

4.3.2 The Objectives for the IDEP

Three objectives for the IDEP are presented below. They have been chosen in view of the development objectives identified for the Southern Sumatra region by government policy and by this JICA study in prior phases. Figure 4.4.1 depicts the regional objectives as well as the IDEP objectives.

Objective 1:	Integration into the Regional Economy
Objective 2:	Increased Productivity in Agriculture and Fisheries
Objective 3:	Conservation and Sustainable Exploitation of Forest Resources

This first objective is a spatial one that is related to the regional objective of improving linkages both within Sumatra and between Sumatra and Java. The completion of the West Coast Road will provide a link between Sumatra's west coast and Lampung and beyond to Java.

Objective 2 above relates to the regional objectives of creation of value added activities and employment, on the one hand, and to the reduction of income disparities on the other. Measures such as the cultivation of higher value crops, yield improvements, and wider market opportunities, will raise income to producers and improve their welfare. This will also raise incomes at the low end of the economic spectrum where many farmers and fishermen are categorized.

The third objective is actually a twin one, including long term management and conservation of natural resources contained in the designated mountain forests, while permitting some exploitation by low income farmers in the form of controlled agriculture and woodcutting to derive some economic benefit from these resources.

4.4 THE BENGKULU SELATAN IDEP

The IDEP consists of 29 projects (subprojects) representing a total investment of \$970 million, and the following series of figures (Figures 4.4.1 to 3) describe various aspects of the program. Figure 4.4.2 describes the timing for each subproject and includes a very approximate cost estimate prepared without the benefit of feasibility studies. Eight of the projects function as key projects and are described below in section 4.5.

