

LEGEN











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|---|-----------------|---|-------------------|
|  | Urban Center |  | Port |
|  | Satellite Town |  | Power Station |
|  | Industrial Zone |  | Transmission Line |
|  | Road |  | Export |
|  | Airport |  | Raw Materials |

Fig. 2.4.3 Schematic Concept for Development

(4) Improvement of Telecommunication System

- 1) Expansion of exchange system,
- 2) Expansion of outside plant,
- 3) Diffusion of OPMC,
- 4) Software center development,
- 5) CAI system development, and
- 6) Establishment of demand forecast system.

(5) Water Resources Development

- 1) Master plan for Urban drainage and sewerage treatment system,
- 2) Feasibility study for Palembang water supply, and
- 3) Feasibility study for Banyuasin floodway.

(6) Tourism Promotion

- 1) Old quarter rehabilitation and conservation,
- 2) Sriwijaya archeological park museum development, and
- 3) Sriwijaya festival promotion.

(7) Kampung Development Program

- 1) Kampung development program.

(8) Improvement of Agricultural Produce Marketing

- 1) Development of cold storage facilities in urban markets, and
- 2) Improvement of slaughter facilities and cold storage in urban centers.

(9) Institutional Support

- 1) Establishment of IDEP Management Unit (IMU)

2.5 DESCRIPTION OF KEY PROJECTS

Selected projects are indicated in Figure 2.5.1 and briefed as follows:

(1) Development of Industrial Estates

The primary objective of this project is to develop infrastructure intensively in some limited location, to provide a set of infrastructure for potential investors, and, as a result, to promote investment from both domestic and abroad. Supplementary aim is to advance areal development through promotion of processing industries of similar kinds and accumulation of local small scale enterprises.

This project comprises three stages: first, planning stage to conduct pre-investment or feasibility study for decision making; second, implementation stage comprising contracting, engineering and construction; and finally, operation stage with the location or settlement of investors and administration. There exist candidate locations for industrial estates in the vicinity of Palembang which are yet to be decided at the end of Jun.1992: Mariane, Sungai Lais, Kertapati and Banyuasin seaport.

Target industries are resource-based, export-oriented secondary processing industries which will produce more value-added products and commodities by applying higher technology level. Industries to be accommodated in the industrial estates is also highly expected to absorb substantial labor force and create new remunerative employment opportunities.

List of PALEMBANG IDEP Projects

1. Development of Industrial Estates
2. Improvement of Vocational Training Centers
3. Investment Promotion
4. Gas-Fired Thermal Power Plant
5. Sultan Badarudin II Airport Upgrading
6. Seaport Improvement
7. Outer Ring Road
8. Expansion of Exchange System
9. Expansion of Outside Plant
10. M/P for Urban Drainage and Sewerage Treatment
11. Old Quater Rehabilitation & Concervation
12. Kampung Development Program
13. Development of Cold Storage Facilities
14. Establishment of IDEP Management Unit (IMU)

Note : Project No. 12 covers entire Kotamadya Palembang.

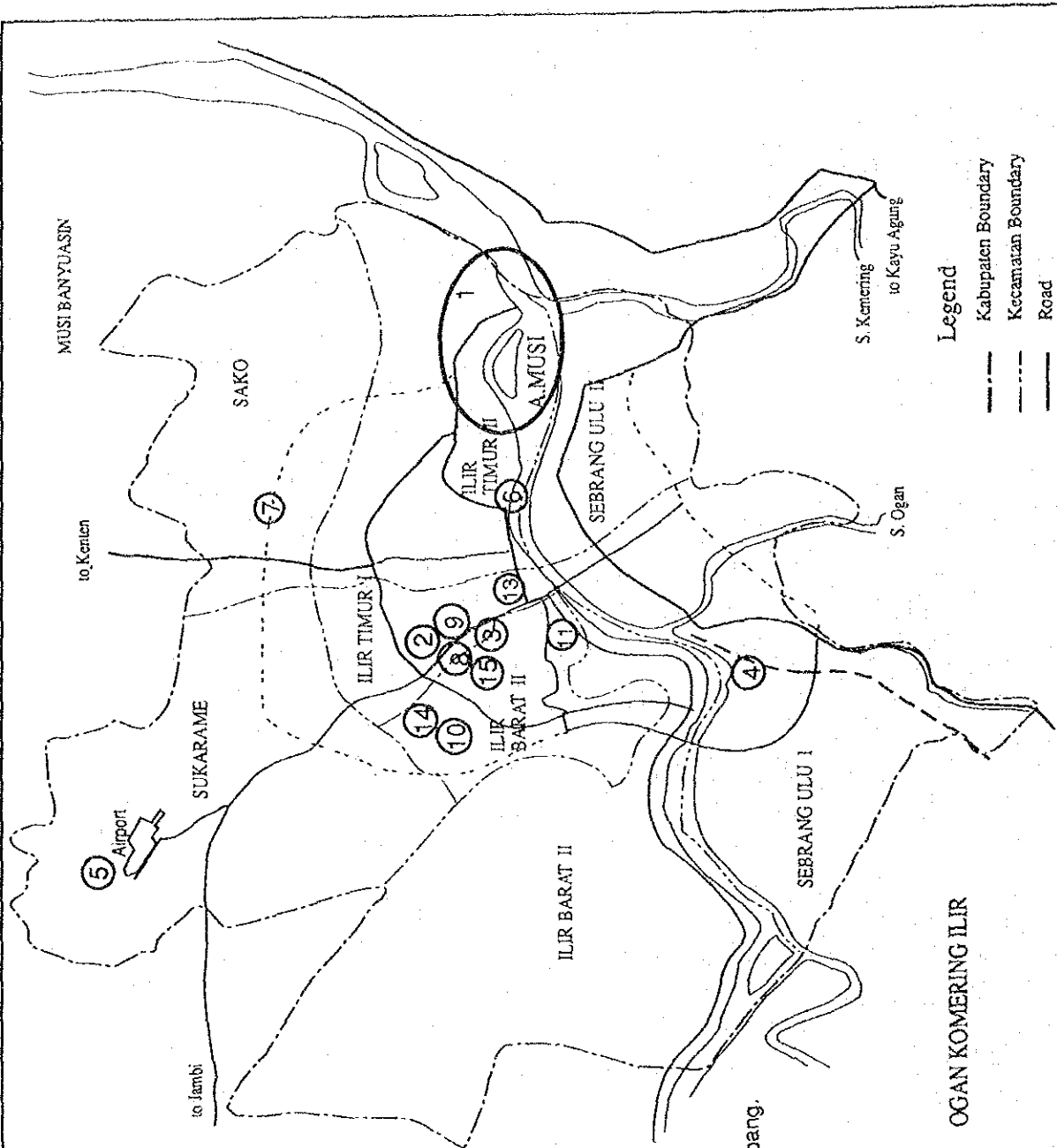


Fig. 2.5.1 Location Map of Key Projects

(2) Improvement of Vocational Training Centers

The objective of this project is to upgrade and expand education of industrial technology in order to meet the increasing demand of specialized manpower, especially middle class managers and engineers in the industrial field. To this end, it is essential to secure skilled, disciplined and productive labor force for industries, particularly, in Palembang where industrial base targeting resource-oriented, secondary processing industry will be established.

The project will be undertaken for a decade under the joint control between BAPPEDA and provincial office of Ministry of Manpower in close coordination with ministries of industry and agriculture. The project covers such components: a) to provide vocational training to potential job seekers, b) to level up instructors, c) to upgrade training facilities, and d) job placement activities.

(3) Investment Promotion

The objective of this project is to promote investment into the Region both from domestic and abroad. It is proposed to undertake the project by means of two program schemes; one in the national level, and the other in the regional level with close coordination between them. BKPM will be the sole executing agency for foreign investment promotion at the national level, while new organization comprising BKPM of four provinces will be set up for the regional level promotion.

Target industries for this promotion are the same as described in (1) above and target countries are newly industrialized countries in Asia such as Taiwan, South Korea, Singapore, Hong Kong including Japan. Project scheme includes: for foreign investment promotion, a) advertisement, b) follow-up and marketing, c) information services, d) consulting services and e) monitoring; and for domestic investment promotion, a) publication of investment guidebook, b) identification of potential domestic investors, c) cooperation with various industrial associations and institutes, d) reinforcement of consulting services, and e) implementation of joint investment campaign.

(4) Gas-Fired Thermal Power Plant

Palembang is presently being supplied electricity by the Kramasan power station with the installed capacity of 274 MW, through 70 kV transmission line. However, according to PLN region IV, shortage of electricity supply is anticipated in 1995/96 and the Region has to import from Java. This is crucially serious to Palembang city itself and totally disadvantageous when industrial development is to be strongly promoted as a core subprogram in IDEP.

With the situation above, the objectives of this project are: a) to secure the stable power supply for increasing regional demand, b) to strengthen power system network in the southern part of Sumatra, and c) to diversify energy source through the effective use of natural gas. Project is phased out into two stages: phase 1, in which basic study will be done, and phase 2 for detailed design and construction of power plant.

(5) Sultan Badarudin II Airport Upgrading

The objectives of this project are: a) to upgrade airport facilities which will be able to accommodate wide body aircraft so as to serve for the entire southern Sumatra as a hub operation, and b) to increase safety of the airport for day and nighttime operation.

Project is composed of the following components: a) revision and updating of the existing master plan, b) reconstruction and expansion of runway and aprons, as well as development of new passenger terminal and freight facilities, c) upgrading of safe instrumentation, and d) formulation of implementation plan.

(6) Seaport Improvement

This project aims at constructing new container berth next to the present Bom Baru port in order to increase its handling capacity. The new berth will be approximately 220 meter long and 20 meter wide at quay wall with water depth of around 6.5 meters.

(7) Outer Ring Road

West and south ring road sections are to be implemented up to 1996 under IUIDP in order to mitigate traffic congestion in the central area. With the planned scheme, this project aims to provide an east-west arterial road of around 13 km on the northern edge of Palembang, thereby linking the northern section with the west ring road.

(8) Expansion of Exchange System

The primary objective of this project is to increase the exchange capacity, which is presently 24,000 switching capacity in three local exchange centers. TELKOM has already a expansion plan of setting up four more exchange centers with around 90,000 exchange capacity up to 1997.

However, this capacity will be far short of even current demand apart from the increasing need from domestic use as well as industrial and commercial use after 1997. Hence, the proposed project is intended further to increase its capacity around 2.5 times as large as the 1997 level to 230,000 exchange capacities, which will be serviced through one trunk switch, seven local switches and 5 remote switching units.

(9) Expansion of Outside Plant

This project is a sister project of the above exchange system expansion project. Connecting subscribers presently total 15,500 in Palembang, among 24,000 exchange capacities due to empty capacity in the newly installed exchange center. Without sufficient number of outside systems from the said exchange center to respective connecting subscribers, telecommunication service is of no use. Hence, this project should be implemented in connection with the expansion of exchange system.

(10) Master Plan for Urban Drainage and Sewerage Treatment System

Palembang urban drainage project is scheduled to be implemented up to 1996 under IUIDP, covering most of the flood prone area in Palembang. With this planned scheme, proposed project primarily deals with, a) formulation of long term drainage plan based on the existing and planned schemes, b) detailed assessment of the combination system between urban drainage and sewerage treatment, and c) prefeasibility study for Banyuasin floodway for smooth drainage in Palembang city.

(11) Old Quarter Rehabilitation and Conservation

This project aims at improving living condition, housing rehabilitation, beautification of townscape. Also included is tourism facility development and infrastructure improvement to serve as one of the attraction spots in Palembang.

(12) Kampung Development Program

This project consists of three schemes: a) Kampung Improvement Program (KIP), b) human resource development, and c) credit union.

The proposed KIP is designed to complement ongoing scheme with particular emphasis on community-based approach, i.e., people's active participation in the project implementation from planning to its operation and maintenance in collaboration with local

governments. Human resource development aims to increase skills and ability for people in Kampung for better social and economic environment. Due to their rudimentary skills and low educational level, they hardly seek better jobs and tend to be mostly disregarded from the formal productive sectors. Last scheme, credit union, aims to arrange financial access and provide financial support for Kampung residents in both formal and informal sectors. This project should be carried out together with KIP project in close cooperation with human resource development project in order to maximize potential benefits and outcomes of the project.

(13) Development of Cold Storage Facilities in Urban Markets

The objective of this project is to improve market facilities so as to meet growing demand of high quality of perishables in storage in the urban area. The project particularly aims to install cold storage facilities in urban markets. This project will directly increase producer's income and is expected as a side effect to trigger farmer's motivation to harvest high quality of agricultural produce.

(14) Establishment of IDEP Management Unit (IMU)

The objective of this project is to support provincial and kotamadya BAPPEDA by establishing IDEP Management Unit I and II (IMU I and II) in order to carry out IDEP projects effectively and efficiently. To this end, IMU will need to have such functions: a) to manage and coordinate all the IDEP projects, b) to coordinate various governmental agencies at various levels, c) to prepare and update IDEP programs, d) to take budgetary measures and identify fund source, and e) to develop institutional and financial capabilities.

2.6 KEY RELATIONS AMONG THE PROJECTS

In the Program, following relations among the projects are of particular importance:

1) The four public-financed projects in the Establishment of Industrial Base subprogram (Development of Industrial Estates [C-4], Upgrading of Institutes of R&D in Industry [C-5], Improvement of Vocational Training Centers [C-6], Investment Promotion [C-10]) must be so coordinated as to effectively support private investments.

2) To support the same subprogram, two utility projects, Gas-Fired Thermal Power Plant (D-3) and Integrated Energy Center (D-5) must be implemented soon in this order.

3) Outer Ring Road (G-55) must be ready before Development of Industrial Estates (C-4) is completed. The ring road becomes a crucial access road to the estate.

4) Telecommunication services are in urgent need to facilitate the industrial development. Expansion of Exchange System (H-1) is particularly urgent with this respect.

2.7 SPECIAL CONSIDERATIONS

In order for Palembang to materialize its roles and objectives by implementing proposed projects effectively and efficiently, two considerations related to IDEP main themes are made as follows:

1) Industrial development is one of the central issues of IDEP. To realize this, three key projects in industrial base subprogram should be promoted among other things. To support this subprogram, first of all utilities and infrastructure projects are to be implemented.

This all leads to create favorable climate for Palembang to attract potential investors, particularly in the form of foreign direct investment. Without realization of full-fledged industrial development, Palembang IDEP is hard to succeed.

2) Urban community development is crucial in order to create a balanced and harmonized urban society, in which development benefits are equitably distributed and social welfare is shared by the people concerned. To do this, people's participation or involvement in the development process is essential so as to sustain the viability of the projects to be implemented. Without this participation or endorsement of the local people, urban redevelopment, which Palembang will have to face soon or later, will be difficult to realize.

As for urban development, one thing to consider is that the more urbanized and developed Palembang will be, the more attractive the city will become. Then a large number of local transmigrates, most of whom tend to be less educated and trained, will move in and reside in Palembang. This is a dilemma in development, although nobody wants and intend the situation. Hence, solution to this is possibly that Palembang needs to grow faster and to create more jobs than the population growth by implementing industrial development.

3. MUSI RAWAS / LAHAT IDEP

This location is characterized as an economic subcenter in the interior which has interprovincial influence over Bengkulu and Jambi. It has high potential of horticultural development as the core of agro-zone 2. Its strategic theme is: How to promote horticulture and agroindustry while strengthening the urban centers.

3.1 PRESENT CONDITIONS

3.1.1 Natural and Physical Conditions

(1) Natural Regions

Kabupatens Musi Rawas and Lahat have a combined area of about 29,000 km², lying between 102°05'E and 103°70'E in latitude and between 2°20'S and 4°25'S in longitude. Following Scholz¹, the area can be roughly divided into three zones from west to east of different physiographic configurations (Figure 3.1.1), which traditionally have had an important bearing on agriculture, the mainstay of the local economy.

Roughly the south-western half of Kabupaten Lahat (the Pasemah Highlands and the Lintang Valley) and the north-western corner of Kabupaten Musi Rawas along the border to Bengkulu Province are part of the Barisan mountain system stretching from Aceh in the north down to Lampung in the south. The Barisan Range is the main watershed of the Musi River system in South Sumatra Province. The primary mountain forests cover most of the Mountain Zone, except in the narrow central bands of valleys and gently sloping plateaus stretching from Kota Agung to Pendopo. In these areas, the settled agriculture of wetland paddy and smallholder coffee have taken root.

Eastward from the Mountain Zone lies the transition belt (or the Piedmont Zone in Scholz) roughly between the 150 m and the 50 m contour line. The trans-Sumatra highway generally runs on this transition belt in the IDEP Area. The Piedmont Zone, 40 km in width at most, is characterized by flat alluvial terraces along the rivers and from undulating to hilly terrains in the hinterlands between major rivers. The rivers in this zone gorge their beds and banks and deposit eroded materials from further upstream, depending on the climatic changes. As a result, two levels of flat alluvial terraces are often formed on both sides of the rivers, with the upper terrace occasionally used for settlements and rainfed wetland for paddy production. The upper terraces have good potentials for large gravity irrigation systems. The colonization scheme in Kecamatan Tugmulyo in Musi Rawas during the Dutch period is one such example. Most of the lowland part of Kabupaten Lahat belongs to this zone.

The remainder of the IDEP Area, that is, most of the land area of Kabupaten Musi Rawas excluding the Mountain Zone and the narrow band of the Piedmont Zone, is part of the vast Musi River Basin. This zone is named Peneplains by Scholz, and excludes the coastal swamps. The Peneplains consist of (i) river levees of accumulated sediments which border the middle reaches of the major west-east rivers, (ii) low floodplains, or inland swamps (lebak), behind such levees which are usually flooded every year, and (iii) extensive hilly terrains, not exceeding 100 m above sea level, further behind the floodplains.

(2) Climate and Hydrology

The climate in the IDEP Area is humid tropical with moderate to high rainfalls and a wet season lasting from September - October to March - April. The mean annual rainfall is 3000 - 3500mm in the lowland part of Kabupaten Lahat, 3000mm in the mountainous zone of Kabupaten Musi Rawas, and 2500 - 3000mm in the mountainous zone of Kabupaten Lahat and

¹ Scholz, Ulrich, *The Natural Regions of Sumatra and Their Agricultural Production Pattern: A Regional Analysis*, Vol. I, Central Research Institute for Food Crops, Bogor, West Java, 1983.

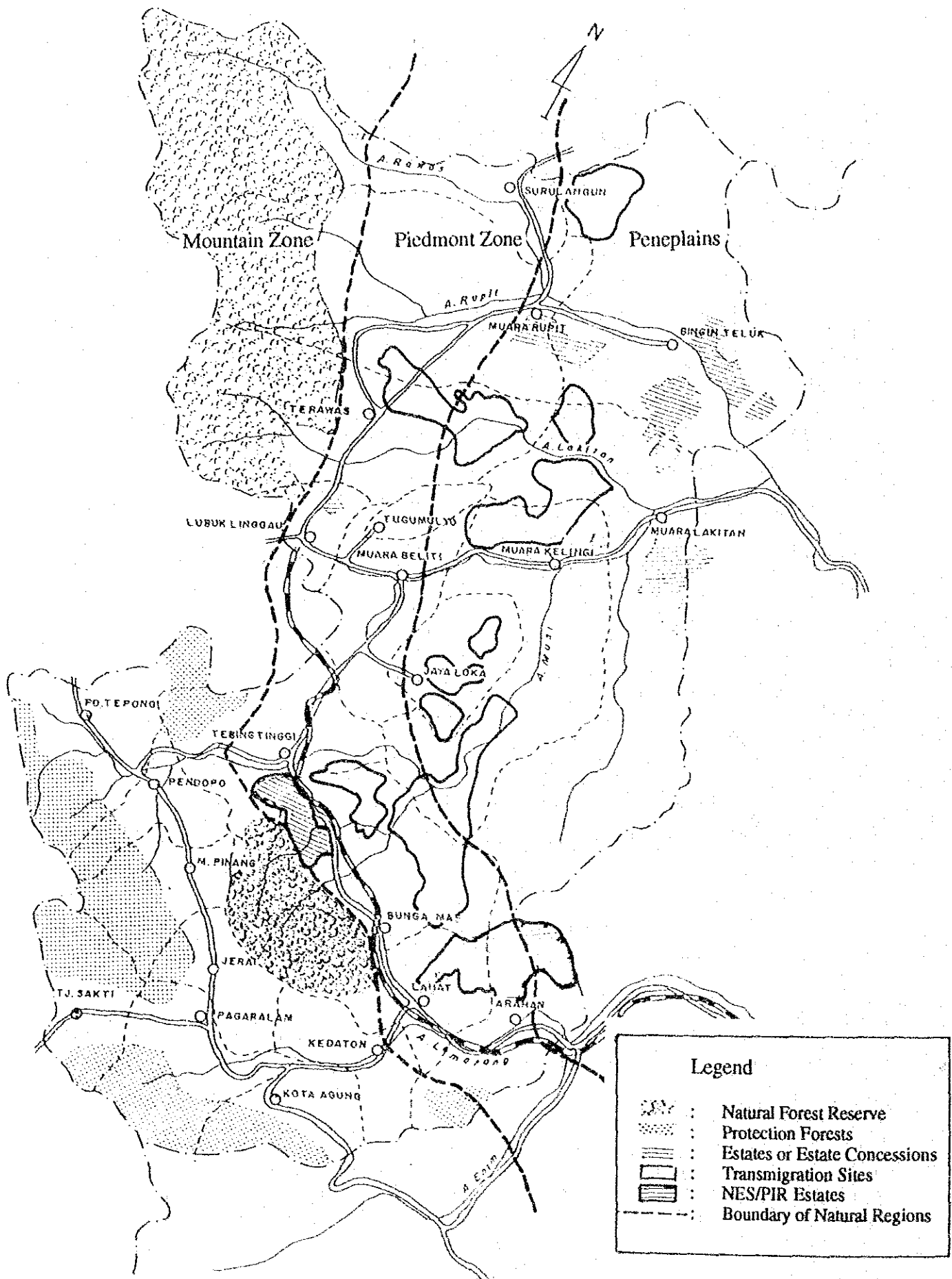


Figure 3.1.1 Musi Rawas / Lahat IDEP Area

in the lowland part of Kabupaten Musi Rawas. Roughly once every five years, the mean annual precipitation falls by about 500mm. In 1991, which was extremely dry, the rainfalls in various parts of Kabupaten Lahat dropped to about 1220 - 1700mm, with the number of rainy days ranging from 85 to 118 days.

