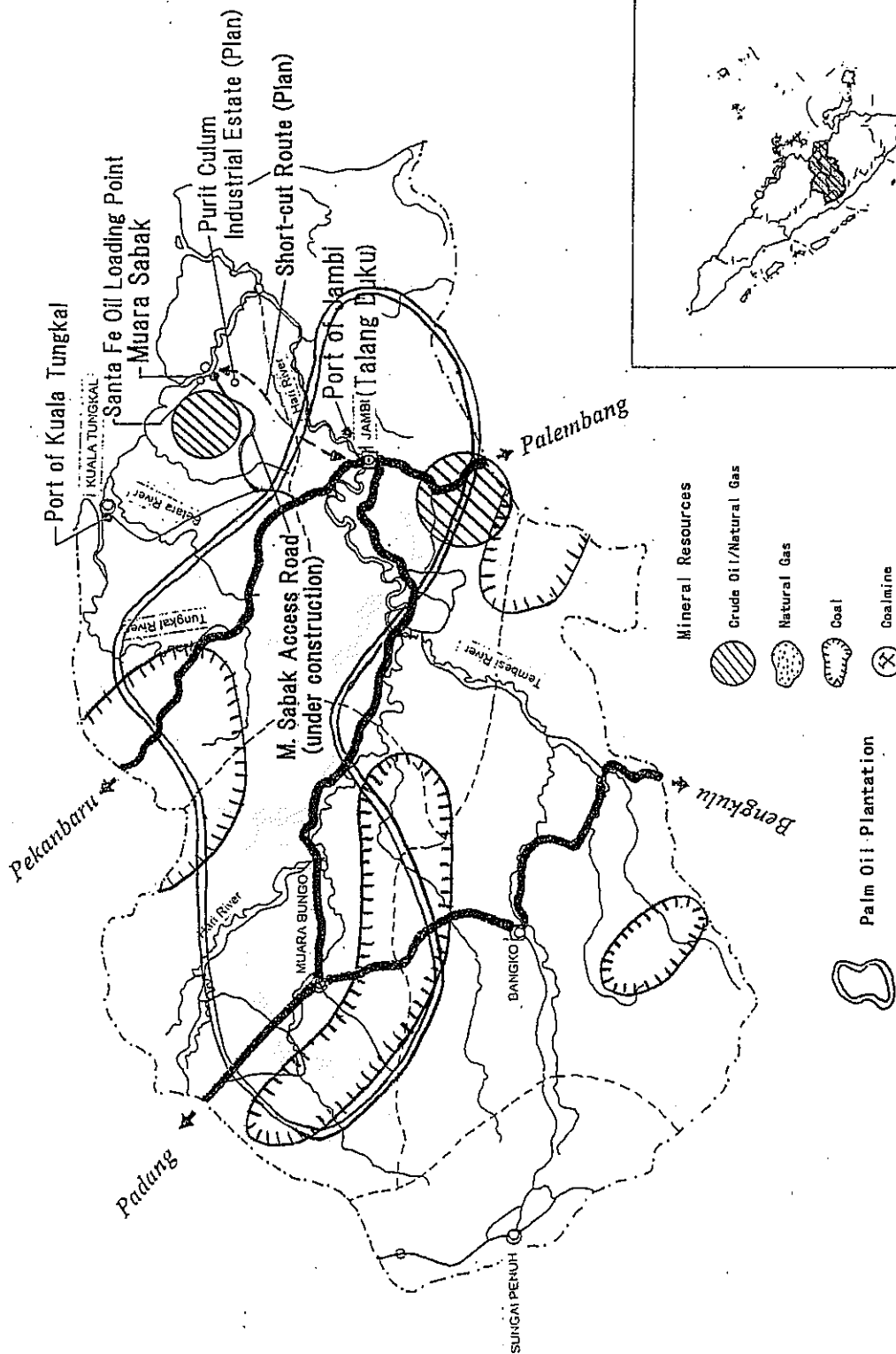











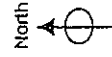


Figure 6.2.23 Location of Mineral Resources and Palm Oil Plantation in Jambi

SOUTH SUMATRA PROVINCE

LEGEND

-  Border of Nation
-  Border of Province
-  Border of Regency
-  Province Capital
-  Regency Capital
-  Municipality
-  Another Cities
-  Highways
-  Provincial Road
-  Railway
-  River