4.4.1 The Subprograms

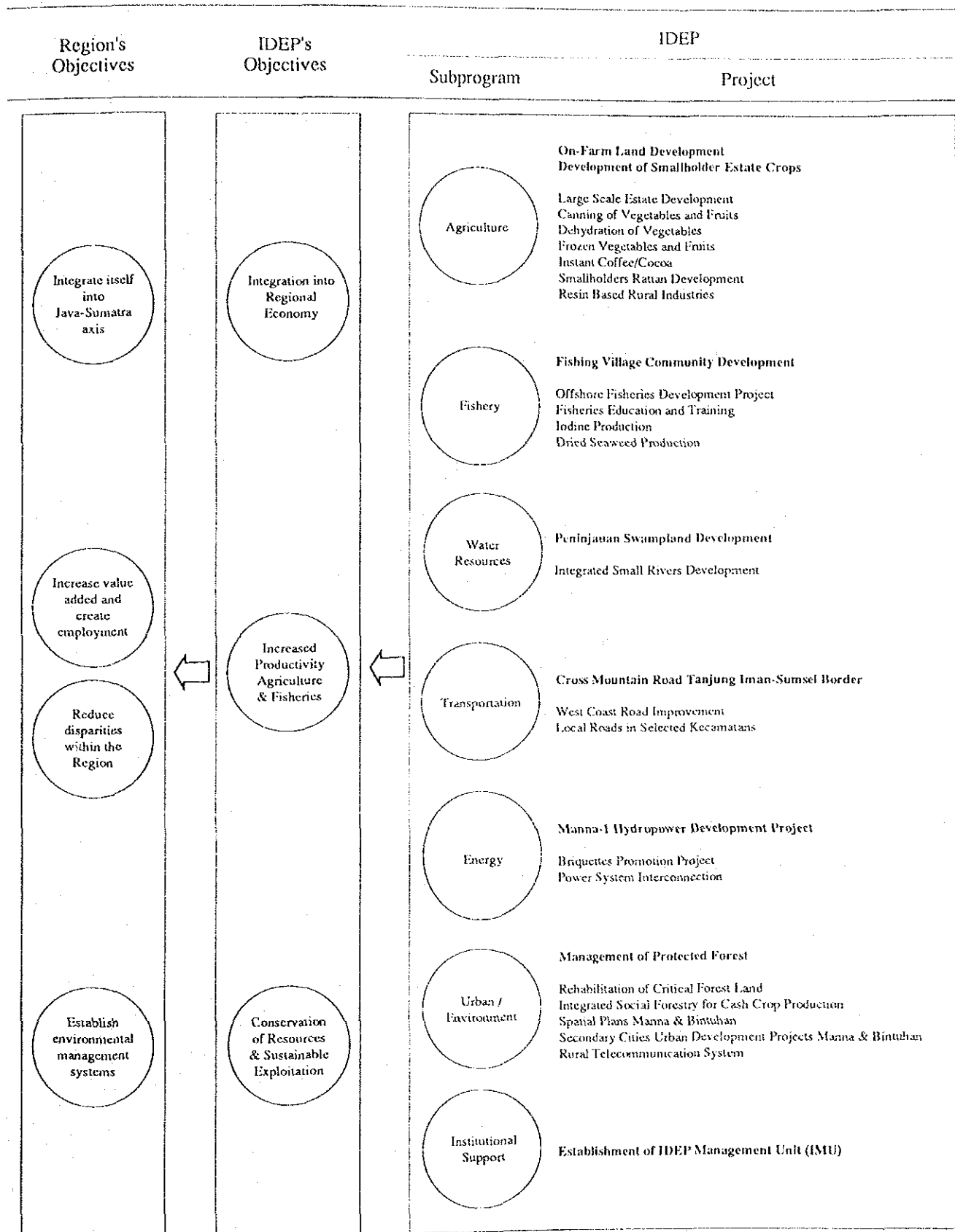
(1) Agriculture Subprogram

Because the area is and will remain basically a rural and agricultural one, this subprogram is vital for improved productivity and increased welfare for the population. The On-farm Land Development Program [A-2] is designed to increase productivity (intensification) of the limited wetland available in the kabupaten. The development of small holder estate crops [A-13] is intended to increase and diversify production over a broad area (extensification) not yet being cultivated. The development of large scale estates in the kabupaten by the private sector [A-17] is still in an embryonic stage but must be supported by government. Four agroindustrial subsectors are also listed in this subprogram [C-16, 17, 18, 19] to represent the potential for industrial development taking advantage of resources and good transport access. The development of resin based industries and rattan harvesting [J-20, J-21] are examples of nontraditional activities that can be started to diversify the economy and use the forests.

(2) Fishery Subprogram

Development and diversification are objectives for this subprogram, which relies heavily on the improvement of technical skills and working conditions for fishermen. The

Figure 4.4.1 Objectives, Subprograms and Projects : Bengkulu Selatan IDEP




Notes: In bold letters is the key project.
 * denotes an on-going project.


Figure 4.4.2 Phasing of IDEP Projects: Bengkulu Selatan 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	'13	
Agriculture	A-2	On-Farm Land Development																					3.2	
	A-13	Smallholder Estate Crops																						4.2
	A-17	Large Scale Estate Development																						639.0
	C-16	Canning of Vegetables and Fishes																						1.5
	C-17	Dehydration of Vegetables																						1.4
	C-18	Frozen Vegetables and Fruits																						1.4
	C-19	Instant Coffee/Cocoa																						2.0
	J-20	Rural Rattan Development																						2.7
	J-21	Resin-Based Rural Industries																						1.0
		Sub-total																					656.4	
Fishery	B-11,12	Fishing Village Community Dev.																					5.3	
	B-13-16	Offshore Fisheries Development Project																					6.8	
	B-21,22	Fisheries Education and Training																					0.5	
	C-24	Iodine from Seaweed																						1.4
	C-25	Dried Seaweed																						0.1
		Sub-total																					14.1	
Water Resources	F-29	Peninjauan Swampland Development																					11.2	
	F-39	Integrated Small Rivers Development																					3.0	
		Sub-total																					14.2	
Transportation	G-64	Cross Mountain Road																					3.3	
	G-59	West Coast Road Improvement Program																					5.0	
	G-63	Local Roads Network Improvement																					2.5	
		Sub-total																					10.8	
Energy	F-28	Manna-1 Hydropower Development																					150.0	
	D-16	Briquettes Promotion Project																					12.2	
	D-23	Power System Interconnection																					104.0	
		Sub-total																					266.2	
Urban / Environment	J-26	Management of Protection Forests																					0.5	
	J-8	Rehabilitation of Critical Forest Land																					0.6	
	J-23	Integrated Social Forestry																					0.8	
	I-16	Spatial Plan (Manna, Bintuhan)																					0.1	
	I-17	Secondary Cities Urban Development																					2.1	
	H-8	Rural Telecommunication System																						1.5
		Sub-total																					5.6	
Institutional Support	K-1	IDEP Management Unit																					1.8	
		Sub-total																					1.8	
		IDEP Total																					969.1	