Kabupatens Musi Rawas and Lahat are located in the upper parts of the Musi River catchment areas (Figure 3.1.2). The Barisan Range which stretches more or less along the border between South Sumatra and Bengkulu Provinces is a belt of about 50 km in width and 600m in average elevation, with the highest peak, Gunung Dempo in Kecamatan Pagar Alam, reaching 3,157 m. The Musi River and its six main tributaries which flow in the Musi Rawas / Lahat IDEP Area have combined catchment areas of 26,000 km², as shown below. The Musi River originates at the elevation of 1,310 m in the mountain ridge of Bengkulu, some 40 km to the west of Lubuk Linggau. The upper part of the Lematang catchments reaches up to Gunung Dempo, while the elevation in the upper part of the Rawas catchments reaches 2,200m.

Musi and Tributaries	Sub Catchment Areas(km ²)
Rawas	6,026
Lakitan	2,772
Semangus	2,146
Kelingi	1,928
Kikim	1,928
Musi	3,776
Lematang	7,390
Total	25,966

(3) Soils and Land Suitability

The current land use pattern and land suitability are shown in Figure 3.1.3. The Mountain Zone includes generally fertile soils, especially in the dissected valleys and gently sloping plateaus in the mountainous part of Kabupaten Lahat. Common soil types found in Kecamatans Pulau Pinang, Pagar Alam, Kota Agung, Jarai and Muara Pinang are alluvial soils, andosols, latosols, and complexes and associations thereof, with occasional distribution of regosols, litosols and acid brown forest soils.

In the Piedmont Zone and the Peneplains, the dominant soil type is red-yellow podozols and its associations and complexes, with occasional latosols. In Kabupaten Musi Rawas, for example, podozols and podozolic associations/complexes cover nearly 70% of the total area. Podozolic soils are chiefly found in the undulating to hilly hinterlands between major rivers, where most of the government-supported transmigration communities have been established. Although limited in area, strips of fertile alluvial soils are found in the terraces formed on both sides of the river banks in the Piedmont Zone, and on the river levees in the Peneplains. These strips of alluvial soils are sometimes used for intensive agriculture.

The alluvial soils and andosols possess intrinsic fertility high enough for more or less continuous cultivation (*tegalan*) of upland arable crops. Coupled with the high altitude of 600m to over 1,000m, the valleys and gently sloping plateaus in the south-western part of Kabupaten Lahat are suitable for vegetables and fruits which cannot be grown in lowland areas. In addition, water can be tapped from small mountain rivers with simple gravity irrigation works which can be managed relatively easily and effectively by farmers themselves.

Red-yellow podozols which are dominant in the Piedmont Zone and the Peneplains are infertile soils, and without major inputs, cannot be used for annual cropping on a sustainable basis. There are two well-established types of agriculture on podozols in Sumatra. One is wetland paddy for which the soils are of lesser constraint due to the special soil conditions in the paddy fields which limit soil acidity and build up organic matter and nutrients. Medium to large irrigation systems have been developed mainly in the Piedmont Zone and upper parts of the Peneplains of South Sumatra Province.

The other type of agriculture is perennial crops such as coffee, rubber, coconut and oil palm. Coffee and rubber, two major tree crops grown by smallholders in the Musi Rawas / Lahat IDEP Area, can be grown in much greater variety of soils, including podzols, than arable crops. Oil palm and coconut can be grown in the vast Peneplains, provided the drainage is satisfactory.

(4) Environment and Land Use

1) Forest Resources

As shown in Table 3.1.1, various classes of forests in Kabupatens Musi Rawas and Lahat total about 1 million ha, or about 36% of the total IDEP Area. The natural forest reserves (HSA) and the protection forests (HL) account for nearly 50% of the total forest area. Natural forest reserves of 282,000 ha in Kabupaten Musi Rawas are part of the Kerinci Sublat National Park (the exact local boundary has been already marked) and cover the western parts of Kecamatans Rawas Ulu, Muara Rupit and Bengkulu Ulu (Terawas). Another area of natural forest reserves, of about 80,000 ha, is found in the eastern slopes of the Barisan Mountain in Kabupaten Lahat (mainly in Kecamatans Lahat and Kikim). Most of the Protection Forests are found in the Barisan Range of Kabupaten Lahat (mainly Kecamatans Tanjung Sakti, Muara Pinang, Ulu Musi, Pagar Alam and Kota Agung), forming more or less contiguous forests across the boundary to Bengkulu Province.

Table 3.1.1 Forest Resources in Musi Rawas and Lahat (1990)

(Unit: '000ha)

	Forest Reserves (HSA)	Protection Forests (HL)	Limited Production Forests	Permanent Production Forests	Convertible Forests	Total Forest
Musi Rawas	282	8	95	190	190	765
Lahat	80	150	22	40	0	291
Total IDEP	361	158	117	229	190	1,055
Provincial Total	663	837	279	845	855	3,479

Source: BAPPEDA Tingkat II Lahat, Kabupaten Lahat Dalam Angka, 1989 and 1991.
Kantor Statistik Kab. Musi Rawas, Kabupaten Musi Rawas Dalam Angka 1990.
BAPPEDA Tingkat I Sumatera Selatan, Sumatera Selatan Dalam Angka 1990.

As shown in the table, there are some 346,000 ha of forests for permanent and limited timber production, a little over 80% of which are found in Kabupaten Musi Rawas (Muara Lakitan and Muara Kelingi, Bengkulu Ulu and Muara Rupit, Rawas Ilir, Rawas Ulu and Muara Rupit). Reflecting the distribution of the production forests, timber exploitation is limited to Kabupaten Musi Rawas, where, as of 1990, there are five forest concessions (HPH) totalling 336,000 ha. The convertible forests cover a total area of 190,000 ha, part of which could be utilized for new transmigration settlements or for large-scale estates.

Part of the permanent production forests is now being turned into industrial forests by a private company. In the southern parts of Kecamatans Muara Kelingi and Muara Lakitan (the area called Cekar), about 77,000 ha has been planted with *Acacia* and *Albizia* species which will be used as materials for paper manufacturing. The industrial forests will eventually expand to some 300,000 ha, and the benefits of the exploitation will be shared by the inhabitants of the local transmigration communities who will undertake part of the forest maintenance.

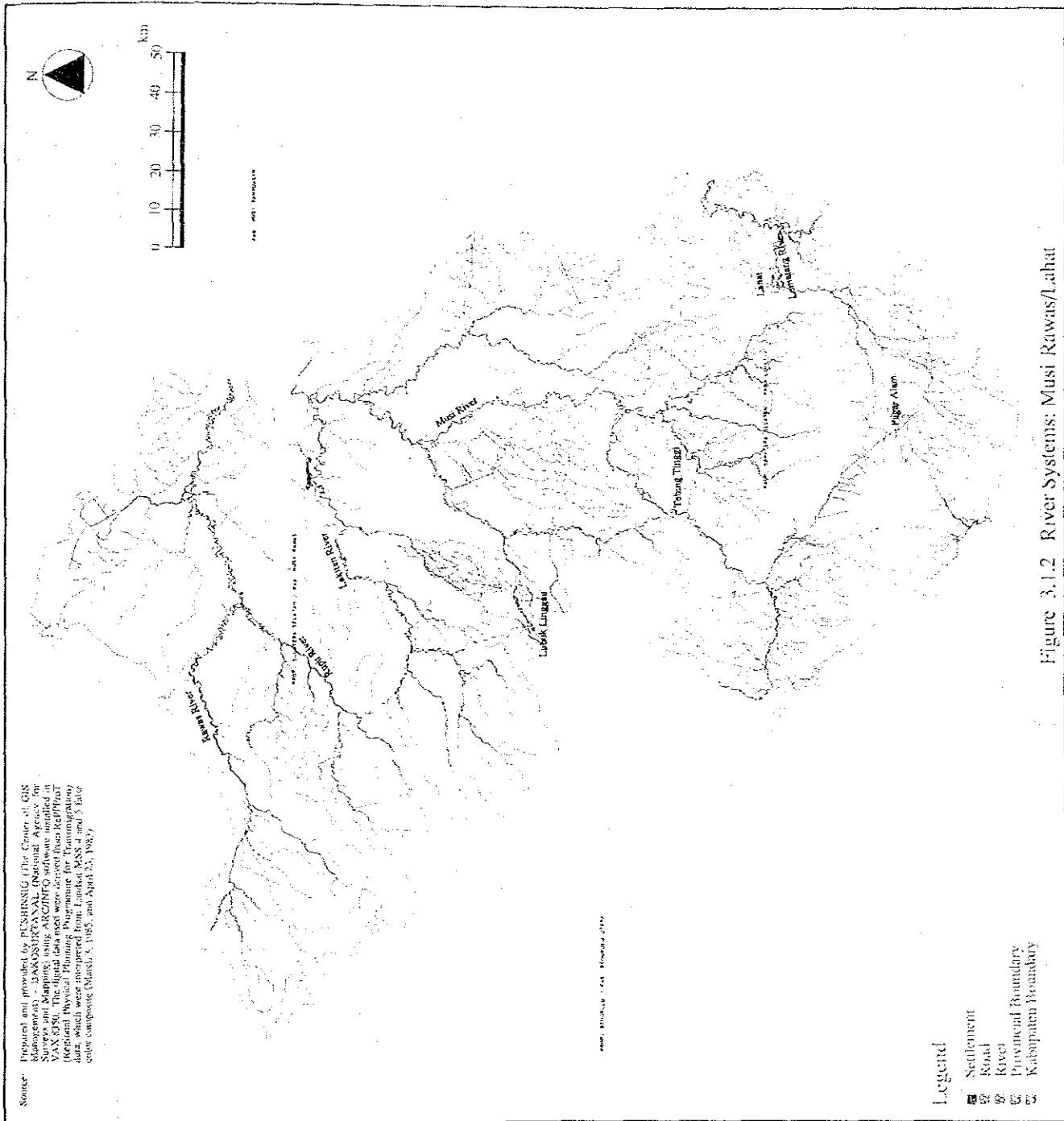


Figure 3.1.2 River Systems: Musi Rawas/Lahat

According to the Provincial Dalam Angka of 1990, a combined area of 414,700 ha is classified as "critical land" in Kabupatens Musi Rawas and Lahat. Of this total, 23%, or 94,000 ha, is found within the forest areas (Table 3.1.2). The degraded land within the forest areas is equivalent to 9% of the total forest area in the IDEP Area, and to 52% of the total provincial degraded forest land. Most of the critical land of the IDEP Area falls outside the forest areas, and chiefly found in Kabupaten Lahat. The rate of rehabilitation has been slow, and the reforestation efforts in 1990/91 covered about 1,200 ha, of which only 207 ha was for the degraded land within the forest areas.

Table 3.1.2 Critical Land Area in Musi Rawas and Lahat (1990)

(Unit: ha)

	Within Forest Area	Outside Forest Area	Total Critical Area	Reforestation(90/91)		Inhabitants Within Forests
				Within	Outside	
Musi Rawas	56,677	65,248	121,925	0	500	8,227
Lahat	37,400	255,342	292,742	207	500	28,929
Total IDEP	94,077	320,590	414,667	207	1,000	37,156
Provincial Total	181,309	486,792	668,101	707	3,600	51,733

Source: BAPPEDA Tingkat I Sumatera Selatan, Sumatera Selatan Dalam Angka 1990.

2) Transmigration Settlements

Kecamatan Tugmulyo of Kabupaten Musi Rawas was the site of the colonization scheme implemented by the Dutch colonial government in the 1930s. In other parts of the IDEP Area, a number of government-supported transmigration programs have been implemented chiefly since the Repelita III of the early 1980s. By 1990, roughly 175,000 ha have been opened up, mostly in Kabupaten Musi Rawas. In contrast to the colonization scheme, these transmigration programs are not associated with irrigation development by the government, and have been established in the hinterland areas of the Peneplains in Kecamatan Rawas Ilir, Muara Lakitan, Muara Kelingi, Jayaloka and Bengkulu Ulu. In Kabupaten Lahat, two nucleus estate and smallholder schemes (PIRSUS) of rubber have been implemented by PTP XI.

For the Repelita VI, two more transmigration sites are being proposed in Kecamatan Muara Kelingi and Rawas Ilir, with a total area of about 30,000 ha. In addition, several sizable areas in the convertible forests are earmarked for future transmigration programs. The largest area of about 90,000 ha is in Lembah Liam (Liam Depression) lying behind the right bank of the River Rupit.

3) Agricultural Land Use

The Agricultural Land Utilization Survey in South Sumatra Province of 1990 lists 10 categories of land use over the total area of about 826,600 ha in Kabupatens Musi Rawas and Lahat. The combined area of wetland paddy fields in two kabupatens is 56,100 ha, or only 7 % of the total surveyed land area. Of the remaining upland area, 438,000 ha are used for various agricultural activities.

As shown in Table 3.1.3, two kabupatens have contrasting characteristics in the distribution of different categories of wetland. The proportion of irrigation in the total wetland area in Kabupaten Lahat is nearly twice as high as in Musi Rawas, and over 90 % of the

irrigated wetland belongs to simple and village irrigation systems. In the highland valleys in the Barisan Range, abundant rain water runs down in many streams, which traditionally have been tapped for irrigation with relatively simple structures. In contrast, the bulk of irrigated wetland in Kabupaten Musi Rawas belongs to either technical or semi-technical irrigation systems, and largely concentrates in three kecamatan (Tugumulyo, Muara Beliti and Bengkulu Ulu). This reflects the fact that in the riverine terrains in the Piedmont Zone and the upper parts of the Peneplains, irrigation requires large investments. Irrigation is practically non-existent and rainfed wetland is predominant in Kecamatan Muara Kelingi, Muara Lakitan, Jayaloka, Rawas Ilir and Ulu, and Muara Rupit where transmigrant settlements have been established since the early 1980s.

Table 3.1.3 Distribution of Wetland in Musi Rawas and Lahat (1990)

(Unit: ha)

Kab. /Kecamatan	Irrigated Wetland				Subtotal	Rainfed Wetland	Lebak Wetland	Unused Wetland	Total Wetland	% of Irrigated Land
	Technical	Semi-Technical	PU Simple	Non-PU Simple 1)						
Musi Rawas										
Rawas Ulu	40	100	33	30	203	1,035	4	63	1,305	15.6
Muara Rupit	0	0	20	10	30	1,955	264	148	2,397	1.3
Bengkulu Ulu	450	260	812	0	1,522	3,036	0	42	4,600	33.1
Muara Beliti	1,663	140	0	25	1,828	376	121	0	2,325	78.6
Tugumulyo	1,843	592	150	35	2,620	446	686	0	3,752	69.8
Jayaloka	0	0	40	0	40	68	0	14	122	32.8
Muara Kelingi	0	0	0	0	0	1,606	0	816	2,422	0.0
Muara Lakitan	0	50	0	0	50	1,673	155	0	1,878	2.7
Rawas Ilir	0	0	0	0	0	297	2,447	2,734	5,478	0.0
Lubuk Linggau Barat	85	0	0	183	268	0	0	76	344	77.9
Lubuk Linggau Timur	0	0	47	0	47	377	0	20	444	10.6
Subtotal	4,081	1,142	1,102	283	6,608	10,869	3,677	3,913	25,067	26.4
Lahat										
Lahat	0	207		576	783	14	0	744	1,541	50.8
Merapi	0	0		600	600	325	0	181	1,106	54.2
Kikim	0	0		1,821	1,821	16	0	1,843	3,680	49.5
Pt. Pinang	0	0		780	780	20	0	542	1,342	58.1
Kota Agung	0	0		2,795	2,795	15	0	384	3,194	87.5
Pagar Alam	0	0		2,310	2,310	0	0	1,501	3,811	60.6
Tg. Sakti	0	0		1,418	1,418	0	0	167	1,585	89.5
Jarai	0	0		1,895	1,895	0	0	62	1,957	96.8
Ma. Pinang	0	0		500	1,950	600	0	200	2,750	70.9
Pendopo	0	50		1,535	1,585	0	0	1,129	2,714	58.4
Tb. Tinggi	0	0		1,267	1,267	55	0	388	1,710	74.1
Ulu Musi	0	0		3,710	3,710	0	0	1,938	5,648	65.7
Subtotal	0	257		19,207	20,914	1,045	0	9,079	31,038	67.4
Total	4,081	1,399	1,102	19,490	27,522	11,914	3,677	12,992	56,105	49.1

Notes: 1) Figures for Lahat Kabupaten include PU simple systems.

Sources: Kantor Statistik, Prop. Sum. Selatan, Luas Lahan Menurut Penggunaannya di Sumatera Selatan 1990.

Kantor Statistik Kab. Musi Rawas, Kabupaten Musi Rawas Dalam Angka 1990

Table 3.1.4 shows the land use in upland areas of Kabupaten Musi Rawas and Lahat. Of the total used upland area, some 288,000 ha, or roughly two-thirds, belongs to the large estates owned by the state and private companies. The remaining upland area of about 150,000 belongs to the smallholder sector.

Table 3.1.4 Distribution of Upland in Musi Rawas and Lahat (1990)

Kabupaten/Kecamatan	(Unit: Ha)												Total A+B+C	% of Used AC
	Used Upland (A)						Unused Upland (B)							
	House Garden	Tegal & Kebun	Ladang & Huma	Estates	Tambak/ Kolam	Subtotal A	Grass- land	Swamps	Fallow Land	Wooded Land	Subtotal B			
Musi Rawas														
Rawas Ulu	1,300	389	1,943	18,011	17	21,660	0	10	4,000	5,500	9,510	31,170	69.5	
Muara Rupit	479	204	1,776	31,550	17	34,026	61	200	3,252	6,231	9,744	43,770	77.7	
Bengkulu Ulu	2,528	9,126	2,832	7,285	87	21,858	1,840	15,000	10,000	15,000	41,840	63,698	34.3	
Rawas Bir	1,951	3,196	5,016	16,098	0	26,261	16	13,483	2,228	17,256	32,983	59,244	44.3	
Muara Beliti	1,386	1,001	2,733	7,169	154	12,443	0	212	1,000	0	1,212	13,655	91.1	
Tugumulyo	1,959	678	1,455	5,224	58	9,374	0	406	0	2,914	3,320	12,694	73.8	
Jayaloka	956	1,754	1,664	4,772	10	9,156	150	432	23,745	425	24,752	33,908	27.0	
Muara Kelingi	2,929	2,746	5,149	27,273	81	38,178	1,600	1,200	1,900	24,027	28,727	66,905	57.1	
Muara Lakitan	1,676	3,536	3,309	11,480	8	20,009	4	415	2,443	54	2,916	22,925	87.3	
Lubuk Linggau Barat	135	320	740	2,406	12	3,613	0	0	1,268	0	1,268	4,881	74.0	
Lubuk Linggau Timur	1,523	235	285	1,590	5	3,638	0	0	0	100	100	3,738	97.3	
Subtotal	16,822	23,185	26,902	132,858	449	200,216	3,671	31,358	49,836	71,507	156,372	356,588	56.1	
Lahat														
Lahat	486	3,500	4,000	5,253	558	13,797	2,950	295	8,500	14,455	26,200	39,997	34.5	
Merapi	1,200	2,450	2,900	4,412	458	11,420	900	700	27,100	3,500	32,200	43,620	26.2	
Kikin	9,760	4,000	8,000	12,730	428	34,918	9,000	2,000	12,000	3,500	26,500	61,418	56.9	
Pulau Pinang	982	1,650	974	3,315	481	7,402	750	600	18,100	2,500	21,950	29,352	25.2	
Kota Agung	275	500	700	6,683	235	8,393	462	0	4,000	4,250	8,712	17,105	49.1	
Pagar Alam	2,277	100	720	32,200	225	35,522	450	0	200	1,000	1,650	37,172	95.6	
Tanjung Sakti	750	475	550	12,125	200	14,100	0	0	650	2,238	2,888	16,988	83.0	
Jurai	177	474	175	14,640	175	15,641	875	0	973	9,740	11,588	27,229	57.4	
Muara Pinang	4,800	2,250	600	18,000	350	26,000	150	0	250	250	650	26,650	97.6	
Pendopo	200	6,509	335	0	40	7,084	0	0	4,500	3,413	7,913	14,997	47.2	
Tebing Tinggi	1,250	1,250	7,600	10,016	85	20,201	4,500	0	20,000	1,900	26,400	46,601	43.3	
Ulu Musi	3,500	552	2,700	36,120	225	43,097	7,284	0	1,862	550	9,696	52,793	81.6	
Subtotal	25,657	23,710	29,254	155,494	3,460	237,575	27,321	3,595	98,135	47,296	176,347	413,922	57.4	
Total	42,479	46,895	56,156	288,352	3,909	437,791	30,992	34,953	147,971	118,803	332,719	770,510	56.8	

Source: Kantor Statistik, Prop. Sumatera Selatan, Luas Lahat Menurut Penggunaannya di Sumatera Selatan 1990.