Scale 1: 2,000,000

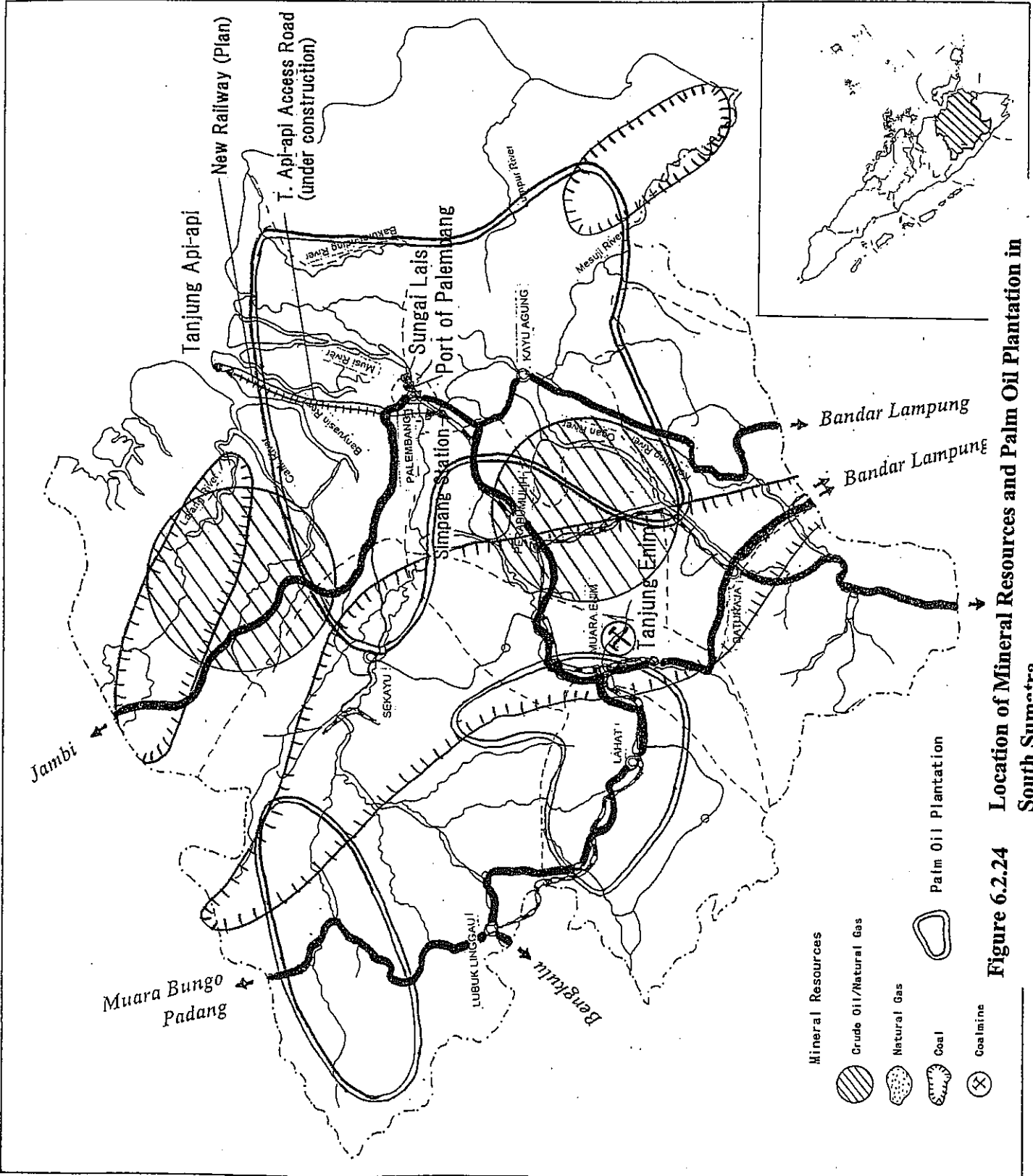
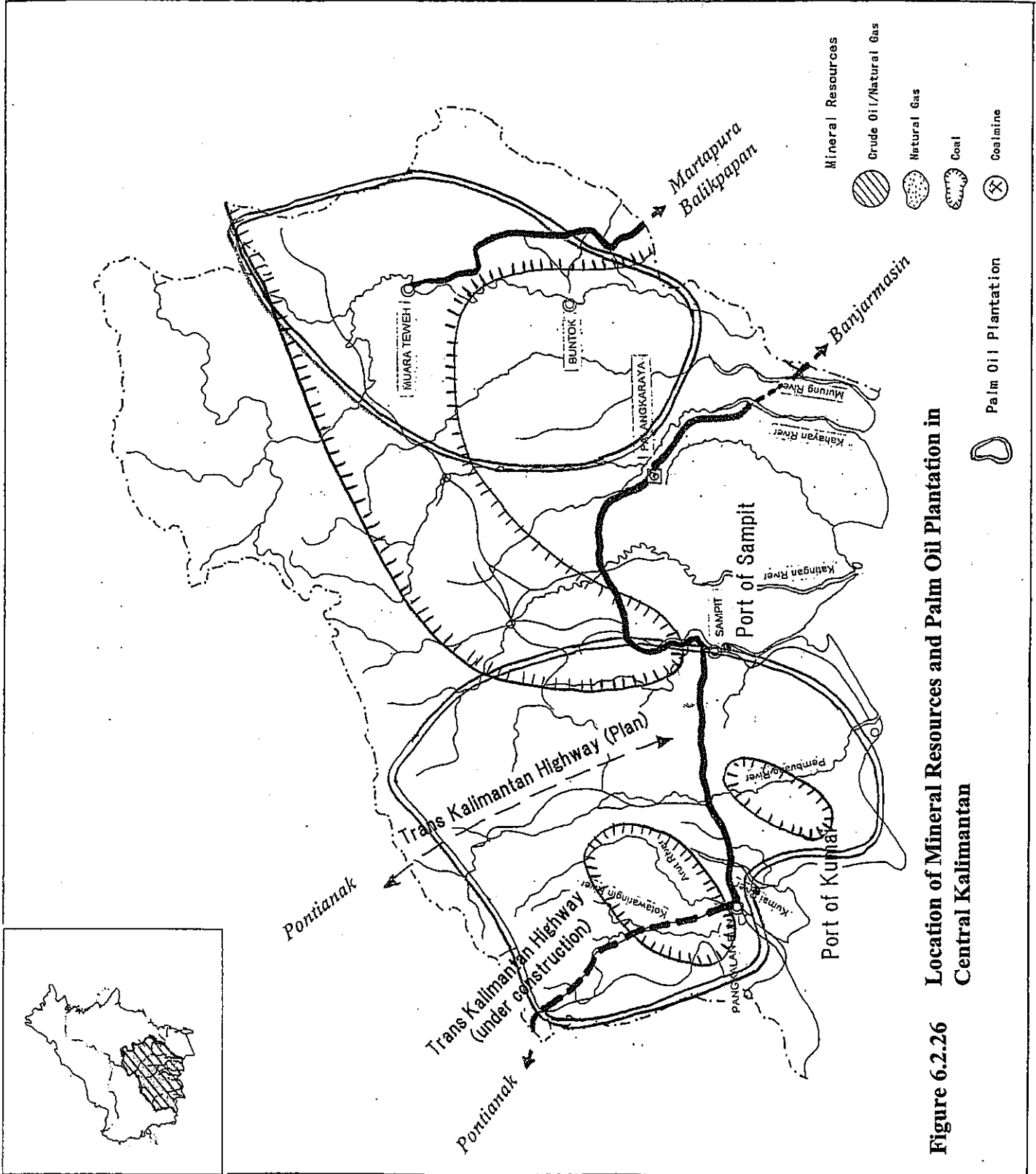