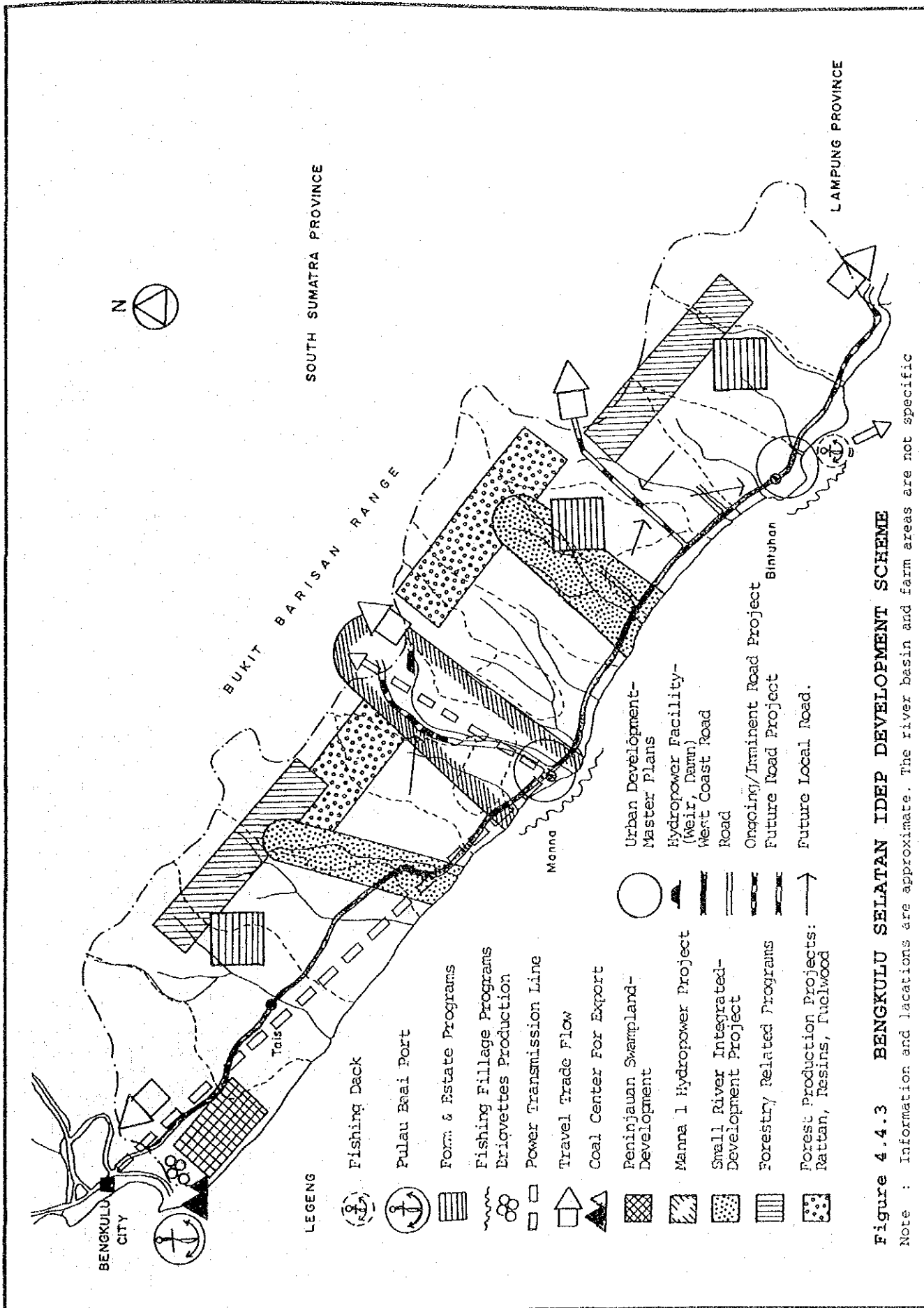
Notes: 1) In bold letters are the key projects.

2)  Pre-implementation study/plan-making

 Implementation

 On-going

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



SOUTH SUMATRA PROVINCE

LAMPUNG PROVINCE

BUKIT BARISAN RANGE

BENGKULU CITY

Tais

Manna

Binuhan

LEGENG

- Fishing Deck
- Pulau Baai Port
- Farm & Estate Programs
- Fishing Fillage Programs
- Ericovettes Production
- Power Transmission Line
- Travel Trade Flow
- Coal Center For Export
- Peninjauan Swampland-Development
- Manna 1 Hydropower Project
- Small River Integrated-Development Project
- Forestry Related Programs
- Forest Production Projects: Rattan, Resins, Fuelwood
- Urban Development-Master Plans
- Hydropower Facility-(Weir, Dam)
- West Coast Road
- Road
- Oracing/Irminent Road Project
- Future Road Project
- Future Local Road.