3.1.2 Socio-Economic Conditions

(1) Population and Cultural Backgrounds

1) Demography

The combined population of Kabupatens Musi Rawas and Lahat numbers 1.1 million in 1990. The annual growth during the period of 1961 - 1990 was 2.83%, which is about the same as the growth of the provincial population (Table 3.1.5). The growth was especially rapid after 1971, partly due to the influx of population to the mountainous areas during the coffee boom, and government-supported and spontaneous transmigration into the lowland areas.

In terms of population distribution, the two kabupatens are yet relatively sparsely populated, with the highest population density in Lubuk Linggau, followed by Kecamatan Tugumulyo (the site of the colonization scheme during the Dutch period), Kecamatan Pagar Alam (the center of the Pasemah Highlands), and Pendopo (the center of the Lintang Valley) (Table 3.1.6). The kabupaten population density relative to the total land area is considerably higher in Lahat than in Musi Rawas, but relative to the total agricultural land area, the density is about equal at 226 and 228 persons, respectively, per square kilometer.

Table 3.1.5 Population Growth in Musi Rawas and Lahat

	Population				Annual Growth (%)			
	1961	1971	1980	1990	61 - 71	71 - 80	80 - 90	61 - 90
Musi Rawas	185,693	252,420	366,081	513,139	3.12	4.22	3.42	3.57
Lahat	310,035	372,821	484,814	599,347	1.86	2.96	2.14	2.30
Total IDEP	495,728	625,241	850,895	1,112,486	2.35	3.48	2.72	2.83
Province Total	2,773,464	3,438,061	4,627,719	6,313,074	2.17	3.36	3.15	2.88

Source : BAPPEDA Tingkat I Sumatera Selatan, Sumatera Selatan Dalam Angka 1990.

Table 3.1.6 Population Distribution in Musi Rawas and Lahat (1990)

	Total Land Area (km ²)	Agricultural Land Area 1) (km ²)	Population (persons)	Population Density /km ²	
				(per total land area)	(per agri. land area)
Musi Rawas					
Rawas Ulu	2,478	230	31,707	13	138
Muara Rupit	4,570	364	40,413	9	111
Bengkulu Ulu	2,252	265	54,675	24	207
Muara Beliti	1,662	286	48,008	29	168
Tugumulyo	248	162	48,839	197	302
Jayaloka	408	95	19,069	47	201
Muara Kelingi	2,056	116	57,216	28	494
Rawas Ilir	2,263	255	53,373	10	138
Lubuk Linggau Barat	181	40	51,781	286	1,309
Lubuk Linggau Timur	85	41	52,889	622	1,296
Subtotal	21,513	2,253	513,660	24	228
Lahat					
Lahat	757	153	94,229	124	614
Merapi	693	125	32,758	47	262
Kikim	1,227	386	54,096	44	140
Pulau Pinang	357	87	21,655	61	248
Kota Agung	420	116	31,235	74	270
Pagar Alam	634	393	106,336	168	270
Tanjung Sakti	501	157	24,883	50	159
Jarai	406	176	44,736	110	254
Muara Pinang	458	288	51,355	112	179
Pendopo	288	98	41,669	145	425
Tebing Tinggi	732	219	53,011	72	242
Ulu Musi	778	487	45,437	58	93
Subtotal	7,252	2,686	601,400	83	224
Total	28,765	4,939	1,115,060	39	226

Note : 1) The total of wetland and used upland (= home garden, tegal/kebun, ladang/huma Estates, and tambak/kolam)

Source : BAPPEDA Tingkat II Lahat, Kabupaten Lahat Dalam Angka, 1989 and 1991. Kantor Statistik Kab. Musi Rawas, Kabupaten Musi Rawas Dalam Angka 1990.

Major urban centers in the IDEP Area are Lubuk Linggau (urban population of 57,000 out of the total kecamatan population of 105,000), Lahat (estimated urban population of 50,000 out of the total kecamatan population of 94,000) and Pagar Alam (population of 66,000 in the newly designated administrative city). Towns of Lubuk Linggau and Lahat, together with other similarly placed towns like Muara Enim, Baturaja and Martapura, grew out of the early trading posts established on the major rivers in the Piedmont Zone, which for long had remained marginal for agricultural development, and largely functioned as a transit area for

redistributing goods transported on rivers between the settled highland areas in the west and the settled river levees in the eastern lowlands.

2) Cultural Groups

Cultural backgrounds of the population are quite diverse, reflecting centuries of inter-migration with other parts of Southern Sumatra. The Mountain Zone of Kabupaten Lahat is inhabited by a number of indigenous cultural groups. The Pasemah mainly inhabit in Kecamatan Pagar Alam, Jarai, Tanjung Sakti and Kota Agung and the Lintang in Kecamatan Pendopo and the surrounding kecamatan. The Ampat Lawang in Kecamatan Padang Tepong and Tebing Tinggi, the Gumay in Kecamatan Pulau Pinang and Lahat, the Kikim in Kecamatan Kikim and the Lematang in Kecamatan Lahat are culturally related to the Pasemah. In addition, offshoots of the cultural groups in neighboring kabupaten and Bengkulu (the Rejang) have also settled in the hilly areas of Kabupaten Lahat and Kabupaten Musi Rawas.

The local population in the lowland areas are mainly the descendants of the earlier Melayu settlers from different ethnic traditions, who gradually migrated westwards to the Piedmont Zone and the upper parts of the Peneplains which had been, and still is to some extent, a pioneer area lying between the settled highlands in the west and the settled river levees along the lower reaches of the major rivers in the east. They usually identify themselves with the principal river where they live: the Rawas in Kecamatan Rawas Ulu and Muara Rupit, the Kelingi in Kecamatan Muara Kelingi, the Rupit in Kecamatan Muara Rupit, the Lakitan in Kecamatan Muara Lakitan, and so forth. There is also a small group of the Suku Anak Dalam, living in scattered locations in Kabupaten Musi Rawas, whose traditional mode of livelihood is hunting and gathering in the forests. With the gradual decrease of the primary forests, some of them are now learning settled upland agriculture from the Melayu neighbors.

The more recent settlers in the IDEP Area are the transmigrants from Java and Bali. By the government-supported transmigration programs chiefly since the Repelita III, roughly 18,500 families, or 82,500 persons, have settled in the Musi Rawas / Lahat IDEP Area. 63% of these transmigrants have settled in Kabupaten Musi Rawas. Two nucleus estate and smallholder schemes (PIRSUS) by PTP XI settled 725 and 902 families respectively in Kabupaten Lahat. Although there are no available statistics, the so-called spontaneous transmigrants of Javanese and Sudanese origin have been also substantial, especially since the coffee boom in the early 1970s. Spontaneous transmigrants usually work as share-croppers or as agricultural laborers of the local land-owning farmers. In addition, the major urban centers in the IDEP Area attracted the Chinese, the Palembangese, the Minang Kabau from West Sumatra and so forth.

(2) Economic Activities

1) Structure of Gross Domestic Product and Employment

Table 3.1.7 compares the structure of gross regional domestic product in Kabupatens Musi Rawas (1989) and Lahat (1988). Compared to the provincial GRDP (excluding petroleum and natural gas), the small share of the secondary sector is common to the two kabupaten, but the proportion of the primary sector, largely consisting of agriculture, is especially large in Kabupaten Musi Rawas. In contrast, the tertiary sector, dominated by commerce, accounts for a little over 50% in Kabupaten Lahat. According to the Kabupaten Musi Rawas Dalam Angka of 1990, about 88 % of the economically active population belongs to the agricultural sector. The secondary sector of manufacturing, construction and electricity and water accounts for only 3.1%. No comparable data is available for Kabupaten Lahat.

Table 3.1.7 Structure of Gross Domestic Product in Musi Rawas and Lahat
(Unit: % in current prices)

	Musi Rawas 1989	Lahat 1988	Province 1) 1989
Primary Sector	62.2	39.7	30.2
Food Crops		11.4	8.9
Tree Crops/ Smallholders		22.8	8.1
Tree Crops/ Estates		0.7	0.5
Forestry		2.3	2.3
Other Agriculture		2.2	3.6
Mining		0.2	6.8
Secondary Sector	11.8	9.3	26.0
Manufacturing		1.0	20.5
Construction		8.1	5.0
Electricity & Water		0.2	0.5
Tertiary Sector	26.0	50.9	43.8
Commerce		29.6	28.7
Government		11.7	4.5
Others		9.6	10.6
Total	100.0	100.0	100.0

Note: 1) Excludes petroleum and natural gas.

Source: Kantor Statistik Kab. Musi Rawas, Kabupaten Musi Rawas Dalam Angka 1990.
Kantor Statistik Kab. Lahat, Produk Domestik Regional Bruto: Kabupaten Lahat 1983 - 88, 1990.
BAPPEDA Tingkat I Sumatera Selatan, Sumatera Selatan Dalam Angka 1990.

2) Agriculture

The traditional characteristics of agriculture in the Musi Rawas / Lahat IDEP Area are the relative importance of upland over wetland agriculture and the relative importance of tree crops over arable crops on upland. This is clearly shown in the results of the Agricultural Census of 1983. As shown in Table 3.1.8, the average size of operated agricultural upland per farming household was 1.42 ha and 1.29 ha respectively in Kabupaten Musi Rawas and Lahat. The average size of wetland was 0.37 ha and 0.41 ha, respectively. Of the total upland, the area under tree crops (called kebun) was 0.58 ha in Musi Rawas and 0.83 ha in Lahat. If we take into account the local tradition of opening up new land (called huma and ladang) by the slash and burn method and growing upland rice for the first couple of years with interplanted seedlings of rubber or coffee, the large part of the upland area grouped under "tegal, ladang and huma" actually include eventual kebun. Kabupaten Muara Enim and, to a lesser extent, Ogan Komering Ulu, which are also located in the area covering the Mountain Zone, the Piedmont Zone and the upper part of the Penneplains, show similar characteristics. In contrast, Kabupaten Ogan Komering Ilir and Musi Banyuasin located in the lower part of the Musi River Basin have a larger wetland area and/ or a smaller upland area, especially under tree crops.

According to the Dalam Angka of South Sumatra Province, the production of dried paddy (GKG) in the two kabupaten totalled about 273,300 tons in 1990, or per capita production of 245kg (252kg in Musi Rawas and 240kg in Lahat), which compares favorably with the provincial average of 190kg. However, judging from the varying per capita production of paddy by kecamatan, some kecamatan, such as Bengkulu Ulu, Jayaloka, Muara Kelingi and Rawas Ilir, do not have stable bases for paddy production, either relying on a limited wetland area or relying more on upland paddy, or both. These kecamatan commonly absorbed government-supported transmigrants in the undulating hinterlands lying between the rivers, where irrigation is usually not possible without major infrastructure development.

Table 3.1.8 Average Landholding by Kabupaten in South Sumatra (1983)

(Unit: ha)

Kabupaten	No. of Farming Households	Wetland			Upland			Total Operated Land
		Irrigated Wetland	Other Wetland	Subtotal Wetland	Tegal, Huma, Ladang	Kebun Upland	Other Upland	
Ogan Komering Ulu	99,311	0.15	0.34	0.49	0.62	0.41	0.04	1.56
Ogan Komering Lili	76,192	0.01	0.88	0.89	0.35	0.15	0.01	1.39
Muara Enim	43,795	0.08	0.28	0.36	0.81	1.02	0.07	2.26
Lahat	56,243	0.35	0.06	0.41	0.41	0.83	0.04	1.69
Musi Rawas	44,061	0.12	0.25	0.37	0.80	0.58	0.04	1.80
Musi Banyuasin (1)	90,880	0.01	0.94	0.96	0.37	0.65	0.03	2.01
Bangka (2)	36,093	0.00	0.00	0.00	0.62	0.82	0.02	1.46
Belitung	7,242	0.00	0.00	0.00	0.49	0.49	0.01	0.99
Total	453,817	0.10	0.47	0.57	0.53	0.58	0.03	1.14

Sources: BPS, Sensus Pertanian: Hasil Sensus Sampel, Seri B.06, for four provinces.

At the same time, a considerable part of the existing wetland apparently remains unused, as already shown in Table 3.1.3. Especially in Kabupaten Lahat, some 9,000 ha, or nearly one-third of the available wetland, is unused, and 65% of this unused wetland is found in the kecamatan located in the Mountain Zone. According to the Dalam Angka of Kecamatan Lahat of 1991, the harvested area of wetland paddy was 23,338 ha in the rainy season, which is about three-thirds of the available wetland, and only 6,811 ha in the dry season. The cropping intensity of wetland is influenced by many factors, but a large part of the wetland underutilization is reportedly due to the damaged small irrigation works. The IDEP Area as a whole can be considered as more or less self-sufficient in rice now, but far from being able to produce a sizable surplus on a stable basis.

Among the many tree crops grown in various parts of the Southern Sumatra Region, coffee and rubber are the most important in the IDEP Area (Table 3.1.9). Coffee is chiefly grown in the Mountain Zone, while rubber is extensively grown in the Piedmont Zone and the Penneplains. Coffee dominates in Kabupaten Lahat, centering in three Kecamatan of Pagar Alam, Muara Pinang and Jarai, and rubber in Kabupaten Musi Rawas, chiefly found in Kecamatan Muara Rupit, Muara Kelingi, Rawas Ulu and Rawas Ilir. According to the Kecamatan Dalam Angka of Lahat, the average holding of coffee kebun is 1.6 ha, varying from 5.3 ha in Muara Pinang to 0.9 ha in Pagar Alam in the coffee producing center. The comparable information is not available for rubber in Musi Rawas, but the standard size seems to be 2 ha.

According to the information obtained from Dinas Perkebunan of South Sumatra Province, there are 20 establishments or concessions of large estates in the IDEP Area. Three government estates command 47,000 ha (one tea estate of 5,000 ha at the foot of Gunung Dempo, and two rubber estates of 7,000 ha and 35,000 ha in Kabupaten Lahat). The government estates have established their planting, but most of the private estates are still in the process of development. The gross areas of the existing concessions of private estates (as of the end of 1990) are summarized as follows.

Crops	No. of Concessions	Gross Area (ha)
Rubber	9	44,920
Rubber & Oil Palm	2	34,000
Cocoa	4	16,275
Hybrid Coconut	1	16,000
Caster Beans	1	2,000
Total	17	113,195

Table 3.1.9 Areas under Smallholder Estate Crops in Musi Rawas and Lahat

	Rubber		Coffee		Coconut		Total Area of Three Crops (ha)
	Area (ha)	Production (ton)	Area (ha)	Production (ton)	Area (ha)	Production (ton)	
Musi Rawas (1990)							
Rawas Ulu	17,797	6,717	51	16	210	113	18,058
Muara Rupit	31,184	11,844	184	45	198	112	31,566
Bengkulu Ulu	7,371	2,850	253	55	169	91	7,793
Muara Beliti	5,401	1,954	641	221	1,074	664	7,116
Tugumulyo	3,750	1,063	467	138	885	515	5,102
Jayaloka	3,400	531	306	92	214	75	3,920
Muara Kelingi	26,814	9,562	501	137	386	74	27,701
Muara Lakitan	11,468	3,636	212	47	292	106	11,972
Rawas Ilir	15,936	5,940	75	14	468	117	16,479
Lubuk Linggau	3,122	1,115	428	104	353	171	3,903
Total	126,243	45,212	3,118	869	4,249	2,038	133,610
Lahat (1991)							
Lahat	4,190	803	1,410	215	153	55	5,753
Merapi	2,568	871	720	156	43	14	3,331
Kikim	5,320	1,331	1,224	307	753	82	7,297
Pl. Pinang	560	194	1,893	980	54	7	2,507
Kota Agung	30	10	5,295	2,100	110	17	5,435
Pagar Alam	0	0	31,846	14,388	107	70	31,953
Tg. Sakti	0	0	9,270	5,417	55	61	9,325
Jarai	0	0	17,387	7,410	89	13	17,476
Ma. Pinang	0	0	24,782	13,466	60	12	24,842
Pendopo	0	0	5,794	939	234	98	6,028
Tb. Tinggi	6,991	3,477	1,680	1,326	303	57	8,974
Ulu Musi	0	0	30,663	14,644	400	93	31,063
Total	19,659	6,685	131,964	61,348	2,361	578	153,984

Sources: BAPPEDA Tingkat II Lahat, Kabupaten Lahat Dalam Angka, 1989 and 1991
Kantor Statistik Kab. Musi Rawas, Kabupaten Musi Rawas Dalam Angka 1990

Chiefly since the early 1980s, a number of smallholder tree crop development projects have been implemented in the IDEP Area: eight PRPTE (the Rehabilitation and Expansion of Export Crops Program) units for coffee in the Mountain Zone of Kabupaten Lahat, and six PRPTE units and one SRDP (the Smallholder Rubber Development Project financed by the World Bank) unit for rubber and one PRPTE unit for cocoa in the lowland parts of the IDEP Area. Each PRPTE unit usually commands a more or less contiguous block of 500 to 1,000 ha, and participating farmers either replanted or newly planted the average area of about 1 ha for coffee and 1.5 ha for rubber. The SRDP unit commands about 6,400 ha at three locations in Kabupaten Musi Rawas.

Compared with coffee, rubber and paddy, the other crops (secondary food crops and horticultural crops) are yet of minor importance, or rather, their importance is yet limited to specific localities. Secondary food crops (palawija crops) and upland paddy are relatively more important in the transmigration areas located in the hinterlands between the rivers, where rainfed wetland is difficult for farmers to develop. Reflecting the much larger areas of the Piedmont Zone and the Peneplains, and the larger presence of transmigrant communities, the annual harvested areas under five major palawija crops (maize, groundnut, soybean, cassava and sweet potato) and upland rice total some 33,000 ha in Musi Rawas, nearly three times as large as the kabupaten's total harvested area of wetland paddy. In contrast, the areas under

palawija and upland rice of Kabupaten Lahat totals 14,000 ha, which is about 50 % of the harvested area of wetland.

Among the valleys and plateaus above 900m in altitude formed in the Barisan Range of Sumatra Island, some areas have evolved to produce mid-latitude vegetables such as Irish potato and cabbage. The Karo Highlands in North Sumatra, parts of the Minangkabau Highlands in West Sumatra and the Rejang Highlands of Bengkulu are such examples. The Pasemah Highlands (Kecamatan Jarai and Pagar Alam) of Kabupaten Lahat is also known for such vegetable production. As shown in Table 3.1.10, the vegetable production in the area is yet limited, and according to the information obtained from some traders in Palembang, the supply of vegetables to the city depends more on outside sources like Bengkulu, West Sumatra and West Java than on the Pasemah Highlands. The situation is partly explained by the traditional importance of coffee growing among the smallholders in the Pasemah Highlands. In view of the declining prices of coffee due to the international oversupply, and moreover, the increasing needs of conserving the forest cover in the mountains to protect the vast Musi River basin, highland vegetable cultivation appears to offer a promising cash cropping alternative to coffee.