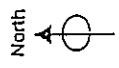
Figure 6.2.24 Location of Mineral Resources and Palm Oil Plantation in South Sumatra



**CENTRAL
KALIMANTAN
PROVINCE**

LEGEND

- Border of Nation
- Border of Province
- Border of Regency
- Province Capital
- Regency Capital
- Municipality
- Another Cities
- Highways
- Provincial Road
- Railway
- River



Scale 1:2,000,000

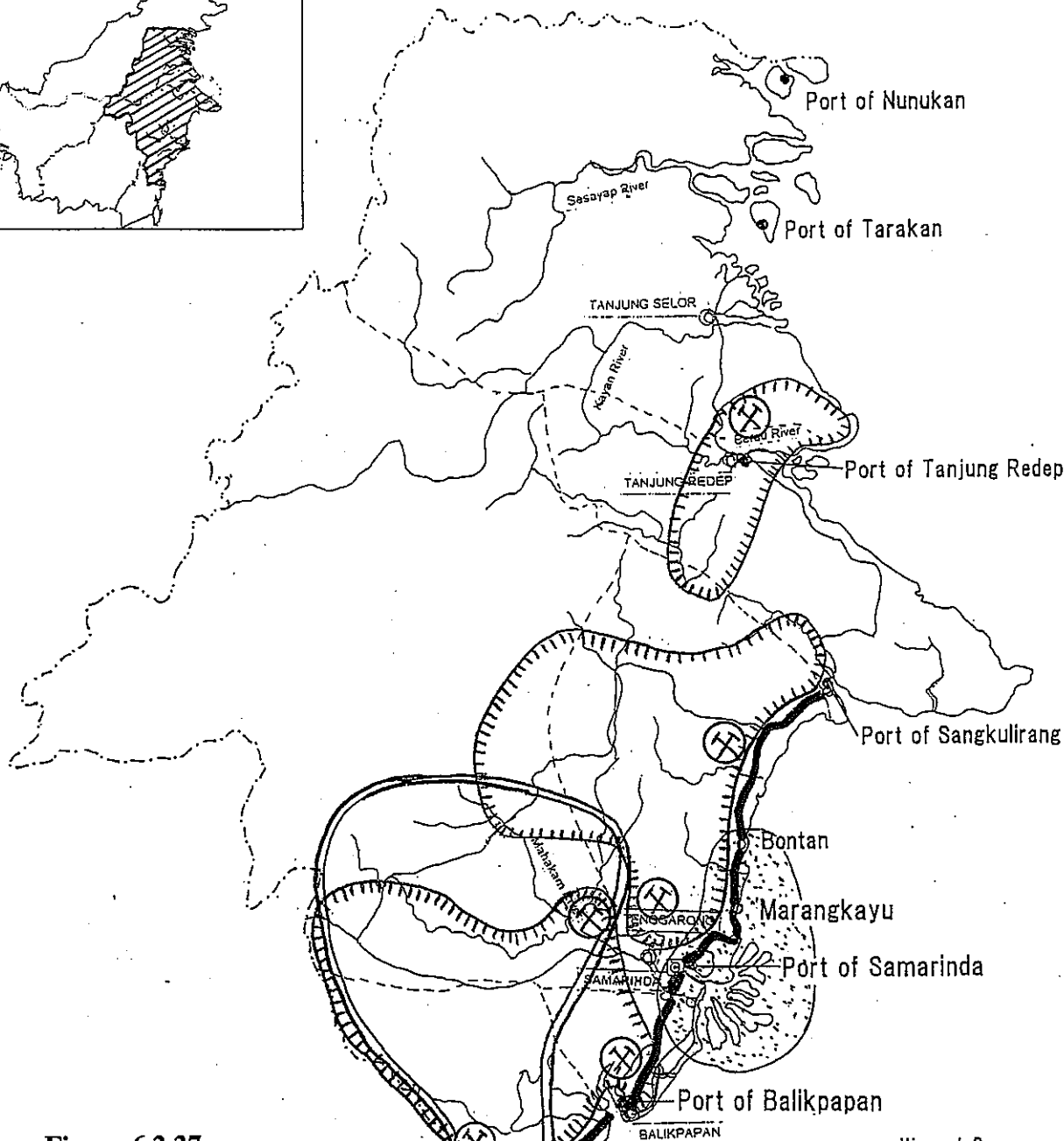
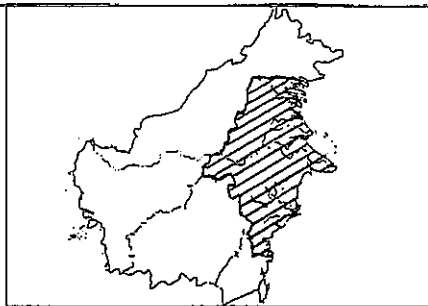