Table 3.1.10 Production of Vegetables in Musi Rawas and Lahat (1990)

Kab. / Kecamatan	Kabupaten Musi Rawas		Kabupaten Lahat		Total Province	
	Area (ha)	Production (ton)	Area (ha)	Production (ton)	Area (ha)	Production (ton)
High-land Crops						
Tomato	77	81	1,232	1,232	2,508	4,829
Green Beans	0	0	354	317	603	1,091
Greens (sawi)	0	0	138	1,453	565	4,335
Leaf Onion	0	0	142	1,211	214	1,507
Cabbage	0	0	81	910	81	910
Radish (lobak)	0	0	33	470	169	1,720
Carrot	0	0	22	328	22	328
Irish Potato	0	0	22	95	12	95
Others	102	224	87	121	296	530
Subtotal	179	305	2,111	6,137	4,470	15,345
Low-land Crops						
Red onion	0	0	42	336	42	336
Cucumber	393	1,515	571	3,041	2,591	13,287
Long Beans	726	3,232	951	7,091	6,550	34,058
Egg plant	482	928	1,556	5,087	5,816	15,430
Chilies	280	892	1,195	2,075	4,318	12,528
Swamp Cabbage	63	184	428	1,327	1,019	3,612
Spinach (bayam)	92	275	513	845	1,043	2,651
Others	26	34	288	404	4,103	4,350
Subtotal	2,062	7,060	0	5,544	20,206	0
Total	2,241	7,365	0	7,655	26,343	0

Source: Dinas Pertanian Tanaman Pangan

The fishery and livestock subsectors are of relatively minor importance compared with food and tree crops, which can be seen to some extent in the percentage shares of 1.8%

for fisheries and 0.4% for livestock and poultry in the GRDP of Kabupaten Lahat. The combined populations of large ruminants in the IDEP Area in 1990 totalled some 150,000 heads (Table 3.1.11). The number of cattle/buffaloes per hectare of wetland is 2.6 heads in the IDEP Area, which is more than twice as high as the provincial average. As is common in other kabupatens of South Sumatra Province, local chickens account for the bulk of poultry population, and the number of broilers and layers is relatively small.

Table 3.1.11 Distribution of Livestock and Poultry in Musi Rawas and Lahat (1990)

	Musi Rawas	Lahat	Total IDEP	Province
Cattle	27,166	52,730	79,896	347,025
Buffaloes	35,034	32,028	67,062	133,988
Total Large Ruminants	62,200	84,758	146,958	481,013
No. of Heads per Wetland Area	2.48	2.73	2.61	1.02
Broilers	74,300	46,890	121,190	
Layers	18,122		18,122	
Local Chickens	621,423	896,554	1,517,977	

Note: Data on poultry are based on the respective Kabupaten Dalam Angka.

Sources: BAPPEDA Tingkat I Sumatera Selatan, Sumatera Selatan Dalam Angka 1990.

BAPPEDA Tingkat II Lahat, Kabupaten Lahat The Dalam Angka 1991.

Kantor Statistik Kab. Musi Rawas, Kabupaten Musi Rawas Dalam Angka 1990.

The supply of eggs in the IDEP Area, especially in urban markets like Lubuk Linggau and Lahat, now appears to be more or less controlled by the large scale producers in North Sumatra Province. The supply situation is basically the same in the market of Palembang. The increase of egg production in the province is apparently hampered by the relatively high costs of feeds, because there are no large-scale producers of poultry feeds. In Lubuk Linggau, a small feed plant has been recently established to supply feeds chiefly for local fish culture but also some for poultry. However, the local market, and the market in Palembang as well, is already firmly entrenched by the suppliers of North Sumatra, and it appears difficult for the local egg producers to compete with them without major capital investments.

Table 3.1.12 Fishery Production in Musi Rawas and Lahat (1990)

	Musi Rawas			Lahat		
	Catch (tons)	Area (ha)	No. of Households	Catch (tons)	Area (ha)	No. of Households
Inland Fishery	568	2,270	490	-	-	-
Aquaculture						
Ponds	505	352	757	879	1,220	3,219
Wetland	85	323	465	425	1,273	1,906

Source : BAPPEDA Tingkat I Sumatera Selatan, Sumatera Selatan Dalam Angka 1990.

As shown in Table 3.1.12, fisheries in land-locked Kabupatens Musi Rawas and Lahat are restricted to the open water fishing in the rivers and small-scale aquaculture in ponds (kolam) and wetland paddy fields (including mina paddy). The open water fishery is conducted mainly in four rivers, the Kelingi, the Musi, the Lakitan and the Rawas, in Kabupaten Musi Rawas. The fish culture by kolams and wetland paddy fields are usually conducted by farmers in areas with irrigation facilities. The scale of operation is generally small and low in productivity. The fish culture in Musi Rawas is relatively well-operated owing to the existence of the technical and semitechnical irrigation systems. Several units of fish ponds are intensively operated. The major species farmed is common carp, but the local supply appears to be more than enough, judging by the low price. Because fish culture is an important source of cash for local farmers, it appears necessary to diversify the species for farming. Recently, frog culture has been started by a private company in Lubuk Linggau.

3) Other Productive Sectors

Apart from the agricultural sector, Kabupatens Musi Rawas and Lahat are endowed with mining and energy resources, which are yet largely untapped. The foremost of the mineral resources is coal deposits, which are roughly estimated to be 138 million tons in Lahat and 850 million tons in Musi Rawas. The other resources are mostly non-metallic minerals, such as limestone at Sukajadi in Lahat (estimated deposits of 7 million tons) and marble also at Sukajadi (estimated deposits of 88 million tons). Marble quarrying and processing have been recently started by a private company.

There were 2,320 and 1,533 industrial establishments respectively in Musi Rawas (1990) and Lahat (1991), employing 8,408 and 6,888 permanent workers. Almost all of the establishments are either small-scale or cottage industries, and the average number of workers per establishment is four in both kabupatens. In Musi Rawas, there were three medium-scale establishments with a total employment of 425 workers in 1990. However, all three sawmills have stopped their operation since then. In their stead, a factory has been recently established near Lubuk Linggau to produce rough furniture modules out of old rubber trees, and another factory in Muara Beliti to produce wood parts of pencils.

(3) Infrastructural Sectors

1) Transportation

Table 3.1.13 shows the total length of roads in the Musi Rawas / Lahat IDEP Area in 1990. The most important characteristic of the transportation infrastructure is the north-south axis provided by the trans-Sumatra highway. The highway directly connects the two kabupaten capitals and seven kecamatan capitals located in the Piedmont Zone. The north-south throughfare is partly paralleled by the railway line as well, which originates from Lubuk Linggau and passes through Lahat, and at Muara Enim bifurcating eastward to Palembang and southward to Bandar Lampung.

There are two major west-east road links from the IDEP Area to Palembang: the link from Lahat City via Muara Enim and Prabumulih to Palembang and the other from Lubuk Linggau City via Muara Beliti, Muara Lakitan and Sekayu to Palembang. The substantial section between Muara Lakitan and Sekayu of the latter link is yet dirt road, but partly under improvement. Lubuk Linggau is linked by the major road westward to Bengkulu City. The good asphalted road connects Lahat and Tebing Tinggi located in the Piedmont Zone with seven kecamatan capitals in the Mountain Zone, reaching north-westwards as far as Kepahiang in Bengkulu Province. Part of the east-west road extending from Tanjung Sakti westward to Manna in Bengkulu Selatan is still dirt road, but the section from Tanjung Sakti to the provincial border is scheduled to be improved with the World Bank financing, and will provide the Area's second link to the western coast.

Table 3.1.13 Road Extension in Musi Rawas and Lahat (1990)

	Musi Rawas	Lahat	Total Province
Roads by Surface Condition (km)			
Asphalt	121	128	2,443
Gravel	404	421	1,677
Dirt	475	300	3,478
Total	1,000	849	7,598
Land Area (km ²) ¹⁾	18,613	4,952	94,254
Road Density (m/km ²)	5.37	17.14	8.06
Road Density (km/village)	3.62	1.52	3.24

Note: 1) The total land area excludes natural forest reserves and protection forests.
Source: BAPPEDA Tingkat I Sumatera Selatan, Sumatera Selatan Dalam Angka 1990.

2) Power Supply

As summarized in Table 3.1.14, there is a clear difference of access to the public power supply between two kabupaten. Only a little over 11% of the households consume electricity in Musi Rawas, compared with nearly 40% estimated for Lahat. Rural electrification appears far more advanced in Lahat, but in a number of kecamatan (e.g. Kikim, Pulau Pinang, Kota Agung, Tanjung Sakti, Ulu Musi and Tebing Tinggi), the access to electricity is just as limited as in many kecamatan of Musi Rawas.

Table 3.1.14 Power Supply in Musi Rawas and Lahat (1990)

	Musi Rawas	Lahat	Total Province
PLN Installed Capacity			
Units	7	38	152
Capacity (KW)	4,964	9,685	342,374
Electricity Consumption			
Total No. of Households	104,859	129,612	1,360,576
Total Consumers	12,754	53,217	281,388
Elec. Consuming Households	11,803	50,818	263,504
% of Total Households	11.3	39.2	19.4
Rural Electrification			
Total No. of Villages	276	560	2,345
Villages with Electricity	37	262	540
% of Total Villages	13.4	46.8	23.0
Rural Consumers	9,529	27,847	102,569

Note: 1) Figures for Musi Rawas are taken from the Kabupaten Dalam Angka of 1990. Figures for Lahat and the province are taken from the Provincial Dalam Angka of 1990. However, the total number of households for Lahat and the province is tentatively estimated by assuming the average household size of 4.64.

Sources: BAPPEDA Tingkat I, Sumatera Selatan Dalam Angka 1990.
Kantor Statistik Kab. Musi Rawas, Musi Rawas Dalam Angka 1990.

3) Telecommunication

The telephone network in the Musi Rawas / Lahat IDEP Area is provided by six exchanges shown below, and three major urban centers of Lubuk Linggau, Lahat and Pagar Alam are equipped with automatic exchanges (Table 3.1.15). According to the on-going

development plan through the end of 1997, the Lahat exchange will be replaced by a new EWSD automatic system, while the switching capacity of the Pagar Alam exchange will be doubled.

Table 3.1.15 Telecommunication in Musi Rawas and Lahat (1990)

	Existing Capacity			On-going Expansions 1)			Capacity in 1997		
	Type	Switch- ing Cap.	Subscri- bers	Outside Plant Cap.	Type	Switch- ing Cap.	Outside Plant Cap.	Switch- ing	Outside Plant
Lahat 2)	PC1000C	2,000	1,568	5,700	EWSD	2,000	-	2,000	5,700
Pagar Alam 3)	EWSD	1,000	808	1,030	EWSD	1,000	2,000	2,000	2,000
Pendopo Lintang 4)	Manual	100	56	220	-	-	-	100	220
Tebing Tinggi	Manual	200	184	810	-	590	-	590	810
Lubuk Linggau 5)	EWSD	3,000	1,796	3,300	-	-	3,900	3,000	7,200
Muara Rupit 6)	Manual	200	76	200	-	-	-	200	200

Notes: 1) Includes replacements.
 2) Also services Pulau Pinang, Kikim and Merapi.
 3) Also services Tanjung Sakti, Kota Agung and Jarai.
 4) Also services Muara Pinang and Padang Tepung.
 5) Also services Batu Kuning, Muara Beliti, Tugumulyo, Jayaloka, Muara Kelingi and Muara Lakitan
 6) Also services Rawas Ulu and Rawas Ilir.
 Source: WITEL-III PTTELKOM

4) Water Supply

The provision of piped water supply systems has been largely limited to two kabupaten capitals and 19 kecamatan capitals. The on-going development during the Repelita V is expected to bring the total service population to about 190,000 as shown in Table 3.1.16.

Table 3.1.16 Estimated Service Population of Piped Water Supply Systems

	Service Population (Target Year 1995)	Service Ratio (%)
Lubuk Linggau	46,289	64
9 Kecamatan Capitals	24,174	40
Other Locality (1)	3,407	50
Total Musi Rawas	73,870	53
Lahat City	46,507	37
10 Kecamatan Capitals	62,154	51
Other localities (3)	6,683	44
Total Lahat	115,345	44

Source: Cipta Karya, PU, Jakarta

5) Education

The present provision of formal education in the Musi Rawas / Lahat IDEP Area is shown on Table 3.1.17. By Indonesian standards, the number of secular schools and teachers for primary and secondary education in the Area appear to be adequate, or at least on a par with the general situation in South Sumatra Province as a whole. However, there is room

for improvement in the quality of education, namely in terms of the qualification of teachers and the equipment available for instruction. Moreover, there is a need to improve the level of literacy among the adult population and the dropouts from formal school systems.

Table 3.1.17 Formal Educational Institutions in Musi Rawas and Lahat (1990)

	Musi Rawas	Lahat	Province
Elementary Schools			
No. of Schools	536	545	5,462
No. of Teachers	3,031	4,094	42,562
No. of Pupils	94,054	108,492	1,075,801
No. of Villages per School	0.4	1.0	0.4
No. of Schools per 100,000 Pop.	104	91	87
No. of Pupils per School	175	199	197
No. of Pupils per Teacher	31	27	25
Middle Schools			
No. of Schools	78	116	1,102
No. of Teachers	836	1,470	14,610
No. of Pupils	16,680	23,651	235,814
No. of Villages per School	3	5	2
No. of Schools per 100,000 Pop.	15	19	17
No. of Pupils per School	214	204	214
No. of Pupils per Teacher	20	16	16
High Schools			
No. of Schools	30	41	444
No. of Teachers	598	864	9,196
No. of Pupils	7,165	13,610	117,567
No. of Villages per School	8	14	5
No. of Schools per 100,000 Pop.	6	7	7
No. of Pupils per School	239	332	265
No. of Pupils per Teacher	12	16	13

Source: BAPPEDA Tingkat I Sumatera Selatan, Sumatera Selatan Dalam Angka 1990.

6) Health Care

Table 3.1.18 shows the medical facilities and personnel servicing the Musi Rawas and Lahat IDEP Area in 1990. The access to the hospitals (general and specialized) and the availability of trained medical personnel as measured per 100,000 population are significantly lower in the Area than the general situation in the province as a whole. The provision of health centers measured relative to the number of kecamatan they service and that of health subcenters measured relative to the number of villages they service in the Area can be considered on a par with the provincial situation, provided that the allowance is made of the considerably larger number of villages per subcenter in Kabupaten Lahat which is due to the smaller size and mutual proximity of villages. However, it is reported that the staffing of rural health centers and subcenters are yet inadequate, not infrequently without permanently stationed medical personnel.

Table 3.1.18 Health Care Services in Musi Rawas and Lahat (1990)

	Musi Rawas	Lahat	Province
Medical Institutions			
No. of Hospitals	1	2	38
No. of Hospital Beds	95	102	4,480
No. of Health Centers	18	23	206
No. of Health Subcenters	83	85	595
No. of Beds per 100,000 Pop.	19	17	71
No. of Villages per Health Center/Subcenter	2.3	5.2	2.9
Medical Personnel			
No. of General Doctors	30	33	561
No. of Special Doctors	5	2	184
No. of Dentists	4	5	137
No. of General Nurses	195	176	2,747
No. of Dentist Nurses	13	7	186
No. of Midwives	29	35	749
No. of Doctors/Dentists per 100,000 Pop.	8	7	14
No. of Nurses per 100,000 Pop.	41	31	46
No. of Midwives per 100,000 Pop.	6	6	12

Source: BAPPEDA Tingkat I Sumatera Selatan, Sumatera Selatan Dalam Angka 1990.

3.2 KABUPATENS MUSI RAWAS AND LAHAT IN PERSPECTIVE

3.2.1 Musi Rawas / Lahat IDEP in Regional Framework

In the Conceptual Spatial Strategy chosen for the Southern Sumatra Region in the Interim Report, the Musi Rawas / Lahat IDEP Area is part of the interior axis, or the Agro-zone 2, which has been benefitting from a development momentum generated by the completion of the trans-Sumatra highway in the early 1980s. The Agro-zone 2 in the Region's Spatial Strategy is expected to grow further as an important agricultural base for, and to forge much closer integration with, the Sumatra Gateway Triangle roughly bound by Bandar Lampung, Palembang and Baturaja.

In the same spatial strategy, the following three central objectives are proposed for the Region.

- 1) Lead national development together with Java and Northern Sumatra and distribute the benefits of development equitably within the Region and also to other parts of Indonesia, while strengthening interprovincial economic linkages
- 2) Expand export of, particularly, natural resource-based commodities and products, taking advantage of proximity to the "growth triangle" and neighboring countries
- 3) Protect its natural environment as a national asset while promoting environmentally sustainable development

As mentioned briefly in Section 3.1, the Musi Rawas / Lahat IDEP Area has a set of natural resources which can be harnessed further to contribute to the closer integration of the Region as well as to the expansion of exports. It is located in the crossroads with Jambi and Bengkulu and has traditionally functioned as one of the important interior nodes of east-west distribution, and latterly, of north-south distribution along the trans-Sumatra highway. Above all, the Area occupies the environmentally crucial area of the vast Musi River Basin. The conservation of natural environment is a national, and a global, issue, which must be pursued in any places where development meets nature, but some places should be given precedence

over other places in South Sumatra Province, the Musi Rawas / Lahat IDEP Area would be ranked among the first to begin and succeed in.

3.2.2 Provincial and IDEP Objectives

The Repelita V of South Sumatra Province aims at the all-round development in (i) agriculture and irrigation, (ii) mining and energy, (iii) industry, (iv) transportation and tourism, (v) trade, and (vi) urban and rural development. However, taking into consideration the possible interactions and interdependence among sectoral development activities, the Provincial Government selected a number of strategic projects, or project groups, which would have greater impacts in accelerating regional economic growth and contributing to the creation of employment and human resource development. The eleven proposed projects, or project groups, can be arranged in relation to the major provincial development objectives, as shown below.

<u>Major Development Objectives</u>	<u>Strategic Projects/Project Groups</u>
1. Food self-sufficiency, expansion of agricultural areas and increased agro-based exports	- Komereng irrigation - Development of large-scale estates - Development of tidal swamp areas
2. Betterment of the transportation network and export promotion	- Construction of a new sea port - Artery road and ring road around Palembang - Improvement and upgrading of road links to Palembang Mid link (Palembang - Sekayu - M. Lakitan - M. Beliti - Lubuk Linggau) Eastern link (Jambi border - Betung - Palembang - Kayu Agung - Pematang Panggang - Lampung border) Oil Palm Roads (Palembang - Muara Enim - Pendopo - Sekayu - Palembang; Palembang - Baturaja - Prabumulih; Palembang - Betung - Bayung Lincir)
3. Urban development	- Dredging of the Musi River and land reclamation in Palembang
4. Poverty alleviation	- Development of urban slums and rural isolated areas (Integrated area development projects (PKT); improvement of traditional irrigation systems; potable water supply)
5. Tourism development	- Sriwijaya Archaeological Park
6. Forest conservation and development	- Reforestation of critical land and expansion of industrial forests (HTI)
7. Industrial development	- Development of industrial estates in Palembang

The provincial objectives and the strategic projects of the Repelita V above are the current focus of development, which, however, suggests the direction of long-term development. Excepting a few Palembang-specific strategic projects, most of the strategic projects, and the development objectives they aim to expedite, have direct relevance and/or have an important bearing in the IDEP Area. For example, the improvement of the mid-link road from Lubuk Linggau through Sekayu to Palembang and part of the planned upgrading of

the "oil palm roads" for 15-ton trucks will strengthen the flow of goods and passengers to, from and through the Area, by shortening the travel time, increasing the unit volume of freight, and reducing the costs of transport. In addition, the on-going improvement of the road connecting Tanjung Sakti to the border with Kabupaten Bengkulu Selatan will add the second link of the IDEP Area to the western coast and enhance the crossroads function of the Area. The schematic map of the existing and planned major road network is shown in Figure 3.2.1.