Figure 6.2.27

Location of Mineral Resources and Palm Oil Plantation in East Kalimantan












- Mineral Resources**
-  Crude Oil/Natural Gas
 -  Natural Gas
 -  Coal
 -  Coalmine


Muarateweh
Martapura
Banjarmasin

 Palm Oil Plantation

EAST KALIMANTAN PROVINCE

LEGEND

-  Border of Nation
-  Border of Province
-  Border of Regency
-  Province Capital
-  Regency Capital
-  Municipality
-  Another Cities
-  Highways
-  Provincial Road
-  Railway
-  River

North 
Scale 1 : 3,500,000

6.3 Evaluation of Inland Transportation Network

6.3.1 Present Situation and Development Plan of Roads related to the Seven Ports

(1) Port of Pekanbaru

The main road in Riau, the Trans Sumatra Highway, runs through the middle of the lowland parallel to the east coast of Sumatra connecting the cities of Jambi, Rengat, Pekanbaru, Minas, Duri and Dumai with each other.

A road connects Pekanbaru and Dumai by four-hour drive of a passenger car.

Although there is a plan to build a toll road between Pekanbaru and Dumai, and a third bridge over Siak River connecting the central urban area of Pekanbaru with the north bank of the river, the construction has not started yet.

(2) Port of Jambi

The main road of Jambi, two Sumatra Highways, run through the middle of the lowland of Jambi along the eastern skirt of the mountains parallel to the east coast of Sumatra Island connecting the cities of Jambi, Pekanbaru, Palembang, Bengkulu and Padang with each other.

A road connects Jambi and Muara Sabak by three-hour drive of a passenger car. As the half-length of this road is left unpaved, its improvement is required. This road will be completed by 2004 and provide an access to the existing Muara Sabak Port and an oil field (Santa Fe).

(3) Port of Palembang

Basic road system related to the port is similar to that of Jambi. Trans Sumatra Highways connect the cities of Palembang, Bandar Lampung, Bengkulu and Jambi with each other.

A 68km-long road between Palembang and Tanjung Api-api has been planned and a part of it has been built with a provisional section. Only 15km of the whole length has been paved, and moreover, about a half of the paved portion is badly damaged. As the road runs through a swampy land, it will be required to improve the road substructure to avoid serious damages, which implies a considerable rise in the construction cost. Although it is planned to complete the road by 2004, a longer period of time may be required.

(4) Port of Pontianak

The road network is very poor in Kalimantan, because a large part of the area is either swampy or mountainous. The road density is much less than the national average.

Although the main road of Kalimantan, Trans Kalimantan Highway is planned to connect main cities with each other, so far neither the road to connect West Kalimantan with Central Kalimantan nor the road network inside each province has been completed yet. Although a road from Pontianak to Sanggau and Sintang was built, the road condition is not good.

(5) Port of Kumai/Port of Sampit

The main road in Kalimantan, Trans Kalimantan Highway, connects the cities of Pangkalanbung, Palangkaraya (Capital of Province) and Banjarmasin with each other.

The highway is under construction between Pangkalanbun and Pontianak, and the construction of another route is proposed inland.

(6) Port of Samarinda

Trans Kalimantan highway is extended from the south boarder to Sangkurirang. The highway will be further extended to the northern part of the province in the future.

6.3.2 Railway Development Plan related to the Seven Ports

Only South Sumatra has railways in the areas where the targeted seven ports are located.

The railway connects the cities of Lampung, Baturaja, Perabumulih, Palembang, Muara Enim, Lahat and others. The railways are used to transport minerals such as coal as well as passengers.

A conceptual framework of Trans Sumatra Railway Network has been made, and railway construction plan has been proposed for the portion between Palembang (Simpang) and Tanjung Api-api to transport coal.












Although a railway construction plan has been proposed to connect coalmines and a seaport in East Kalimantan, the plan has not been materialized yet.

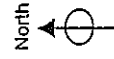
6.3.3 Possible Future Inland Transportation Network related to the Seven Ports

Fig. 6.3.1 to 6.3.6 show possible future inland transportation network related to the target ports.