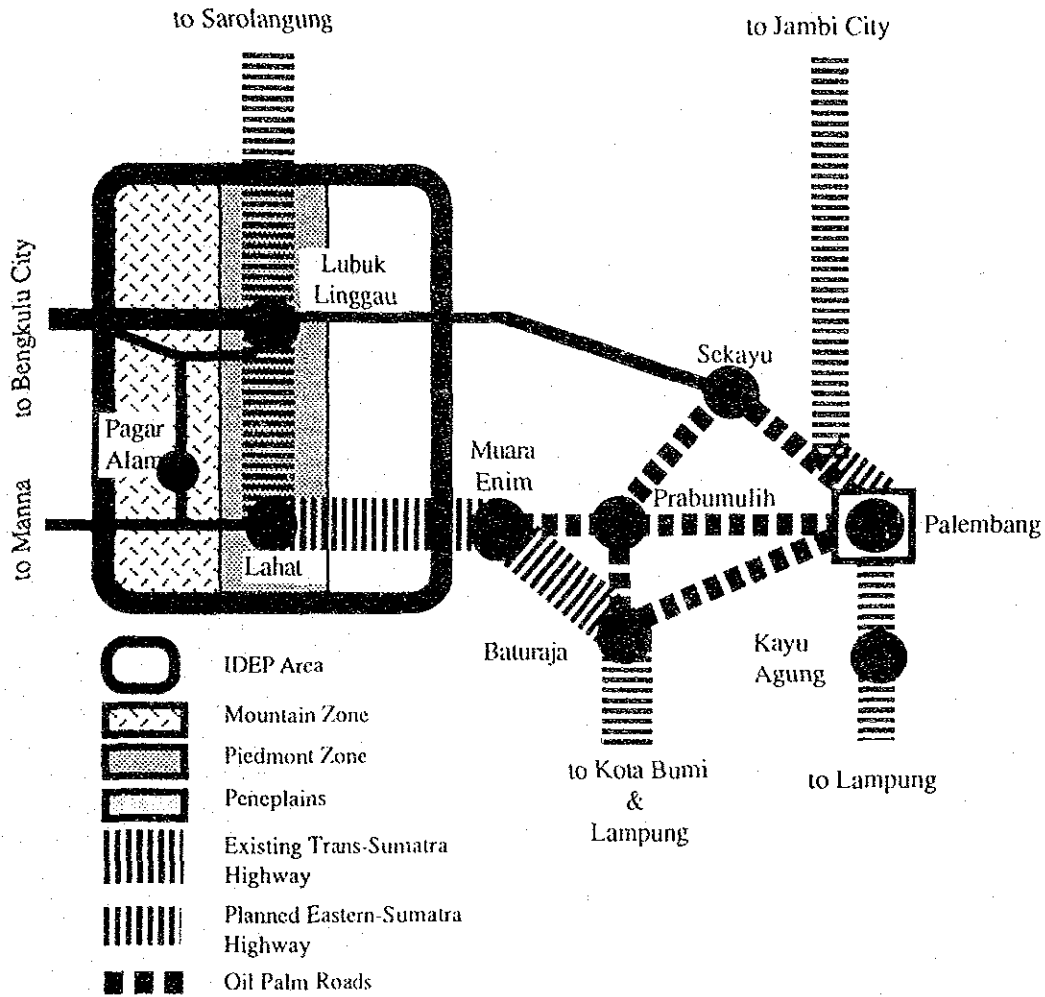


Figure 3.2.1 Schematic Road Network of Musi Rawas/Lahat IDEP Area

What is necessary for the IDEP Area is to utilize this added development of its major road links toward the activation of the development potentials. That is to say, the existing north-south trans-Sumatra highway and closer east-west linkages can be made to function not simply for servicing through-traffics of goods and passengers originating from somewhere else and shipping out its traditional products such as rubber and coffee, but also for diversifying the local products, with as much value-added as possible.

The major objectives of the IDEP Area consistent with the provincial objectives and the Regional Spatial Strategy can be stated as follows.

- 1) To maintain local food security and build up the capacity to produce surplus paddy,
- 2) To strengthen the Area's, especially, the two kabupaten capitals', function as major inland collection and distribution centers, by promoting market-

- oriented agricultural development and targeting export markets and the domestic, especially the Region's, urban markets,
- 3) To develop resource-based industries, especially agroindustries to stimulate intensification and diversification efforts of the local agriculture,
 - 4) To strengthen forest conservation efforts and sustainable forest exploitation,
 - 5) To improve the access to basic social services and the income of the Area's disadvantaged rural communities, and
 - 6) To develop basic infrastructure to support the above objectives.

3.3 DEVELOPMENT STRATEGY FOR MUSI RAWAS / LAHAT IDEP

3.3.1 Main Theme of the Musi Rawas / Lahat IDEP

The main theme of the IDEP is "sustainable diversification of production maximizing the local and market potentials." The diversification involves two dimensions. The first dimension is horizontal in the sense that location-specific intrinsic potentials, such as high-value mineral resources and good natural and soil conditions suitable for high-value crops. But this dimension need be equally matched by the clear understanding of specific market opportunities. The second dimension is vertical in the sense that the available potentials are activated to create more value-added. This dimension also calls for the clear, and more sophisticated, understanding of the market opportunities. As mentioned already, the towns in the Piedmont Zone traditionally functioned as trading posts between the Mountain Zone in the west and the Peneplains in the east. The future development of the Area will add an vertical dimension initially through resource-based industries.

3.3.2 Development Strategy for Musi Rawas / Lahat IDEP

(1) Food Security and Production of Paddy Surplus

From the viewpoint of cost-effectiveness and quick yield, the short-term priority is in the rehabilitation of the existing irrigation systems operating well below their original capacity. With respect to relatively large irrigation systems ranging from 300 - 500 ha to over 1,000 ha, there are a number of on-going or planned rehabilitation projects in the Area. The Master List of the World Bank financed PIADEP (Provincial Irrigated Agricultural Development Project) includes ten systems all located in Kabupaten Musi Rawas: namely, Kasie II, Air Tupak, Air Gegas, Bumi Agung, Kasie I, Air Malus, Air Satan, Megang Tikip, Air Deras I and II. The first four systems are currently under rehabilitation to be completed during 1992/93 and 1994/95. In addition, the rehabilitation of Air Dulu is being undertaken with national budget. The rehabilitation of the remaining projects, especially Air Malus, in the Master List will soon be implemented or in the pipeline for further World Bank financing or with national budget.

The Musi River Basin Study completed in 1989 lists six sites for rehabilitation and extension projects: namely, Air Mulak, Tebing Panjan, Air Keruh, Lintang Kanan, and Air Kasie I and II. Excluding the last two systems which overlap with the PIADEP proposals, the suggested projects are located in the Mountain Zone of Kabupaten Lahat and they need be studied in more detail for early implementation. In addition, many small village systems in Kabupaten Lahat, especially in its Mountain Zone, are in clear need of repair. According to the information provided by the BAPPEDA Tingkat II of Kabupaten Lahat, there are some 400 village irrigation systems, of which only 23% are in good conditions, and 33% are heavily damaged.

From the medium- to long-term development perspective, the construction of new irrigation systems can be undertaken in the Piedmont Zone and the upper parts of the Peneplains. The construction partly aims to maintain the Area's long-term rice self-sufficiency and partly to produce a sizable surplus for other parts of South Sumatra Province and the Southern Sumatra Region, where the growth of population, especially urban population, is projected to be high. The afore-mentioned Musi River Basin Study and the provincial PU have

identified a number of promising locations along the Musi tributaries in Kabupaten Musi Rawas, such as Air Bal, Muara Rupit, Muara Lakitan, Muara Beliti and Lembah Liam. These possibilities in the Upper Musi Basin need be studied for scheduling and implementation, including the requirements of river training for flood control.

(2) Market-oriented Agricultural Development

The strategy for this objective mainly centers on upland areas, and implies a range of options. The important aims are to increase sources of cash income for local farmers, to narrow economic disparities originating from the lack of equity either in the access to agricultural land or in the natural environment where farmers operate, to encourage directly or indirectly environmentally more sustainable farming practices, and to activate the potentials of estate and agribusiness development on parts of the available convertible forest land.

Tree crops in general are important for the IDEP Area, because they generate cash income for farmers, are more adaptable to less fertile soils and less likely to cause erosion hazards than arable crops. However, the extensification of their planted area need be promoted mainly in the lowland areas (the Piedmont Zone and the Peneplains), where the land is still available in substantial scale. In the Mountain Zone, the primary emphasis will be placed on the intensification and diversification for the existing area under coffee. The level of agricultural land use in the mountainous coffee producing areas is already high, and the expansion of new areas must be carefully weighed against the risks of surface soil erosion on the sloping terrains.

The volcanic alluvial fans found in the Mountainous Zone are considered suitable for the production of mid-latitude vegetables, fruits, and flowers. Development of horticulture in the mountainous areas has two purposes. One is to support the growth of the already existing horticulture by improving its income generating capability, and the other is to promote a new possibility of agricultural exports and/or of import substitution. Such horticultural development will require the following components.

- 1) Selection of appropriate crops by identifying target markets
- 2) Provision and distribution of seeds or planting materials and production inputs
- 3) Land development to ensure long-term sustainability
- 4) Provision of extension and training for farmers groups and establishment of a pilot farm
- 5) Infrastructure for post-harvest handling and marketing
- 6) Establishment of effective and stable marketing arrangements, including the possibility of local agroindustrial development

Environmentally sustainable farming of palawija crops can be promoted in selected upland areas of the Piedmont Zone and the Peneplains. The production of palawija crops would generate immediate economic benefits for the farmers, when some processing industry is established in the Area. At the same time, it is necessary to incorporate certain measures to the upland farming systems to prevent soil degradation, such as contour terracing, "alley farming" (interplanting with leguminous shrubs or multi-purpose trees on the contour), and integration with livestock and leguminous grassland as fodder.

Small-scale fish farming is important as a subsidiary source of income for farmers, especially those who are less endowed with agricultural land, and also as an incentive for increasing the local production of crops used as feed materials. Considering the fact that the local market for cultured fish (chiefly common carp) appears to be more or less saturated, it will be necessary to promote the diversification into higher-priced species, specifically freshwater giant prawn. Depending on the improvement of market prospects, there is a possibility of the commercial undertaking. Poultry farming is equally important as a source of cash income for local farmers and as an incentive for feed crop production, and offers an opportunity of agribusiness.

(3) Resource-Based Development of Industry and Energy

The strategy for this objective is to promote agroindustries which use locally produced, or produceable, agricultural commodities. Large-scale estates of tree crops such as rubber and oil palm usually establish primary processing facilities as integral part of their operation. Although the actual development is yet far from being completed, a number of concessions for large-scale private estates have been either granted, or applications for concession are being processed, in the Area. The actualization of these private investments will give an important impetus to the Area's development.

There are possibilities other than the processing of tree crops, such as processing of palawija crops and certain vegetables and fruits. Concerning timber, there are several ways to increase the value added of production, mainly by elevating the degree of manufacturing, such as semi-finished furniture modules, particle boards, fiber boards, and wood wool cement, which can utilize old rubber trees and/or residues of sawmilling. In addition, the coal fields in Kecamatan Rawas Ilir in Musi Rawas needs boring exploration and reserve estimation prior to planning their development.

(4) Forest Conservation and Sustainable Forestry

The strategy for this objective is to ensure the protection of the watersheds of the major Upper Musi tributaries and to transform a substantial part of the on-going commercial forest exploitation into a more sustainable undertaking. It will be necessary to enforce strictly the protection and management of the natural forest reserves and protection forests, to rehabilitate the critical land in the major watersheds through reforestation, and to promote the expansion of industrial forests in the existing production forests and convertible forests.

(5) Development of Supportive Infrastructure

1) Transportation

As mentioned already, the north-south axis provided by the trans-Sumatra highway and the two east-west link roads partly under improvement constitute the vital transportation framework, connecting the Area with Palembang, and major centers of Bengkulu, Jambi and Lampung Provinces. The connection with Palembang will be partly fortified by the development of the so-called Oil Palm Roads. Within the Area, all the kecamatan capitals are now connected by asphalted roads in more or less good conditions. Therefore, the strategy for transportation development in the short run will be to provide more serviceable feeder roads to rural areas, which will constitute a major component of the rural development discussed below.

For the medium- and long-term development in transportation, further upgrading of the existing road network connecting the Area with major urban centers within and outside South Sumatra Province will become necessary in order to enhance the agroindustrial development and collection and distribution function of the Musi Rawas / Lahat IDEP Area. The extension of civil aviation to the major centers (kabupaten capitals) in the Area will become commercially viable sooner or later, depending on the growth of the local industrial base and the accompanying urban population agglomeration. Similarly, the existing railway link with Palembang and Bandar Lampung will probably require an expansion of the carrying capacity apace with increased agricultural, agroindustrial and mining production in the Area.

2) Urban Development

In view of the expected growth of agroindustries and market-oriented agriculture, two kabupaten capitals in the Area will require improved urban facilities and urban planning. Lubuk Linggau City already has its spatial plan, and has embarked on some projects, such as by-pass roads for through-traffic on the trans-Sumatra highway and the road link to Bengkulu

City, in order to restructure the city area according to the plan. Lahat City is yet to complete its urban spatial plan, but is scheduled to implement the Integrated Urban Infrastructure Development Program (IUIDP) with ADB financing. The IUIDP will be also necessary for Lubuk Linggau. The concomitant expansion of power supply and telecommunication will be necessary to enhance the growth pole functions of these cities.

3) Rural Development

The objective of rural development is to narrow down socio-economic disparities between towns and villages, on the one hand, and between villages, on the other. It will be necessary to extend better feeder roads, basic social services like primary health care and education, and electricity and telecommunication networks equitably to reach rural communities. The rural road development will start from under-serviced villages, such as those found in Kecamatan Rawas Ilir and Ulu in Kabupaten Musi Rawas and those located on the right bank of the River Lematang of Kecamatan Merapi, Lahat and Pulau Pinang in Kabupaten Lahat. Special mention must be made of the need to relocate squatters living within the Area's forest reserves and protection forests. Each of the kabupaten governments has been working on possible locations for such resettlement, and the extension of better feeder roads and the provision of basic services to resettlement sites will be necessary.

3.4 MUSI RAWAS / LAHAT IDEP

The Musi Rawas / Lahat IDEP consists of seven subprograms which are selected in reference to the Area's six objectives, as summarized in Figure 3.4.1. In view of the importance of three natural regions in terms of development potentials and conservation needs, the projects selected for each subprogram are marked with MO (Mountainous Zone), PI (Piedmont Zone) and PE (Penepains), and key projects for earlier implementation in each subprogram are shown in block letters.

1) Water Resources Development Subprogram

The aim of the subprogram is to increase the Area's capacity to produce a stable supply of wetland paddy, and in the long run to provide a sizable surplus to large urban centers in the Region and elsewhere. Rehabilitation of existing systems in the Mountain Zone will have an added effect of controlling soil erosion hazards.

- a) **Rehabilitation and Extension of Irrigation Systems (MO)**
- b) **On-farm Land Development (MO)**
- c) Upper Musi River Basin Water Resources Development (PI, PE)

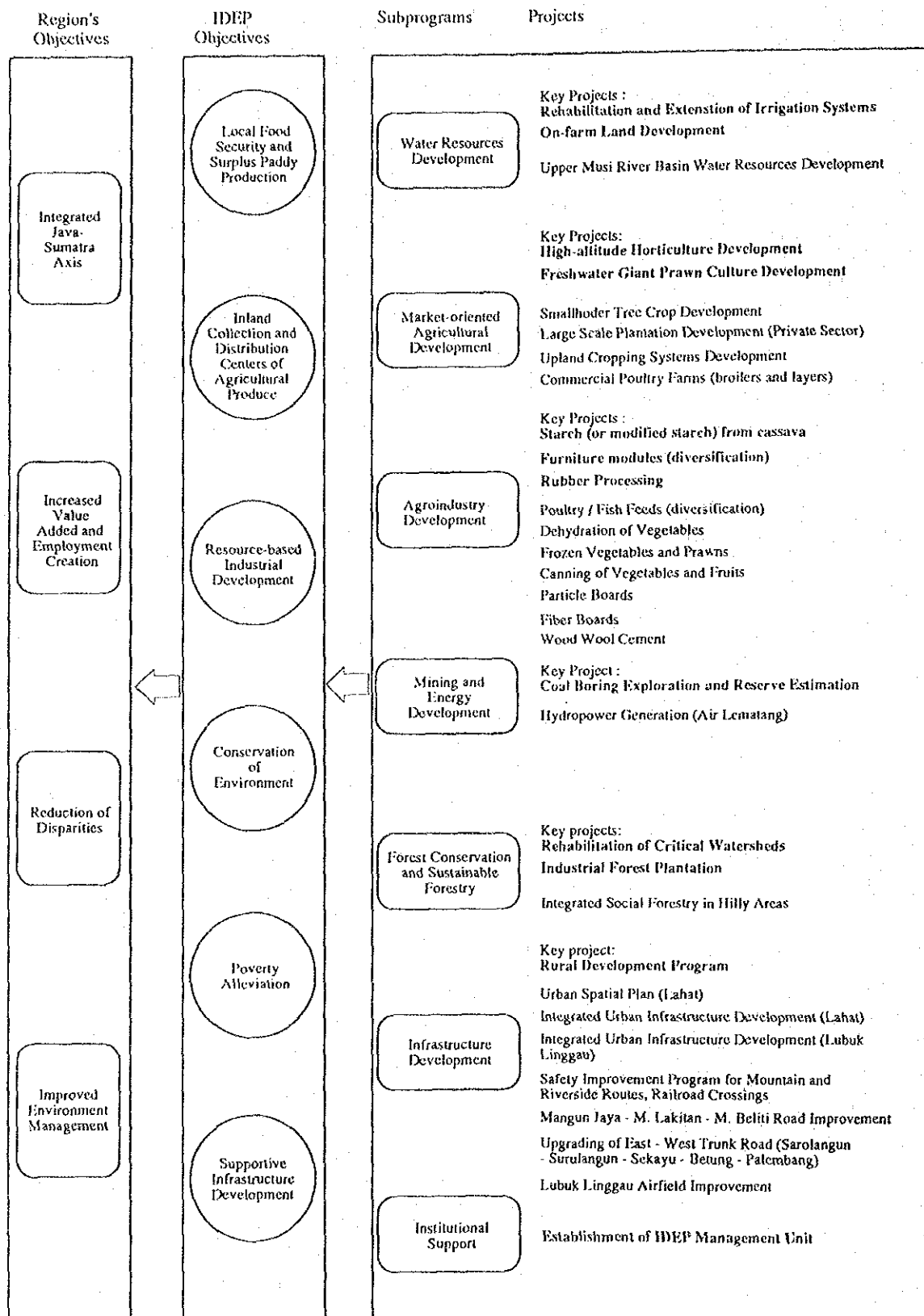
2) Market-oriented Agricultural Development Subprogram

The aim of the subprogram is to take advantage of the diverse agricultural potentials in the Area in order to respond to the changing demands in the urban markets of the country and to diversify agricultural exports originating from the Area. Most of the proposed projects include the conservation component in view of the vulnerability of upland areas to soil erosion hazards.

- a) **High-Altitude Horticulture Development (MO)**
- b) **Freshwater Giant Prawn Culture (PI)**
- c) Development of Smallholder Tree Crops (MO, PI, PE)
- d) Large-scale Estate Development (PI, PE)
- e) Upland Cropping Systems Development (PI, PE)
- f) Poultry Farms (small-scale and commercial) (PI, PE)

3) Agroindustry Development Subprogram

Figure 3.4.1 Objectives, Subprograms and Projects : Musi Rawas / Lahat IDEP



The aim of the subprogram is to increase the value-added of the primary commodities which are produced, and produceable, in the Area and the surrounding Agro-zones 2 and 3, and thereby to stimulate the intensification and diversification efforts of the farmers. The listed projects cover only a limited range of possibilities for private investment, because they are selected to bolster a few emerging industrial establishments or to build on the already existing and the proposed agricultural / fishery commodities in the Area.

- a) **Starch (or Modified Starch) from Cassava (PI)**
- b) **Furniture Modules (PI)**
- c) **Rubber Processing (PI, PE)**
- d) **Poultry / Fish Feeds (PI)**
- e) **Dehydration of Vegetables (PI)**
- f) **Frozen Vegetables and Prawns (PI)**
- g) **Pickles of Vegetables (PI)**
- h) **Canning of vegetables and Fruits (PI)**
- i) **Particle Boards (PI)**
- j) **Fiber Boards (PI)**
- k) **Wood Wool Cement (PI)**

4) Mining and Energy Development Subprogram

The aim of the subprogram is to promote the development of major energy resources found in the Area. Coal deposits in Kecamatan Rawas Ilir needs to be evaluated in detail prior to mining. If proven financially viable, it will become necessary to consider the development of an appropriate means for transporting coals from the mines.

- a) **Coal Reserve Estimate by Boring Exploration (PE)**
- b) **Air Lematang Hydropower Generation (MO)**

5) Forest Conservation and Sustainable Forestry Subprogram

The aim of the subprogram is to step up the reforestation of the critical land found in the major watersheds of the Upper Musi River Basin, and to promote further the on-going development of industrial forest plantations.

- a) **Rehabilitation of Critical Watersheds (MO)**
- b) **Industrial Forest Plantations (PI, PE)**
- c) **Integrated Social Forestry in Hilly Areas (MO)**

6) Infrastructure Development Subprogram

The main aims of the subprogram is (i) to provide the rural communities in the Area with transport access to markets and to basic social services, with special emphasis on villages located in upstreams of the major and minor tributaries of the Musi River, (ii) to strengthen the urban infrastructure and functions of the two major cities in the Area, and (iii) to upgrade the existing road network.