RIAU PROVINCE

LEGEND

-  Border of Nation
-  Border of Province
-  Border of Regency
-  Province Capital
-  Regency Capital
-  Municipality
-  Another Cities
-  Highways
-  Provincial Road
-  Railway
-  River



Scale 1: 2,000,000

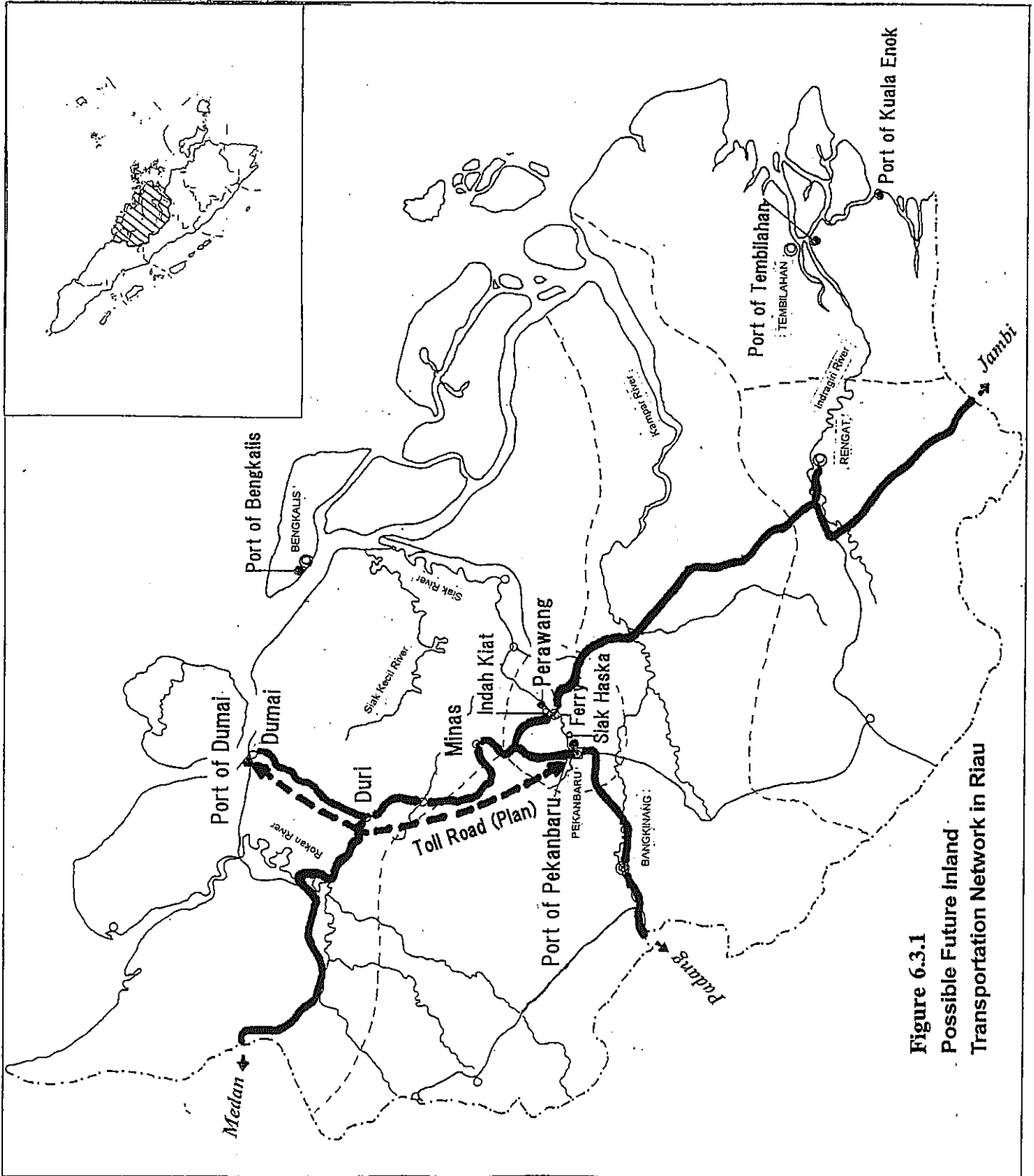











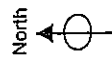


Figure 6.3.1
Possible Future Inland
Transportation Network in Riau

SOUTH SUMATRA PROVINCE

LEGEND

-  Border of Nation
-  Border of Province
-  Border of Regency
-  Province Capital
-  Regency Capital
-  Municipality
-  Another Cities
-  Highways
-  Provincial Road
-  Railway
-  River