- a) **Rural Development (MO, PI, PE)**
- b) **Urban Spatial Plan in Lahat**
- c) **Integrated Urban Infrastructure Development (UIDP) in Lahat**
- d) **Integrated Urban Infrastructure Development (UIDP) in Lubuk Linggau**
- e) **Safety Improvement for Mountain and Riverside Roads and Railway Crossings**
- f) **Mangun Jaya - Muara Lakitan - Muara Beliti Road Improvement**
- g) **Upgrading of East-West Trunk Road (Sarolangun - Surulangun - Sekayu - Betung - Palembang)**
- h) **Lubuk Linggau Airfield Improvement**

7) Institutional Support Subprogram

The aim of the subprogram is to support the provincial BAPPEDA in implementation of the IDEP activities.

a) Establishment of an IDEP Management Unit

The rough locations of the selected projects are conceptually shown in Figure 3.4.2. The tentative implementation schedules for the proposed IDEP projects is shown in Figure 3.4.3.

3.5 DESCRIPTION OF KEY PROJECTS

(1) Rehabilitation and Extension of Irrigation Systems

1) Executing Agency: Directorate General of Water Resources Development (DGWRD), Min. of Public Works (MPW)

2) Objectives

- a) To increase the functional area and water management
- b) To secure the stable capacity of wetland paddy production to maintain rice self-sufficiency in the Mountain Zone of Kabupaten Lahat

3) Project Description

- a) Air Mulak (current irrigated area 1,544 ha)
- b) Air Keruh (current irrigated area 1,500 ha)
- c) Lintang Kanan (current irrigated area 2,450 ha)

4) Project Duration

- a) F/S: 6 months
- b) Implementation: 5 years

5) Project Cost

- a) F/S and implementation: US\$ 9,600,000

6) Remarks

The Musi River Basin Study proposed the rehabilitation and extension for eight systems, of which four are located in the IDEP Area. The results of preliminary economic evaluation are as follows.

<u>Existing Systems</u>	<u>Rehabilitation & Extension (ha)</u>	<u>Estimated B/C Ratio</u>
Air Mulak	2,207	4.397
Air Keruh	1,531	2.901
Lintang Kanan	3,509	3.674

(2) On-farm Land Development

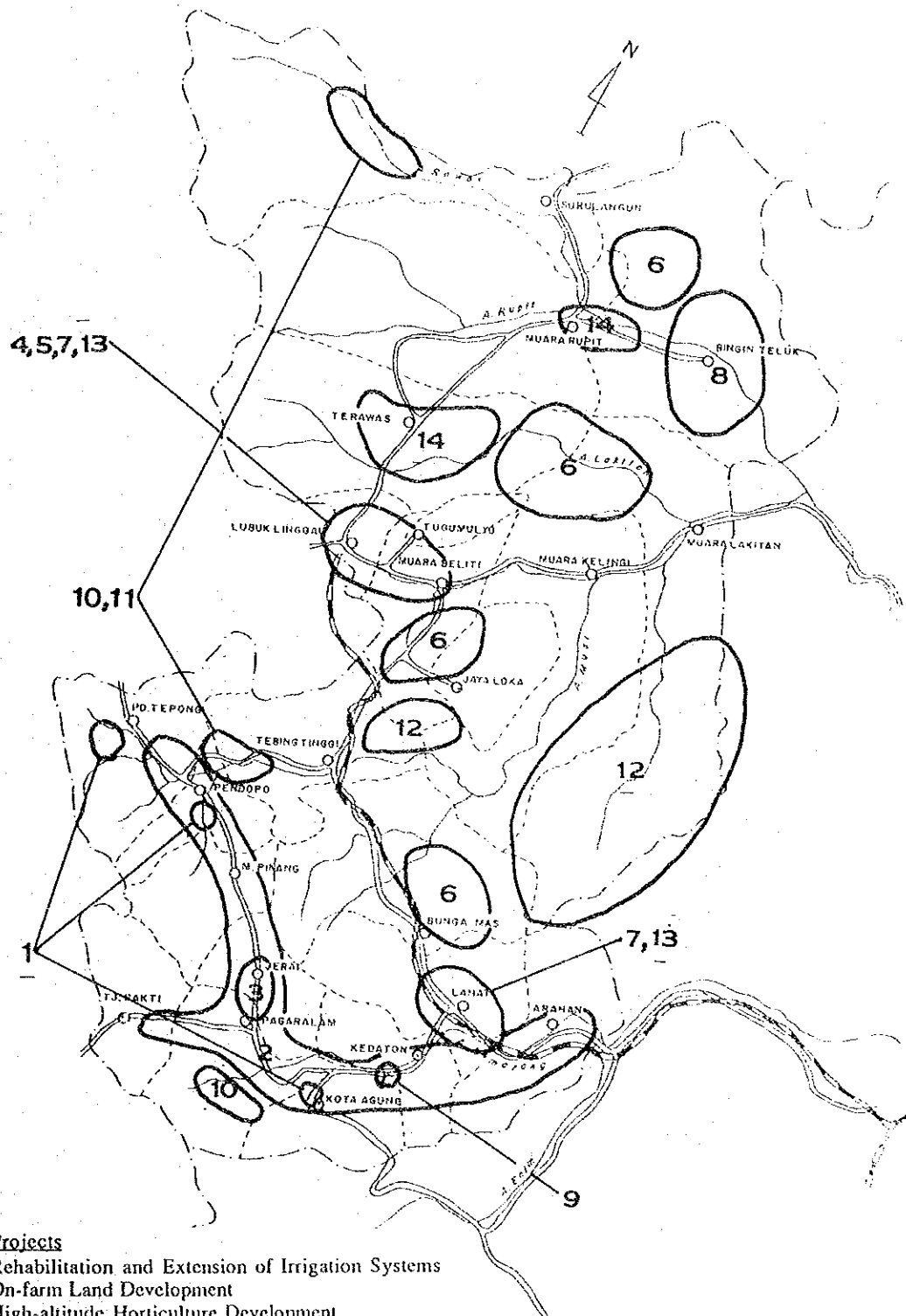
1) Executing Agency: Directorate General of Food Crops, Min. of Agriculture, Directorate General of Water Resources Development, Min. of Public Works.

2) Objectives

- a) To rehabilitate or upgrade the damaged village irrigation systems
- b) To develop on-farm facilities in the existing MPW irrigation command areas
- c) To achieve the sustainable food self-sufficiency in the Mountain Zone
- d) To raise the local farmers' income and standard of living
- e) To mitigate the forest degradation and soil erosion

3) Project Description

- a) Village Irrigation Development (tentatively 11,500 ha)
- b) Land Development in MPW command areas (tentatively 500 ha)



- | No. | Projects |
|-----|---|
| 1 | Rehabilitation and Extension of Irrigation Systems |
| 2 | On-farm Land Development |
| 3 | High-altitude Horticulture Development |
| 4 | Freshwater Giant Prawn Culture Development |
| 5 | Poultry Farms |
| 6 | Smallholder Tree Crop Development |
| 7 | Agroindustry Development |
| 8 | Coal Boring Exploration and Reserve Estimation |
| 9 | Air Lematang Hydropower Development |
| 10 | Rehabilitation of Critical Watersheds |
| 11 | Integrated Social Forestry in Hilly Areas |
| 12 | Industrial Forest Plantation |
| 13 | Integrated Urban Infrastructure Development (IUIDP) |
| 14 | Upper Musi River Basin Water Resources Development |

Figure 3.4.2 Location of Selected Projects in the Musi Rawas and Lahat IDEP

Figure 3.4.3 Phasing of IDEP Projects: Musi Rawas/Lahat IDEP

Sub-program	Project 1)		Phasing 2)													Tentative Cost 3) (US\$ mil)						
	No.	Title	Repelita VI			Repelita VII			Repelita VIII - IX													
			'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06		'07	'08	'09	'10	'11	'12
Water Resources Development	F-15	Rehabilitation of Irrigation	■													9.6						
	A-2	On-Farm Land Development	■													9.7						
	F-14	Upper Musi River Basin Water Resources				■			■							149.2						
		Sub-total																				
Market-oriented Agricultural Development	A-3	High Altitude Horticulture	■													9.6						
	B-9	Freshwater Giant Prawn Culture	■													5.3						
	A-14	Smallholder Tree Crop Marketing	■													2.4						
	A-17	Large Scale Estate Development	▤			▤			▤							200.0						
	A-4	Upland Cropping Systems Development	■													1.8						
	A-21	Commercial Poultry Farms	■													0.4						
		Sub-total																				
Agroindustry Development	C-13	Starch/Modified Starch	■													0.2						
	C-34	Furniture/Furniture Modules	■													2.5						
	C-36	Rubber Processing	■													0.2						
	C-48	Poultry/Fish Feeds	■													0.3						
	C-17	Dehydration of Vegetables	■													1.4						
	C-18	Frozen Vegetables and Prawns	■													1.4						
	C-22	Pickles of Vegetables	■													0.1						
	C-16	Canning of Vegetables	■													1.5						
	C-33	Particle Board	■			■										2.5						
	C-32	Fiber Board	■			■										2.5						
	C-31	Wood Wool Cement Board	■			■										2.5						
	Sub-total																					15.1
Mining and Energy Development	D-11	Boring Exploration in Coal Field	■													2.3						
	F-16	Lematang-4 Hydropower							■							369.8						
	Subprogram Total																					372.1
Forest Conservation and Sustainable Forestry	J-24	Rehab. of Critical Watersheds	■													0.4						
	J-7	Industrial Forest Plantation	■			■			■							10.2						
	J-23	Integrated Social Forestry	■													0.8						
	Sub-total																					11.4
Infrastructure Development	I-26	Rural Development Program	■													9.9						
	I-12	Spatial Plan (Lahat)	■													0.1						
	I-13	Secondary Cities Urban Dev. (Lahat)	■													4.0						
	I-11	Integrated Urban Infra. Dev. (L. Linggau)	■													4.0						
	G-50	Road Safety Improvement	■													3.0						
	G-53	Mangun Jaya - Muara Beliti Road	■													8.3						
	G-52	Sarolangun-Sekayu-Belung Trunk Road	■			■										11.2						
	G-6	Lubuk Linggau Airfield Improvement	■													2.0						
	Sub-total																					42.5
Institutional Support	K-1	IDEP Management Unit	■													1.8						
		Sub-total																				
	IDEP Total																					830.9

Notes: 1) In bold letters are the key projects.

2) ▤ Pre-implementation study/plan-making

■ Implementation

▤ On-going

3) Some cost estimates only cover study components and do not include construction costs.

- c) Institutional Strengthening (training of extension staff and farmers, provision of necessary facilities and equipment for training and organization of farmers)
 - d) Strengthening of Coordination and Monitoring (training of the BAPPEDA staff on coordination and monitoring, and the provision of necessary facilities and equipment)
- 4) Project Duration
- a) F/S: 12 months
 - b) Implementation: 60 months
- 5) Project Cost: US\$ 9,700,000
- 6) Remarks

The proposed project includes Kabupaten Bengkulu Selatan as well as Kabupaten Lahat. The total cost of implementation is tentatively estimated at US\$ 13 million.

(3) High-altitude Horticulture Development

1) Executing Agency: Directorate General of Food Crops, Min. of Agriculture

2) Objectives

- a) To improve farm management and quality control in vegetable cultivation
- b) To create new income-generating opportunities in agriculture and related activities
- c) To contribute to the better control of forest degradation and soil erosion in the Mountain Zone through effective and intensive land use in the high potential areas

3) Project Description

- a) Selection of appropriate crops by identifying target markets
- b) Strengthening of extension services and establishment of demonstration plots
- c) Organization of farmers and institution of rural credit
- d) Strengthening of seed multiplication and distribution
- e) Infrastructure for post-harvest handling and marketing
- f) Establishment of effective and stable marketing arrangements, including the possibility of local agroindustry development

4) Project Duration

- a) F/S: 12 months
- b) Implementation: 5 years

5) Project Cost

- a) F/S: US\$ 1,600,000
- b) Implementation: US\$ 8,000,000

(4) Freshwater Giant Prawn Culture Development

1) Executing Agency: Directorate General of Fisheries (DGF), Ministry of Agriculture, Directorate of Water Resources Development (DGWRD), Ministry of Public Works

2) Objectives

- a) To increase the income of local small-scale fish-culture farmers by introducing freshwater prawn culture
- b) To increase the production of freshwater prawn for export

3) Project Description

- a) Development of small-scale prawn culture ponds over 270 ha in three irrigation systems (Malus, Satan and Deras)
- b) Establishment of a public-sector freshwater giant prawn hatchery with a capacity of 20 million pcs. per year, ideally to be located at a site in Bengkulu where clean seawater and freshwater are available
- c) Local production of prawn feed through organizing a farmers' group to establish a pilot-scale prawn feed plant

- d) Establishment of a model farm per farmers group (mainly mina paddy farmers) with a total area of 30 ha
- 4) Project Duration
 - a) F/S: 4 months
 - b) Implementation: 36 months
- 5) Project Cost
 - a) F/S: US\$ 300,000
 - b) Implementation: US\$ 5,000,000
- 6) Remarks
 - a) The F/S is for the purpose of identifying appropriate sites and farmers' groups, and drawing up basic designs for the ponds and the related facilities. The identification study may include Kabupaten Ogan Komerin Ulu in addition to Musi Rawas and Lahat.
 - b) Local production of prawn feed can be done by the existing local fish feed plant.
 - c) Private investment in prawn culture ponds will become possible, when new technical irrigation systems be constructed in the future.
 - d) It is advised to establish the hatchery on the coast near Bengkulu City because of the ready supply of fresh sea water. It is possible to establish the hatchery near Lubuk Linggau, by employing the sea water recycling technology which needs much less sea water. However, the technology requires an added cost of replacing filters at adequate intervals, and it will be vital to establish a secure and ready supply of filters.

(5) Starch / Modified Starch Production from Cassava

- 1) Executing Agency: Private Investors
- 2) Objectives
 - a) To increase the value-added of locally produced cassava
 - b) To increase local industrial employment
 - c) To increase the income of cassava producing farmers
 - d) To increase agro-based exports
- 3) Project Description
 - a) To produce starch from cassava
 - b) To diversify into the production of modified starch such as dextrin, oxidized starch, thin boiling starch and pregelatinized starch
 - c) To increase agro-based exports
- 4) Project Duration

The project can be started any time, by arranging technical partnership with foreign companies.
- 5) Project Cost: US\$ 150,000 per establishment

(6) Furniture Modules

- 1) Executing Agency: Private Investors
- 2) Objectives
 - a) To increase the value-added of local timber industry
 - b) To increase local industrial employment
 - c) To increase agro-based exports
- 3) Project Description
 - a) To process old rubber trees and other trees into sawn wood for making furniture modules
 - b) To manufacture semi-finished modules of furniture, starting from floorings and wall panels, and then diversifying to the components of desks, tables, chairs and so on.
- 4) Project Duration

Two to three years to introduce the technology and knowhow
- 5) Project Cost: US\$ 2,500,000 per establishment

(7) Rubber Processing

1) Executing Agency: Private Investors

2) Objectives

- a) To increase the value-added of locally produced raw rubber
- b) To increase local industrial employment
- c) To increase the income of rubber growing smallholders
- d) To increase agro-based exports

3) Project Description

To process raw rubber into molds, die-cuttings and balls

4) Project Duration

Two to three years to introduce the technology and knowhow

5) Project Cost: US\$ 200,000 per establishment

(8) Boring Exploration in Musi Rawas Coal Field

1) Executing Agency: Directorate of Coal, Ministry of Mines and Energy
Mineral Technology Centre (PPTM)
P. T. Tambang Batubara Bukit Assam (PERSERO)

2) Objectives

- a) To increase the exploration density of coal resources
- b) To confirm coal qualities and minable reserves by boring exploration
- c) To prepare a preliminary action plan for the future coal development

3) Project Description

a) Phase 1 Boring Exploration

- i) Review of existing data related to coal resources and qualities
- ii) Determination of fields and the order of boring exploration
- iii) Boring exploration and coal analysis

b) Phase 2 Estimation of Coal Reserves

- i) Evaluation of geological structure of coal seams in each field
- ii) Drawing of contour maps showing the thickness of coal seams and the coal quality in each field
- iii) Estimation of minable coal reserves

4) Project Duration: 2 years

5) Project Cost: US\$ 2,300,000

6) Remarks

The proposed study covers the following three fields.

- a) Sungaimalam (Kabupaten Musi Rawas)
- b) Sungaiaur (Kabupaten Musi Rawas)
- c) Rantau Pandan (Kabupaten Bungo Tebo, Jambi)

(9) Rehabilitation of Critical Watersheds

1) Executing Agency: Directorate General of Reforestation and Land
Rehabilitation (RRL), Ministry of Forestry

2) Objectives

- a) To reforest the critically degraded forest land in the watersheds of major rivers
- b) To protect the Musi River basin from flood hazards

3) Project Description

- a) To review the present conditions of the critical forest areas, especially in the watersheds of the main tributaries, and to establish the order of priority for rehabilitation
- b) To develop appropriate packages for reforestation and rehabilitation
- c) To reforest the major watersheds of the Musi River system, starting from 200 ha in the IDEP Area, which will be expanded later

4) Project Duration

Planning: 12 months

- Implementation 2 years
- 5) Project Cost
 - Planning: US\$ 164,000
 - Implementation US\$ 250,000
- 6) Remarks
 - The planning stage covers entire South Sumatra Province.

(10) Industrial Forest Plantation

- 1) Executing Agency: Directorate General of Reforestation and Land Rehabilitation (RRL), Ministry of Forestry
- 2) Objectives
 - a) To establish sustainable forestry in the existing production forests
 - b) To rehabilitate degraded land in the production forests
- 3) Project Description
 - a) To identify suitable areas for establishing industrial forests, with emphasis on the degraded production forests
 - b) To identify appropriate species for planting
 - c) To establish an institutional setup to manage and monitor industrial forest promotion
 - d) To select and plant an approximate area of 10,000 ha in the IDEP Area
- 4) Project Duration
 - Study and planning 12 months
 - Implementation 10 years
- 5) Project Cost
 - Study and planning US\$ 226,700
 - Implementation US\$10,000,000
- 6) Remarks
 - The study and planning covers entire South Sumatra Province. The total area of industrial forest plantation in the province is tentatively set at 20,000 ha.

(11) Rural Development Program

- 1) Executing Agency: Ministry of Public Works(Directorate General of Highways, Local Road Division); Ministry of Health
- 2) Objectives
 - a) To provide better transportation for relatively isolated rural communities
 - b) To improve and expand rural health care services
 - c) To expand informal adult education programs
- 3) Project Description:
 - a) To provide all-weather gravel roads totalling approximately 200km mainly in underserved areas, such as Rawas Ilir, Rawas Ulu, Muara Rupit, Pulau Pinang, Kota Agung, Merapi, Tanjung Sakti, and Ulu Musi.
 - b) To rehabilitate health centers and subcenters (tentatively, 10 centers and 50 subcenters), upgrade subcenters to centers (tentatively, 10 subcenters) and construct new subcenters (tentatively, 10 subcenters)
 - c) To organize adult education programs for rural communities with high incidences of illiteracy
- 4) Project Duration
 - Study & Planning 6 months per component
 - Implementation 10 years
- 5) Project Cost
 - Study & Planning US\$ 200,000 per component
 - Implementation:
 - Roads US\$ 7,600,000
 - Health Care US\$ 700,000 (buildings, equipment & vehicles)
 - Adult Education US\$ 100,000 per year
- 6) Remarks

The rural development program consists of three tentatively selected components, but may be expanded to include other activity components, depending on the findings of the preceding study.

(12) Establishment of an IDEP Management Unit

1) Executing Agency: BAPPEDA Tk. I and Tk.II

2) Objectives:

- a) To manage and coordinate all IDEP activities
- b) To coordinate the central, provincial and local governments, and foreign donor agencies in implementing the IDEP program
- c) To take budgetary measures and identify fund sources for the IDEP program
- d) To develop institutional and financial capabilities in the provincial and local governments

3) Project Description

- a) To establish the IDEP Management Unit (IMU) inside the BAPPEDA Tk. I and Tk.II
- b) To dispatch an outside expert to the provincial IMU to support the IMU
- c) To provide some training programs for BAPPEDA Tk.I and Tk.II

4) Project Duration:

- a) IMU 10 years
- b) Expert 5 years

5) Project Cost: US\$ 1,750,000

3.6 KEY RELATIONS AMONG THE PROJECTS

In the Program, following relations among the projects are of particular importance:

1) **High Altitude Horticulture Development (A-3)** is the key to the following group of industrial projects using the products as raw materials: **Dehydration of Vegetables (C-17)**, **Frozen Vegetables and Prawns (C-18)**, **Pickles of Vegetables (C-22)**, **Canning of Vegetables (C-16)**.

2) Similarly, **Upland Cropping Systems Development (A-14)** must go together with **Starch/Modified Starch (C-13)**.

3) **Poultry/Fish Feeds (C-48)** is an industrial project to precede **Freshwater Giant Prawn Culture (B-9)** and **Commercial Poultry Farms (A-24)**.

4) **Rubber Processing (C-36)** depends mainly on the progress of two agricultural projects: **Smallholder Tree Crop Development (A-14)** and **Large-Scale Plantation Development (A-17)**.

3.7 SPECIAL CONSIDERATIONS

Two important issues for the Musi Rawas / Lahat IDEP Area are market orientation and sustainable production. Improved access to channels of marketing and processing provides a major incentive not only to the increased production but also to the wider adoption of improved technologies in farming and quality control by the farmers. Better understanding of the demand for construction materials will enable more economically and environmentally efficient uses of forest resources, such as utilization of by-products and residues from saw mills to manufacture particle boards or fiber boards. One of the major consumer electronics makers in Japan has recently announced that it will increase the use of imported semi-finished parts made of old rubber trees for the manufacture of household heating appliances, and this knowledge will offer promising prospects of diversification for timber-related industries. Both in the agricultural and the agroindustrial development activities suggested for the the Musi Rawas / Lahat IDEP Area, it is essential to widen the access to

markets, both domestic and external, to understand the changing demands among the end-users, and to selectively identify target markets.

The Musi Rawas / Lahat IDEP Area is located in the major watershed areas of the Musi River Basin, and consequently it is vital to incorporate appropriate conservation measures into the agricultural undertakings, be they the growing of vegetables or tree crops. Although the Area still has a sizable area for expanding agriculture, or extensification, the actual utilization of newly opened land as well as of the existing farm land must aim at intensification. Without establishment of more intensive agriculture, long-term sustainability will be eventually lost, by forcing the opening up of less and less suitable, or more and more environmentally fragile, land for cultivation apace with the growing demands for foods and agricultural raw materials.

4. BENGKULU SELATAN IDEP

This location has high potential of agricultural and fisheries development as the core of agro-zone 3. Its particular significance is that this area will become relatively close to Java once the western coastal road is improved. The strategic theme of this site is: How to lay the solid ground for development while breaking up isolation.

4.1 PRESENT CONDITIONS

General information about the area is contained in Table 4.1.1 below and in appendix tables. In addition, a map of the area is presented (Figure 4.1.1). More complete statistical information on both the kabupaten and its kecamatan, is contained in the appendix to this Chapter. Information is generally organized into 7 kecamatan because before the reorganization in early 1992, there were only 7 kecamatan in the kabupaten. The available statistical information therefore does not reflect the new arrangement of 9 kecamatan.

Table 4.1.1 Brief Description of Bengkulu Selatan Kabupaten

Population	299,800 (1990)		
Area	5,949 square km		
Capital city	Manna (urban population 21,000)		
Kecamatans	Sukaraja	Seluma	Talo
	Pino	Manna	Seginim
	Kaur Utara	Kaur Tengah	Kaur Selatan
Road distances from Manna to:			
	Bengkulu		142 km
	Trans-Sumatra Highway		190
	Palembang		550
	B Lampung		575
	Jakarta		500 (airline distance)
annual rainfall			3,000-4,000 mm
dry months per year			1-3
length of coastline			200 km
average width (coast-inland)			30 km
highest peak			2,817 m Mt Patah
Bukit Barisan Selatan Nat'l Park			660 square km

Sources : Kantor Statistik, Statistik Bengkulu Selatan, 1990

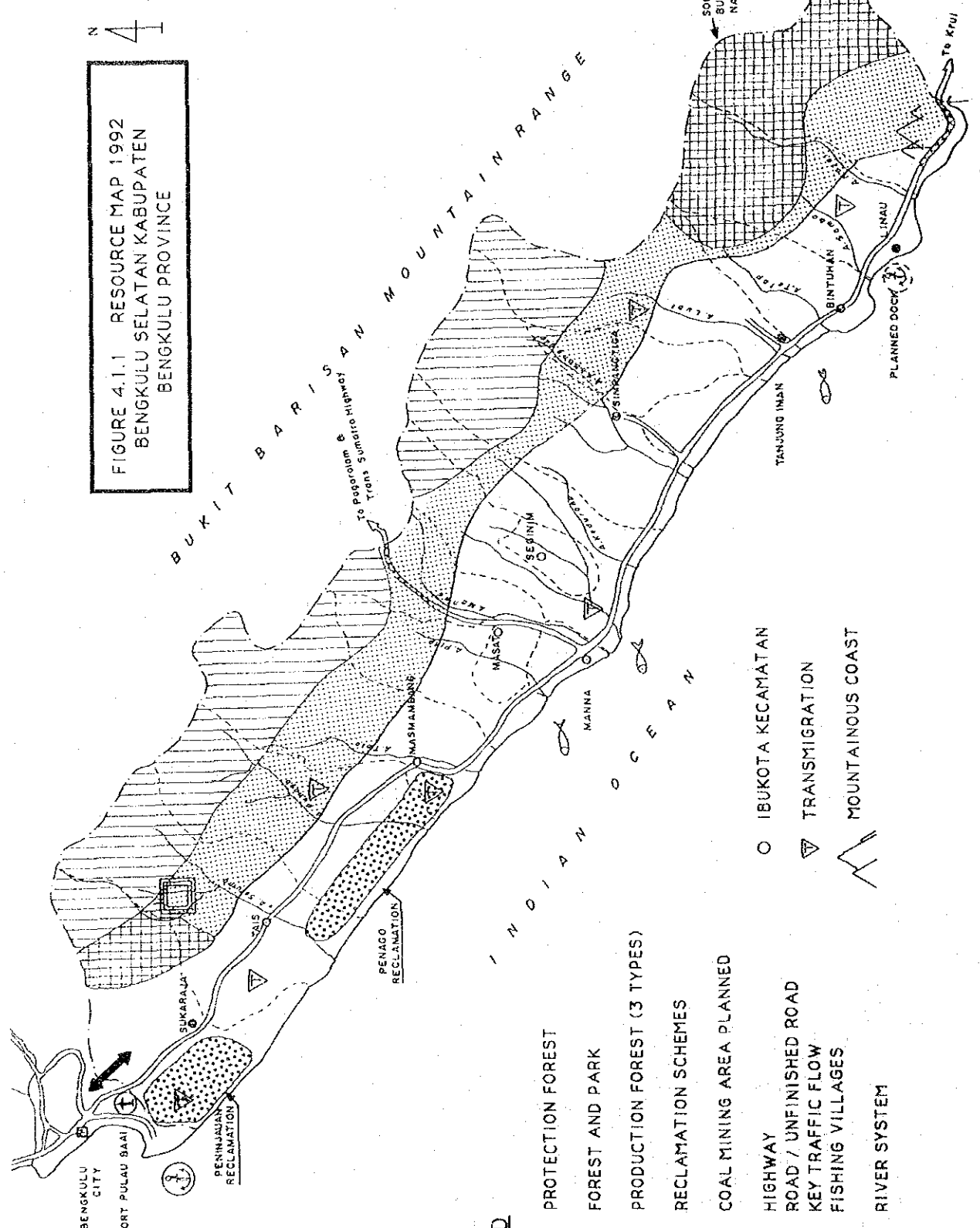
Note : The kecamatan of Sukaraja and Seginim were established in early 1992.

4.1.1 Geography

The area of Bengkulu Selatan is rectangular in form, and extends some 200 km along the Indian Ocean, by an average of 30 km inland from the coast up to the Bukit Barisan Range (Figure 4.1.2). Because of its location along the narrow western slope of the Bukit Barisan, Bengkulu Selatan has abundant rainfall year round, and it is crossed by 20 rivers. The soil is fertile, and nearly half (47%) of the total area is sloped 25% or higher. There is little flat land except for the area along the coast just south of Bengkulu City and its Pulau Baai port, measuring approximately 8 by 64 km (approximately 500 sq km) known as the Peninjauan swamp. The southernmost part of Bengkulu Selatan, containing the three Kaur kecamatan, is the most remote because it is basically an enclave having no practical land access except the substandard coastal road from Manna. It is an area that is substantially mountainous even along the coast.

4.1.2 Society and Culture

FIGURE 4.1.1 RESOURCE MAP 1992
 BENGKULU SELATAN KABUPATEN
 BENGKULU PROVINCE



- LEGEND**
- PROTECTION FOREST
 - FOREST AND PARK
 - PRODUCTION FOREST (3 TYPES)
 - RECLAMATION SCHEMES
 - COAL MINING AREA PLANNED
 - HIGHWAY
 - ROAD / UNFINISHED ROAD
 - KEY TRAFFIC FLOW
 - FISHING VILLAGES
 - RIVER SYSTEM

- IBUKOTA KECAMATAN
- TRANSMIGRATION
- MOUNTAINOUS COAST

Source: Prepared and provided by PUSBANSIG, The Center of GIS Management, BAKOSURTANAL, National Agency for Survey and Mapping, using ARC/INFO software installed in VAX350. The digital data used were derived from Replibool (Regional Protected Programme for Transmigration) data, which were interpreted from Landsat MSS 3 and 5 false color composite (March 3, 1985, and April 23, 1985).

FIGURE 4.1.2 RIVER SYSTEMS

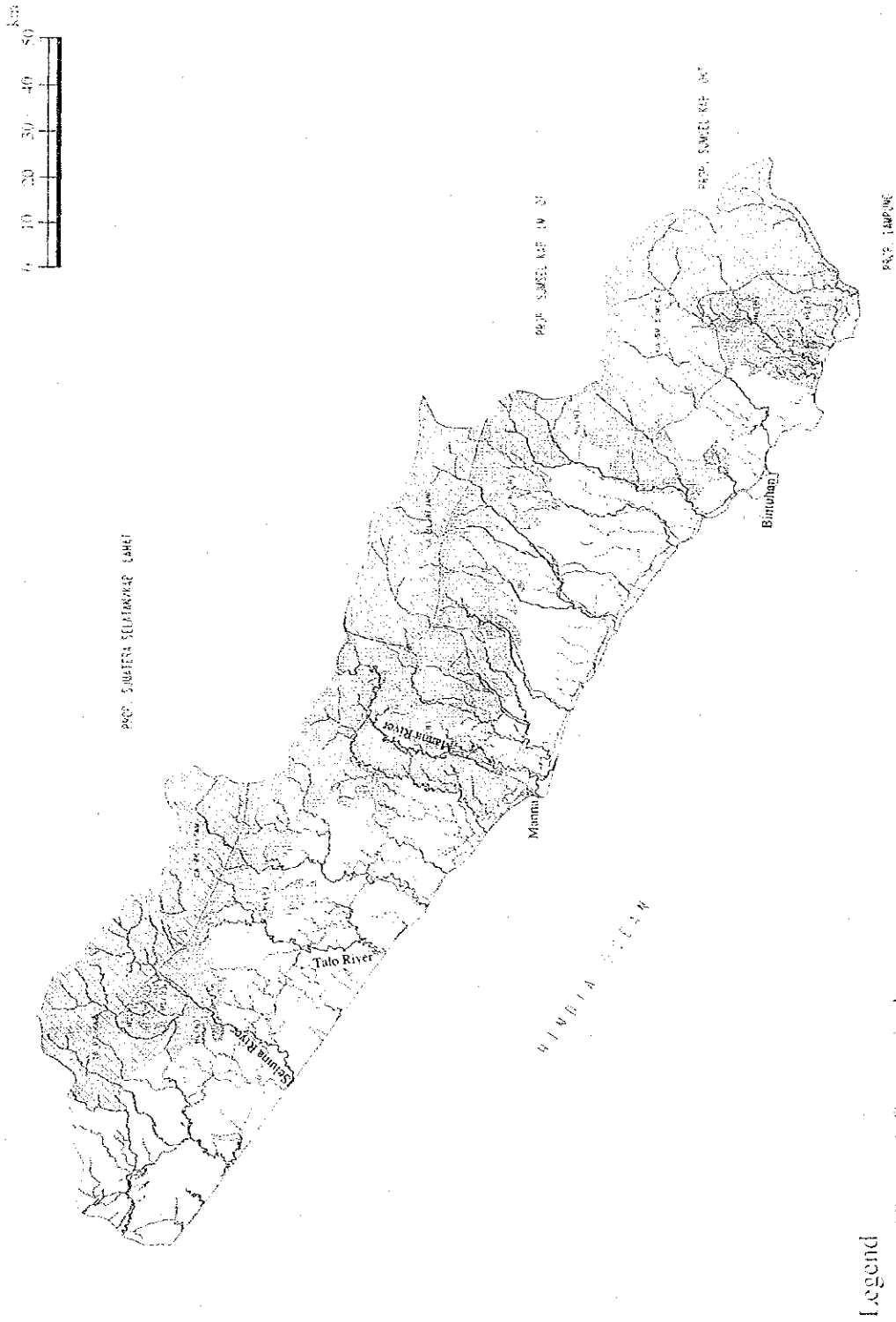


Figure 4.1.2 River Systems: Bengkulu Selatan

The population is predominantly rural and consists of four main local groups, the Serawai which is the majority social group, the Kaur, the Pasemah and the Semendo. These groups are principally agricultural producers with some engaging in fishing. As farmers they are primarily smallholder treecrop farmers. For many people traditional forms of working together via kin linked groups, as well as of dispute resolution, are still the current practice. Islam is the predominant religion. The two latter groups, the Pasemah and the Semendo are migrants from Sumatra Selatan and Lampung. The population from Java and Bali has generally come via the government's transmigration program and is contained in the transmigration settlements. Other migrants are mainly urban-based including Chinese, West Sumatrans and North Sumatrans. In addition, some fishermen have migrated from Padang (Merantau), Sibolga (North Sumatra), and South Sulawesi (Bugis).

Because of the traditional nature of the inhabitants, and because of the relative isolation of Bengkulu Selatan from the rest of Sumatra, with its location on the west coast of Sumatra behind the mountain range from Palembang and Lampung, new ideas have been slow to take hold in the area. Probably the transmigration program which is dispersed across five of the kecamatan, has been the main recent outside influence in the area.

4.1.3 Population

Tables 4.1.2 and 4.1.3 present information about population in the kabupaten, the province and in the region as compared to national trends.

Table 4.1.2 Population Trends Compared
(unit : thousands)

	Bengkulu Selatan	Bengkulu Province	Southern Sumatra	Indonesia
Urban	21 7%	240 20%	3,270 21%	55,460 31%
Rural	277 93%	939 80%	12,242 79%	123,862 69%
Total	298 100%	1,179 100%	15,512 100%	179,322 100%
Average growth (1980-90)	2.33%	4.38%	3.04%	1.97%
Density	50	60	71	93

Source : JICA Study Progress and Interim Reports

Table 4.1.3 Bengkulu Selatan Population Past Growth and Forecast
(Unit: Thousands)

	1980	1990	Average annual change(%)	1995	2000	2050	2010	Average annual change(%) 1990-10
Bengkulu Selatan	237	298	2.33	334	373	416	457	2.15
density	40	50			63		77	
Bengkulu	768	1,179	4.38	1,411	1,618	1,817	2,018	2.72
density	39	60			82		102	
Southern Sumatra	11,465	15,491	3.06	17,899	20,267	22,593	24,960	2.42
density	53	71			93		115	
Indonesia	147,490	179,321	1.97	194,516	208,828	221,552	233,315	1.32
density	77	93		101	109	115	122	

Source : Interim Report (p.230 and p.239)

(1) General

Bengkulu Selatan contains 9 kecamatan, 9 perwakilan kecamatan, and 381 villages. All but one of the kecamatan extend from the coastline up to the mountains, and are crossed by the West Coast Road. The villages are spread across the territory with some concentration along the coast. Over 90% of the population is classified as rural. The area's population density is 50/sq km, far below that of the province (60) or of the Region (71). The population of each of the kecamatan and perwakilan kecamatan is presented in a table in the appendix.

(2) Quality of Life

Over the decade of the Eighties, the population of Bengkulu Selatan grew more slowly than that of the province, the Region or the nation, 2.33% versus 4.38% for the province. This is probably indicative of the area's high infant mortality and of some out migration for work opportunities elsewhere. In 1985, infant mortality per 1,000 births was 90, compared to 60, 67 and 70 for the province, the Region and the nation respectively. The province of Bengkulu has relatively high levels of rural poverty in 1980 at 22% (IFAD 1988), a problem possibly even worse in this kabupaten. The poorest kecamatan according to different sources are Pino, Talo and the three Kaur kecamatan (the southernmost ones). Bengkulu province also has the highest level of illiteracy in Southern Sumatra at 17% (BPS 1990), a problem also present in Bengkulu Selatan. [More recent statistics for Bengkulu Selatan are not readily available.]

(3) Transmigration

As regards the population living in transmigration communities, by 1990 over 21,000 persons were settled in such communities in several kabupaten. They come primarily from Java and Bali, but some also come from neighboring Lampung. The program is continuing, but in the future, additional settlement in Bengkulu province will be limited to the Transbandep program of expanding villages, rather than creating new settlements as in the past. Areas in Bengkulu Selatan identified for further development of this kind include the kecamatan of Talo, Kaur Selatan and Kaur Utara. Transmigration programs are still under way for 1992/93 at Muara Sahung (350 households), Renah Gajah Mati (445) and Penago (450).

4.1.4 Economy

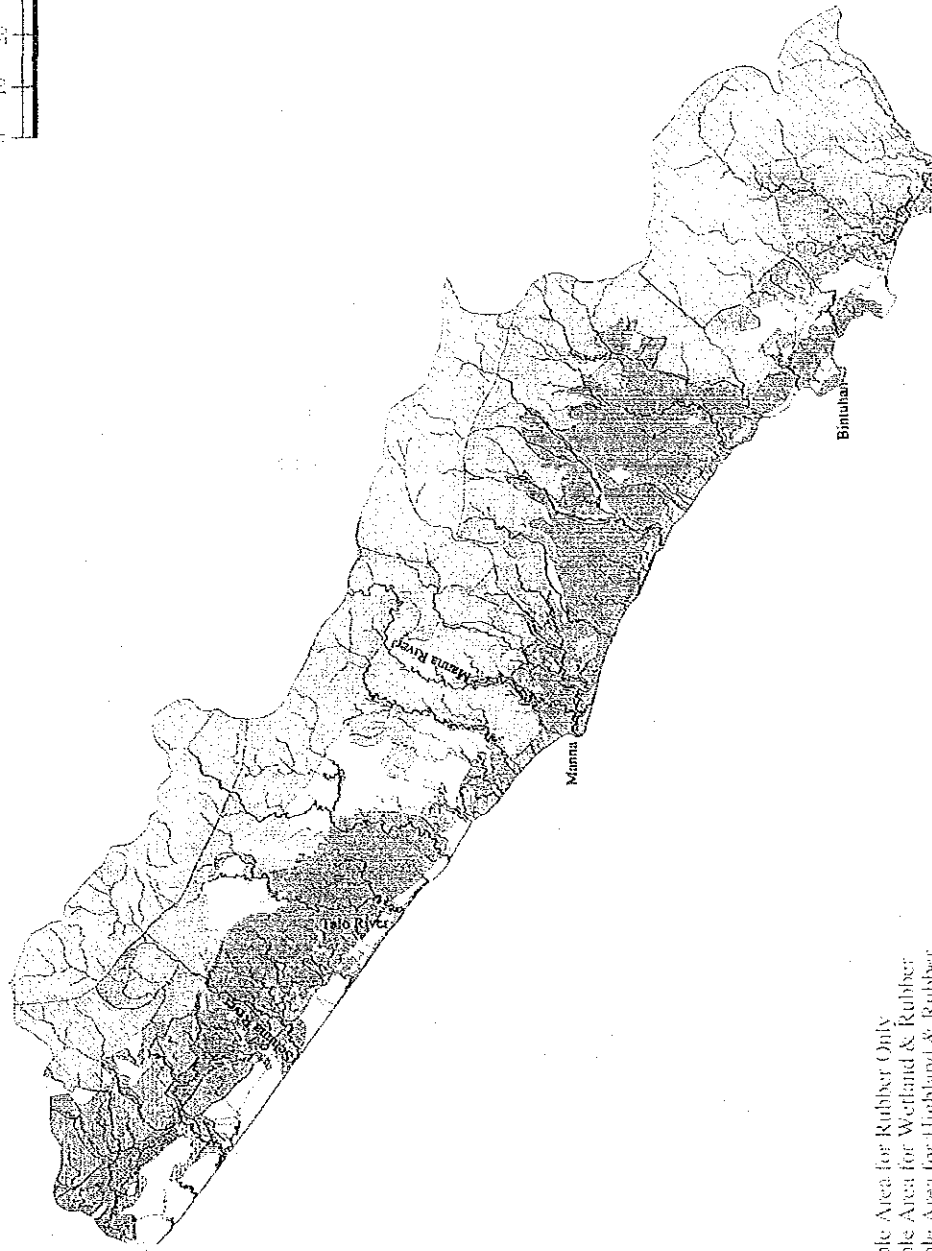
(1) Macroeconomic Performance

The area's economic performance on a per capita basis is compared to that of the province, the Region and the nation in Table 4.1.4. In 1989, total GRDP for Bengkulu Selatan is estimated at Rp 122.4 billion (approximately US\$68 million). This compares with a level of Rp 81.5 billion in 1985, representing an annual increase of 11%, but actually a decrease in dollar terms, since the 1985 product was worth US\$72 million. The figures on per capita GRDP indicate how disadvantaged the area is in comparison to the larger areas (Table 4.1.4). The per capita production of Bengkulu Selatan is half that of the national (without oil) average, as the index shows (and only 44% of the with oil national figure). The structure of the economy is primarily agricultural, 47%, while the sector's share for Southern Sumatra is 31% and for the nation only 24%. This is evidence of the low productivity of the agricultural sector in Bengkulu Selatan. As of yet no substantial manufacturing industries have developed in the area.