Scale 1:2,000,000

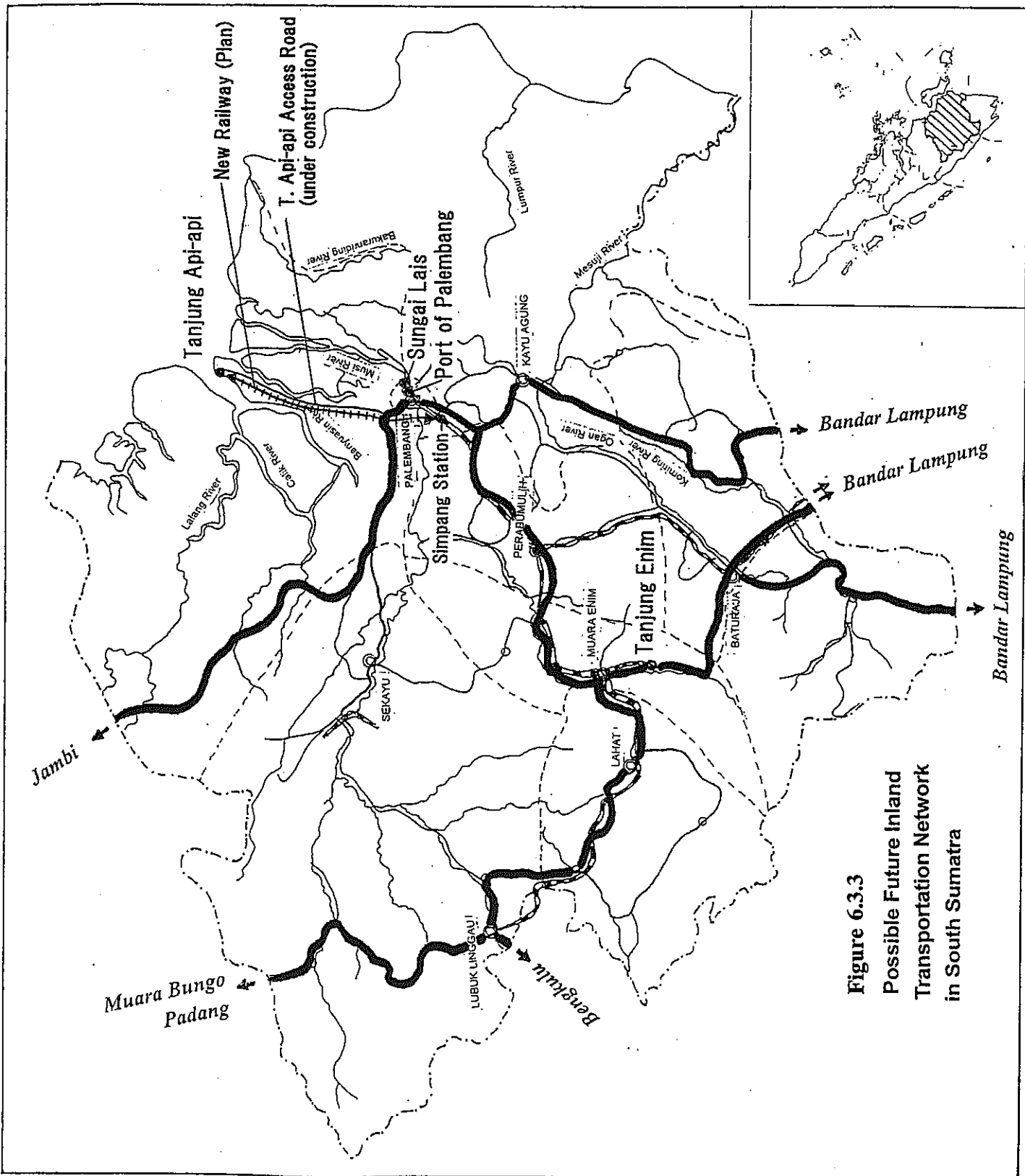











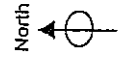


Figure 6.3.3
Possible Future Inland
Transportation Network
in South Sumatra

WEST KALIMANTAN PROVINCE

LEGEND

-  Border of Nation
-  Border of Province
-  Border of Regency
-  Province Capital
-  Regency Capital
-  Municipality
-  Another Cities
-  Highways
-  Provincial Road
-  Railway
-  River