(2) Agriculture

The current land use pattern and land suitability are shown in Figure 4.1.3. Agricultural production is significant in all the kecamatan and the kabupaten is generally self

Source: Prepared and provided by HUSBINSIG, The Center of GIS Management, BAKOSURTANAL, National Agency for Spatial Information, using ARK/INPRO software installed in VAX 8340. The digital data were derived from RAPPRIOT (Regional Physical Planning) Programme by Transmigration, data which were interpreted from Landsat MSS 1 and 2 bands, color composite (March 5, 1983, and April 23, 1983).



Legend

- ▨ Suitable Area for Rubber Only
- ▩ Suitable Area for Wetland & Rubber
- ▧ Suitable Area for Highland & Rubber
- ▦ Suitable Area for Highland Only
- ▥ Protection Forest
- ▤ Natural Reserve & Conservation Forest
- ▣ Currently in Use by Upland Crops
- ▢ Currently in Use by Wetland Crops
- Currently in Use by Tree Crops

Figure 4.1.3 Land Use Pattern and Land Suitability: Bengkulu Selatan

sufficient in terms of rice production. Wetlands in the kabupaten total over 29,000 ha (Table 4.1.5), and existing irrigation schemes, including technical ones, semi-technical ones and simple ones, number 118 and cover about half of total wetland. Yields vary significantly between the areas (see Appendix for paddy yields). Per hectare yields for sawa paddy average 4.1 tons, and for ladang paddy 1.6 tons. Problems such as partial year production, lack of inputs such as fertilizer, or unfamiliarity with better methods and seed varieties hamper farming in general and keep yields lower than their potential. Many of the irrigated wetlands are served by systems that are in poor condition and that are no longer used, since farmers don't have the knowledge or the materials to keep them functioning properly.

Table 4.1.4 Structure of Bengkulu Selatan's Economy

	Bengkulu Selatan	Bengkulu Province	Southern Sumatra	Indonesia
Per Capita GRDP (Rp million 1989)				
without oil:	0.4	0.6	0.7	0.8
index	50	75	88	100
with oil:	0.4	0.6	0.8	0.9
index	44	67	89	100
US\$ equivalents				
-without	227	332	388	443
-with	227	332	443	499
Sector shares	(1989)	(1990)	(1990)	(1990)
Agriculture	47%	40%	31%	24%
Mining	0	6	5	2
Manufacturing	1	3	17	18
Services and Other	52	51	47	56
	100%	100%	100%	100%

Source : JICA Team, Southern Sumatra Progress Report II, 1991.

Table 4.1.5 Areas under Wet Land in Bengkulu Selatan (1990)

(Unit : ha)

Kecamatan	Semi-Technical	Simple Technical	Simple PU	Simple Non-PU	Sub-Total	Rainfed Wetland	Tidal Swamp Wetland	Non-tidal Swamp Wetland	Other Wetland	Total Wetland	% of irrigated Wetland
Kaur Selatan	0	99	25	236	360	1,355	0	0	0	1,715	21.0
Kaur Tengah	0	147	0	1,402	1,549	400	0	0	20	1,969	78.7
Kaur Utara	0	27	612	855	1,494	716	0	0	0	2,210	67.6
Manna	0	2,230	1,375	2,896	6,501	997	0	0	140	7,638	85.1
Pino	0	0	63	1,494	1,557	639	0	0	254	2,450	63.1
Talo	0	0	440	956	1,396	2,289	2,662	0	1,999	8,346	16.7
Seluma	1,068	290	459	323	2,140	932	162	0	1,778	5,012	42.7
	1,068	2,793	2,974	8,162	14,997	7,328	2,824	0	4,191	29,340	51.1

Source : Kantor, Statistik, Propinsi Bengkulu, Luas Penggunaan Tanah dan Alat-Alat Pertanian di propinsi Bengkulu 1990.

A far larger area of dryland is available in the kabupaten for cultivation, amounting to 344,028 ha (Table 4.1.6). If national forests and other areas are added, the total is 565,574 ha. Less than 20% of this area is in use, in 1990 totaling 106,551 ha, the largest use being for estates. There is therefore great potential for extensification. Over half the area is contained in Sukaraja, Seluma, Talo and Kaur Selatan kecamatans. The area under estate crops, over 82,000 ha in 1990, is divided by type of ownership and crop in Table 4.1.7. Over three fourths of this area for estate crops is farmed by smallholders with nearly all the balance

(15,000 ha) occupied by state enterprises, with private estates accounting for under 4% of the total area. Therefore, private estate farming is still in an incipient stage.

Table 4.1.6 : Area under Dry Land in Bengkulu Selatan

Type	Area (ha)	Share
Used Dryland (A)		
House Garden	15,590	
Tegal and Kebun	16,854	
Ladang and Huma	12,280	
Estates	59,830	
Tambak/Kolam	1,997	
Sub-total (A)	106,551	19%
Unused Dryland (B)		
Grass-land	9,537	
Swamps	32,343	
Fallow Land	81,086	
Wooded Land	114,511	
Sub-Total (B)	237,477	42%
Total Potential Dry Land	(A) + (B)	61%
National Forests	(D)	
Others	(E)	
Total Dry Land	(C) +(D)+(E)=(F)	100%

Source: Kantor Statistik, Propinsi Bengkulu

Table 4.1.7 : Area under Estate Crops in Bengkulu Selatan (1990)
(Unit : ha)

	Smallholder	State-owned Estates	Private Estates	Total
Coconut	11,182	0	0	11,182
Hybrid coconut	0	0	0	0
Rubber	12,590	10,985	0	23,575
Oil palm	0	4,391	1,158	5,549
Coffee	23,451	0	0	23,451
Clove	12,205	0	0	12,205
Pepper	1,757	0	0	1,757
Cocoa	609	0	1,581	2,190
Cinammon	411	0	0	411
Tree crops sub-total	64,349	15,376	2,924	82,649
Seasonal crops sub-total	0	0	0	0
Estate crops total	64,349	15,376	2,924	82,649
Share	79%	19%	4%	100%

Source : Data of Dinas Perkebunan, Bengkulu Province

As of 1990, some 27 companies had obtained approved concessions from the government for the purpose of creating large scale private plantations in Bengkulu Selatan. The affected area extends through all the kecamatan and generally falls in the lowland half of the kabupaten along the coast. The actual creation of large estates is a long term process and most such concessions have not yet been developed. In the long run, the development of large estates will be a major factor in modernizing farming methods and boosting productivity locally.

Table 4.1.8 Estate Concessions by Kecamatan

(Unit : ha)

	All crops	Only Oil palm	Only Cacao	Only Rubber
Seluma	18,679	9,100	3,729	-
Talo	30,713	6,000	12,513	12,000
Pino	9,000	6,500	2,500	-
Manna	9,525	6,000	2,025	-
Kaur Utara	14,000	4,000	3,000	7,000
Kaur Tengah	-	-	-	-
Kaur Selatan	67,000	42,000	13,500	5,000
Total	148,917	73,600	37,267	24,000
Share	100%	49%	25%	16%

Source : Dinas Perkebunan, Tk I Bengkulu

The KUD structure for organizing farmers within the same village is very weak so far in the kabupaten. Few villages have taken the initiative to develop functioning cooperatives and as a result farmers rely on golongan tani or on no such grouping for support. This is an area where there is much work to be done if the institution of KUDs is to take hold in the farming community.

(3) Fisheries

Fisheries, particularly marine fishing, in Bengkulu Selatan has considerable potential, but is hindered mainly by the severe natural condition of a coastline that is open directly to the Indian Ocean and is swept by its strong wave action. There is no fishing port in the kabupaten because of this natural feature. The main villages are Pasar Bawah near Manna town, Sekunyit (Kaur Selatan) and Muara Pering (Talo). A total of 1,455 households in 13 villages (1991) were active in fishing using 406 boats to produce a total of 1,360 tons of marine fish. The vessels they use range from 2 to 9 m in length, and about 75% are non-motorized. About two thirds of the fishermen work part time (seasonally), usually in combination with farm work. The major catch includes sharks, catfish, grunter, red snapper, king mackerel, etc. Due to the low level of catch and its seasonal fluctuation in volume, the fish price is relatively high. From March to August fishing is suspended due to high winds and the Region's demand is met from North and West Sumatra. A breakdown of types of commodities destined for markets outside the kabupaten is presented in Table 4.1.9.

Table 4.1.9 Export of Fishery Products 1991

(domestic and foreign)

(Unit : tons)

Commodity	Volume	Main producing areas
Prawns	3.3	Talo, Manna, Kaur Selatan
Lobster	1.8	Talo, Manna, Kaur Selatan
Seaweed	28.8	Kaur Selatan
Shark oil	10.1	Manna
Frogs	13.9	Manna
Total	57.9	

Source : Dinas Perikanan Tk II (Bengkulu Selatan)

In the main fishing villages of Pasar Bawah (Manna), Pasar Lama and Sekunyit (Kaur Selatan) there are village-based KUDs. KUD activities in the Region are still in the

embryonic stage, because of the lack of adequate management and financial capabilities. The largest fish landing base, Pasar Bawah, is the only KUD that manages fish auctioning/bargaining in this kabupaten, but it is small scale.

As regards aquaculture, freshwater fish ponds are relatively well developed and their productivity high because of nutrient rich soils and water availability. The government plans to construct 20 such ponds (kolam) for small scale farmers at Ulu Kinal in 1992/93. In addition, in 1991 three private companies launched frog culture operations in Seginim for export.

(4) Industry

No significant manufacturing activity has developed up to now in the kabupaten or in fact in the province generally for several reasons. One is the remoteness of the west coast area from Sumatra's main markets of Medan, Padang, Palembang and Bandar Lampung. In addition, the infrastructure of Bengkulu Selatan for communication and utilities is only now developing and is not yet sufficient for industrial development. An exception to this is Sukaraja kecamatan at the northern tip of the kabupaten. This area is actually within the area of influence of Bengkulu City and is being included in the service area for some utilities (power, water, telephone, roads, etc). However, public services in the remainder of the kabupaten need to be expanded substantially before they are adequate for industrial development. In addition, capital for industrial development is scarce and bypasses this area.

Finally, an additional factor discouraging industry is the lack of training and experience of the local people in manufacturing processes. The human resources factor is the most important one, and it is probable that in the future a small level of industry will develop under the guidance of newcomers either Indonesian or foreign, who are familiar with market requirements elsewhere and simple processes that can be adapted to conditions in Bengkulu. However, at present industry has not yet developed in Bengkulu Selatan.

(5) Public Resources

In the area of public finance, the kabupaten manages a comparatively small but rapidly growing budget. The values for total expenditure for routine and development purposes for the kabupaten, the province, the region and nation are compared in Table 4.1.10.

Table 4.1.10 Total Public Expenditures 1984 and 1989
(Unit : Rp billions)

	Bengkulu Selatan	Bengkulu Province	Southern Sumatra	Indonesia
1984/85	3.2	26.1	189.9	19,381
1989/90	9.7	24.0	237.1	36,575
Average annual growth	25%	-2%	5%	14%
Expenditures per capita (000)	32	20	15	204

Source : BPS and provincial annual statistical reports.

(6) Regional Linkages

In general, the economy has few strong linkages with outside areas, the primary one being that with Bengkulu City at its northern border. It absorbs few inputs from elsewhere, and sends only very limited agricultural production to neighboring markets at

Bengkulu or beyond. This is because the Bukit Barisan has served as a barrier for most of the west coast of Sumatra, not just for Bengkulu Selatan, shielding the coastal regions from the larger provinces east of the range, and from Java. Limited amounts of coal (from kec Seluma) and wood (from kec Kaur Selatan) do leave the area by sea for Java or for export.

4.1.5 Infrastructure

As is the case for much of Sumatra, especially for its western coast, infrastructure is absent in many areas, uneven in quality, but is in the process of substantial improvement in some areas. As regards roads, the coastal road is the vital and sole land link for Bengkulu Selatan to the outside world. It has only recently been improved between Bengkulu City and Manna to bring Manna within a 2 to 3 hour drive from Bengkulu City, when beforehand it took much longer. Foreign funded road improvement programs are upgrading this road as well as the mountain road from Manna to Pagaram (South Sumatra), scheduled for completion by 1994. Once the West Coast Road is completed from Manna to Kota Agung and Krui in Lampung, Bandar Lampung will be about 400 km from Manna, much less than today's 575 km drive. Completion of the mountain road from Manna to Pagaram will bring the Trans-Sumatra Highway to within a 3 hour drive of Manna. This road construction represents a very major and positive development for access to the area.

There is a project by the Directorate General for Sea Communication (Ministry of Transportation) to build a dock at Linau for small ocean vessels (dockside water depth of -5 m), and officials reported in mid-1992 that construction was funded and about to begin.

Regarding utilities, only portions of Sukaraja kecamatan, which abuts the Bengkulu urban area, are connected to the power network. For most of the kabupaten, villages have no power service, or use locally run diesel generators to produce electricity during certain hours of the day. Such systems are costly and can be unreliable. Telephone service is limited to Manna as well as the area bordering Bengkulu City, and the quality of service is also not high. An ADB program to expand coverage exists. As regards public water systems, coverage again is minimal, with households relying on alternative sources. Additional information about infrastructure is presented in the appendix tables.

With respect to irrigation, systems in the area are limited in size, because the terrain is hilly making for an average project size of under 1,000 ha of irrigable land. An area of this size is considered too small by MPW to justify construction of weirs or dams to create such systems.

4.1.6 Social Services

Community development, health and education services are available in most parts of the kabupaten, and some indicators are provided in the appendix tables. Coverage is very uneven with services focused on Manna and to a lesser extent, on Seluma which abuts Bengkulu City. Pino and the Kaur kecamatans are the least favored areas according to several indicators. It is relevant that these areas are all remote, Pino in that it is an inland area, and the Kaur kecamatans the farthest ones from Bengkulu City. With respect to KUD development, only 62 KUDs exist in the kabupaten (1990) as compared to a total number of villages of nearly 400. In contrast, there are the same number of LKMD (381) as villages, according to statistics of the Bengkulu Selatan government.

4.1.7 Environment

The area is largely forested (see Appendix tables), with well over half the territory (over 330,000 ha) covered by some type of forest. The forested area covers the higher elevations of the kabupaten away from the coastline. The southeast corner of Bengkulu Selatan is occupied by the Bukit Barisan Selatan National Park which extends deep into Lampung Barat. Because of its park status, formal agriculture is prohibited. The forest lands represent an enormous underused resource from the standpoints of both environmental preservation and

commercial exploitation. They contain a large variety of both plant and animal species some of which are not found elsewhere, and constitute a resource of biodiversity of great potential value to future research for medicinal and industrial purposes among others.

There is a problem of deforestation or degradation in some areas where illegal logging and agriculture are present. The exodus of some wildlife such as wild pigs and elephants in search of food outside the forests in the Kaur kecamatans is evidence of this. Furthermore, with the completion of the West Coast Road between Manna and Krui (Lampung) an influx of spontaneous migrants into Bengkulu Selatan may occur aggravating these problems.

There is similarly little exploitation of the considerable water resources in the area's rivers for such purposes as irrigation, flood control and riverbank stabilization, drinking water and sanitation, or power generation. A good technical inventory of the main river basins has not been completed to assess the potential of each basin. There is also a problem in some locations of coastal erosion caused by the sea. Finally, there are commercially exploitable findings of coal near the Seluma River and there is a plan by a private company to mine coal there within two years.

4.2 BENGKULU SELATAN IN PERSPECTIVE

4.2.1 The Outlook

The outlook for the kabupaten is positive for several reasons. There is an abundance of untapped resources to be brought into use. As road links improve, communication and trade over a broader area will develop, slowly exposing the people of Bengkulu Selatan to better ways of doing business and of running community affairs. The kabupaten will be able to make better use of the transportation, business, educational and government infrastructure already established at nearby Bengkulu City, from which it was previously isolated. As communications internally improve, increasing areas of wetland and dryland will be farmed by locals as well as newcomers, and output distributed into a wider market hinterland, a share of it for export.

An influx of spontaneous migrants from more densely populated areas, such as from Lampung, could develop bringing new skills for farming, fishing or for commerce to the area. Movements of people, particularly unplanned ones, can also cause social frictions regarding use of land, competition for existing businesses, or cultural or family rivalries. Careful monitoring of the forest resources will be needed to minimize any further encroachment of illegal activities beyond current levels into their boundaries.

Table 4.2.1 : Per Capita GDP (without oil) Forecast
(Unit : 1983 value Rp. million)

	1990	1995	2000	2005	2010	Average annual GDP growth rates(%)				
						90-95	95-00	00-05	05-10	90-10
Bengkulu Selatan	0.34	0.44	0.59	0.78	1.07	7.7	8.1	8.3	8.5	8.1
Index	64	69	75	78	82					
Bengkulu Prov.	0.39	0.48	0.61	0.79	1.06	8.2	7.8	7.9	8.4	8.1
Index	73	75	76	78	80					
Southern Sumatra	0.46	0.58	0.74	0.97	1.30	7.6	7.8	7.9	8.1	7.8
Index	88	91	94	98	101					
Indonesia	0.53	0.64	0.79	1.00	1.30	5.6	5.8	6.1	6.5	6.0
Index	100	100	100	100	100					

Source: Team's forecasts

Note: Average annual economic growth for the nation is 6 per cent.

As regards projections of economic growth Table 4.2.1 presents the GDP forecast for Bengkulu Selatan to the year 2010. The average annual growth rate of 8% (1990-2010) is well over the forecast national rate of 6% and slightly higher than the 7.8% rate forecast for the Southern Sumatra region. This pace of growth can be considered "catch up" growth that closes the GDP gap somewhat between the kabupaten and the province and the nation.

4.2.2 The Role of Bengkulu Selatan in the Regional Perspective

Bengkulu Selatan is situated in the center of Agro-zone 3, which includes the narrow western slope of the Bukit Barisan along the Indian Ocean coastline. As road links over the mountain range improve, the zone will be able to integrate itself into the regional economy as a provider of food crops and natural resources that are presently produced in only limited quantities. It will be able to obtain inputs more easily from the interior of Sumatra, and it will be able to distribute its output via regional marketing networks that presently exclude it. The functions that Bengkulu Selatan can fulfill have been formulated in view of the area's long run limitations and opportunities, and they are twofold:

Function 1: A productive farming district with a diversity of tree and food crops destined for markets in Sumatra, Java and abroad. Fish production is also included.

Function 2: A reserve of natural mountain resources managed for the purposes of conservation and sustainable long run exploitation.

These functions are consistent with the priorities for Bengkulu province as defined in Repelita V, and with the prior findings of this same JICA study.

4.2.3 Constraints

Four main developmental constraints have been identified as the key factors slowing the area's advancement. They are:

Constraint 1: The widespread use of substandard skills and technology in agriculture and the fishing industry. Lack of knowledge and lack of capital are responsible for this.

Constraint 2: Limited market hinterlands for output. Because of low quality of output or lack of transportation to major markets in Manna, Bengkulu or Sumatra Selatan, output does not reach markets where prices may be higher.

Constraint 3: Lack of collective spirit to improve skills and share resources. The lack of functioning KUD and other farmer and fishermen groups is evidence of this.

Constraint 4: Geographical isolation from markets. Until recently driving conditions to Bengkulu City were difficult, and to other points nonexistent.

4.3 DEVELOPMENT STRATEGY FOR BENGKULU SELATAN IDEP

4.3.1 The Main Theme for the IDEP

The main theme for the Bengkulu Selatan IDEP is the upgrading of the level of productive skills in use mainly in agriculture and fishing, but also in community development to raise productivity and income. This will enable producers to take full advantage of the coming opening of Bengkulu Selatan to the Region, that will make possible beneficial linkages between the local economy and the regional economy, linkages which are currently so weak. Producers will be able to enter new markets if they adopt better farming and fishing methods, diversify, and increase quantity and quality of output. Income will rise, and the welfare of the population will also rise with it. This is a production-oriented approach for the IDEP.