Scale 1: 3,000,000

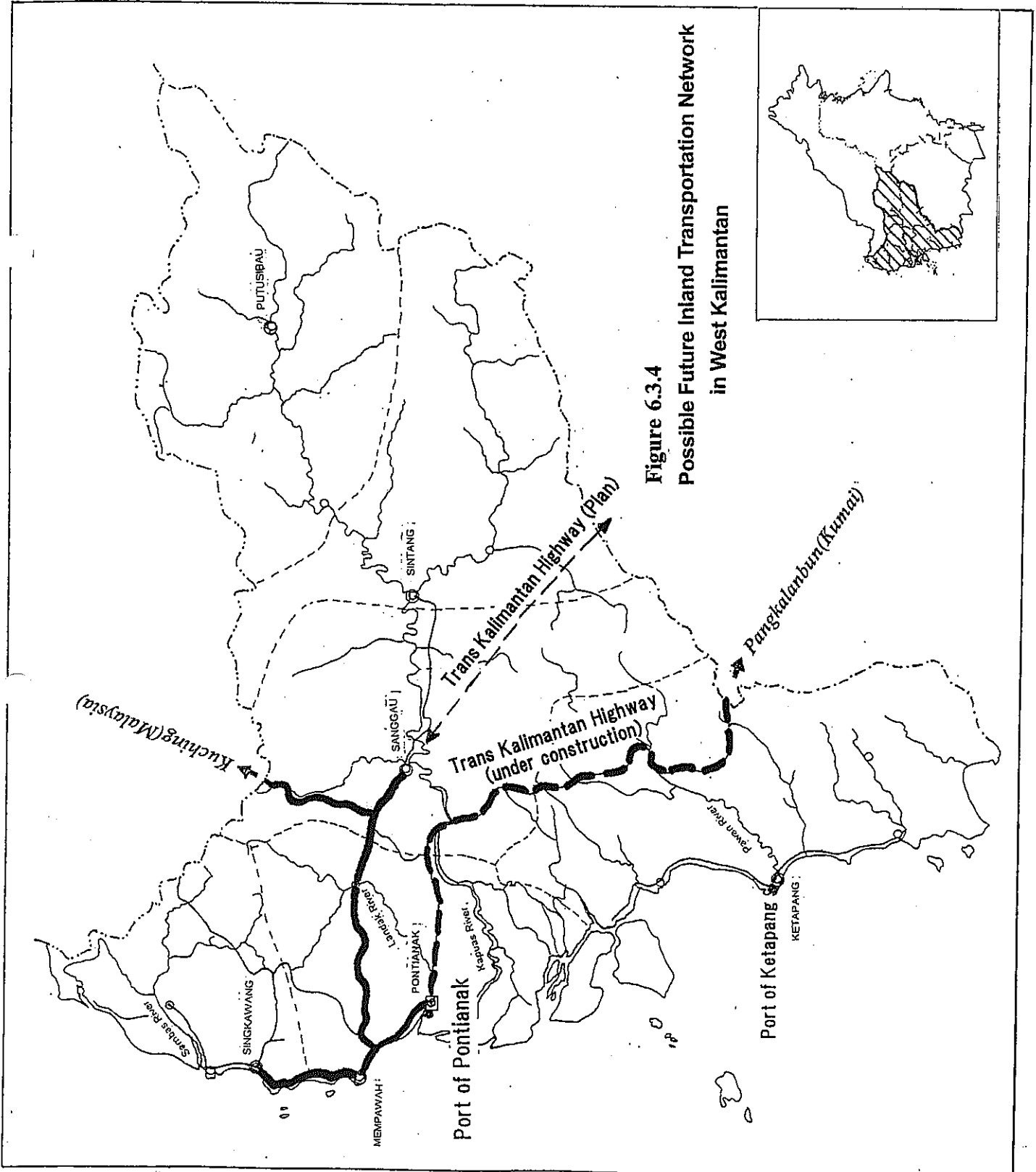











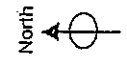


Figure 6.3.4
Possible Future Inland Transportation Network
in West Kalimantan

CENTRAL
KALIMANTAN
PROVINCE

LEGEND

-  Border of Nation
-  Border of Province
-  Border of Regency
-  Province Capital
-  Regency Capital
-  Municipality
-  Another Cities
-  Highways
-  Provincial Road
-  Railway
-  River



Scale 1: 2,000,000

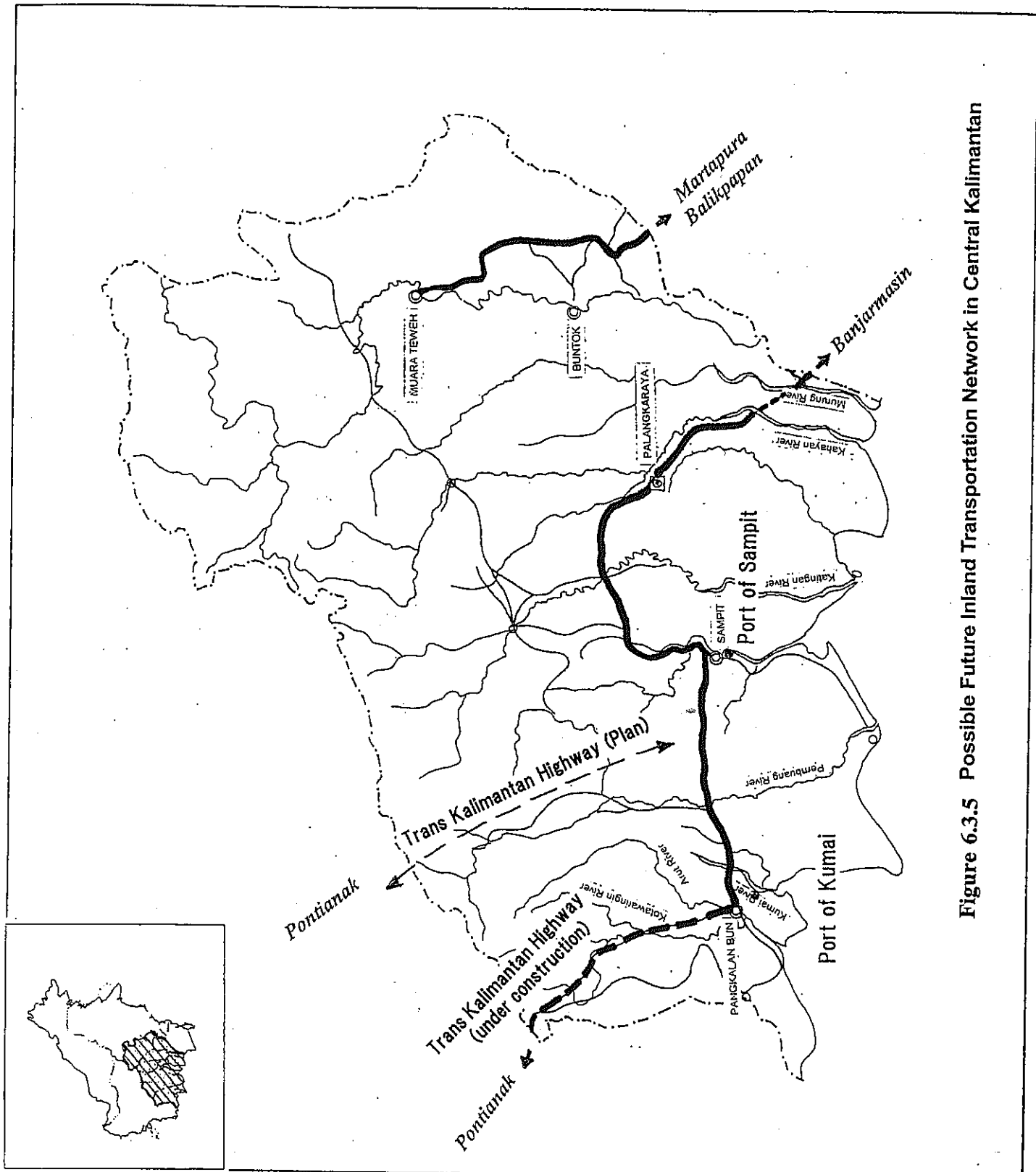


Figure 6.3.5 Possible Future Inland Transportation Network in Central Kalimantan

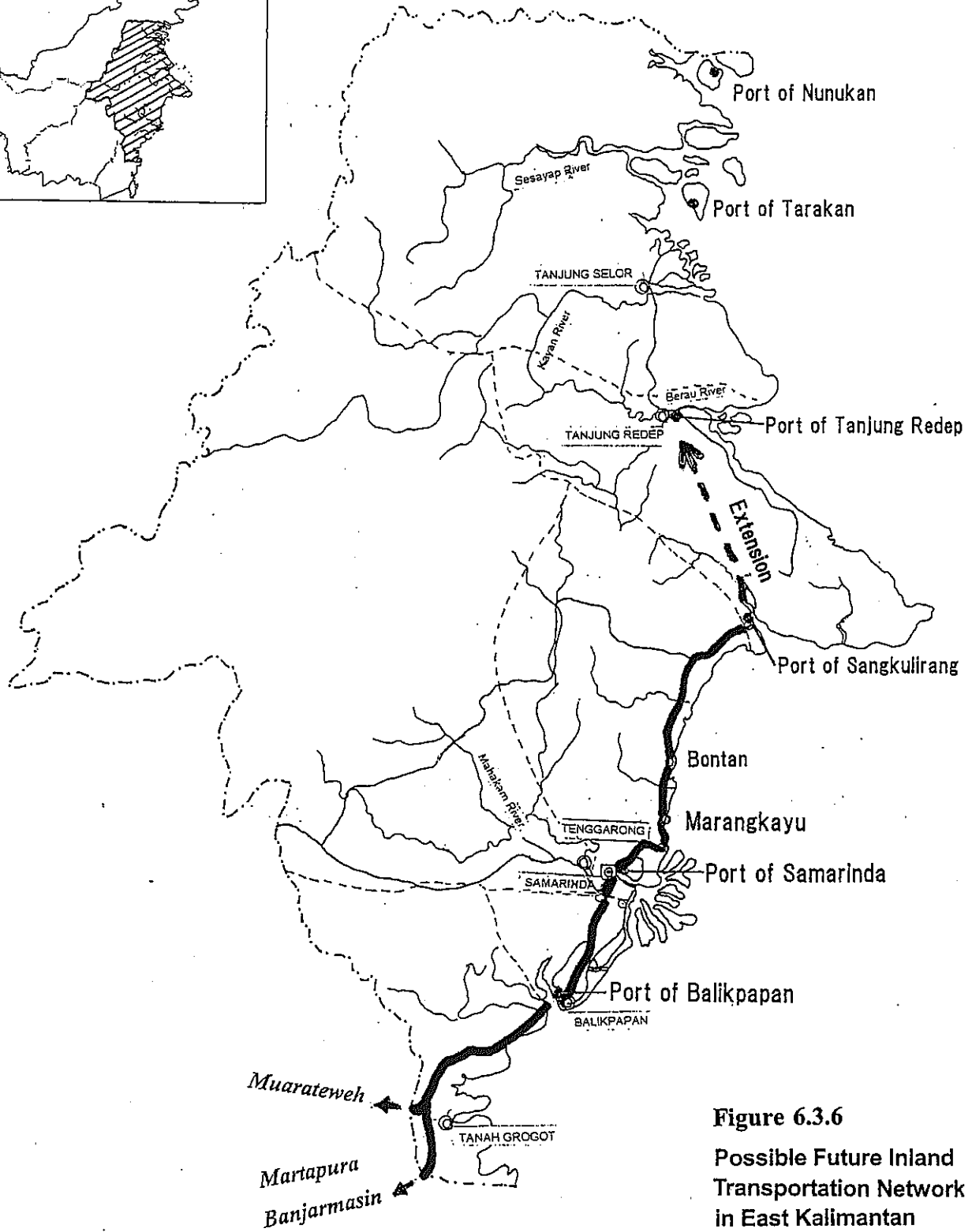
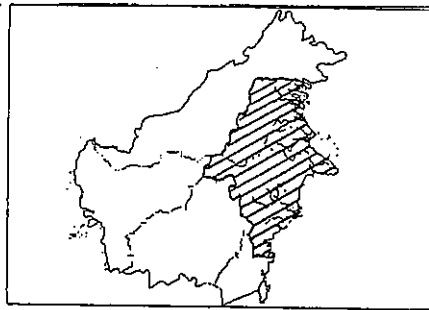


Figure 6.3.6
Possible Future Inland Transportation Network in East Kalimantan

EAST KALIMANTAN PROVINCE

LEGEND

- Border of Nation
- Border of Province
- Border of Regency
- Province Capital
- Regency Capital
- Municipality
- Another Cities
- Highways
- Provincial Road
- Railway
- River



Scale 1 : 3,500,000