Figure 4.4.3 BENGKULU SELATAN IDEP DEVELOPMENT SCHEME

Note : Information and locations are approximate. The river basin and farm areas are not specific

Fishing Village Community Development Project [B-11, 12] is designed to boost productivity of artisanal fishermen through a combination of training, motorization of fishing boats, improvement of engine maintenance service level, and reinforcement of KUD development for marketing, extension and credit access. Two projects, namely, offshore fishery development project (private investment) and fishery education and training project, are expected to support those activities in technical and managerial aspects. In the long run, a related possibility in the more distant future is the construction of a fishing dock at Linau as a modification to the general purpose dock scheduled to be built in 1992. Such a dock could serve as a fish landing base for motorized boats in the region. Diversification possibilities are represented by two additional activities, dried seaweed production [C-25] and iodine production [C-24], areas identified for private sector initiative. Ultimate fish catch could increase tenfold by the year 2010 if these programs are executed as planned.

(3) Water Resources Subprogram

The Peninjauan program [F-29] is intended to reassess the existing wetland development program to determine if any improvement to it can be made in view of its unique advantage of good sea and road access. Any possibility of industrial or high value agricultural use will be explored in the interest of diversification for increased productivity. The Small Rivers Integrated Development Program [F-39] is a planning study designed to evaluate key potentials in the area's numerous riverbasins such as hydropower, irrigation, flood control, water systems and environmental stabilization. The ultimate purpose of this study is to determine which river basins have sufficient potential to merit integrated development programs. Without such a study it is not possible to know which rivers have the greatest potential. [The river projects on Figure 4.4.3 are hypothetical and purely illustrative.] The results of both these projects are far reaching.

(4) Transportation Subprogram

The kabupaten has the good fortune to soon see the completion of the West Coast Road finally giving it a good link both north to Bengkulu City and south to Lampung province. In addition by 1995 the cross mountain road from Manna to Pagaralam will be completed (OECF and IBRD funding) providing a good access to Palembang and the Trans-Sumatra Highway. The next major improvement in access is the completion and upgrading to provincial status of the cross mountain road from Tanjung Iman, passing near the transmigration communities of Muara Sahung, and leading into South Sumatra's Ogan Komering Ulu kabupaten [G-64]. It will provide improved access to South Sumatra and Lampung provinces. Reinforcement of the local road network [G-63] in the lower (Kaur) kecamatan of Bengkulu Selatan will increase the benefits of this new road. In addition, because of problems of ocean erosion and of the unusually heavy rainfall typical of the west coast, a major improvement program for the vital coastal road link is proposed [G-59].

(5) Energy Subprogram

Two large projects are proposed based upon the hydropower potential of the Manna River. The hydropower project on this river [F-28] would generate energy that would enter the regional power grid via a proposed interconnection extending from Bengkulu via Maana to Pagaralam [D-23]. Rural electrification programs would then become possible along this routing. Such an arrangement would in the long run make possible processing and manufacturing activities that rely on a stable source of power, which today cannot locate in Bengkulu Selatan. However, the main justification for these projects would be the regional power needs, rather than the local ones of the kabupaten.

The briquettes project [D-16] has an entirely different purpose, which is to demonstrate the viability of briquette production in Sumatra at a location near coalfields, and to stimulate larger scale private investment. The plant would be a government sponsored pilot one to supply the Java market with an affordable alternative to wood, to arrest deforestation.

However, if quality is satisfactory, export markets can also be targeted. A location near Pulau Baai may be desirable.

(6) Urban/Environment Subprogram

The urban and natural resources of the area are the focus of this subprogram. The organization of urban infrastructure can be evaluated for the Manna and Bintuhan areas during Repelita VI to define later investment programs for public works. Two types of planning studies are included for these two urban areas [I-16, I-17]. Installation of a telephone system serving all the kabupaten ibukotas is a government objective fully met by this program, and the objective of essential telephone service to all desas is partially met [H-8].

The three forestry projects, although financially among the smaller projects, are central to the objectives of establishing effective environmental management systems for the purposes of conservation and sustainable exploitation of forest resources. The execution of these projects will assure the healthy survival of forests and is an investment in the area's long term future [J-8, J-23, J-26].

(7) IDEP Management Subprogram

This subprogram consists of the creation of an IDEP Management Unit [K-1] within BAPPEDA Tk.I and Tk.II (IMU; see description Volume 2) to oversee the implementation of the programs. In addition to the normal management functions of this unit, it will fulfill a function of long-term institutional strengthening at the provincial and local level by means of training components for civil servants.

4.4.2 General Features of the IDEP

(1) Human Resources Development

The development of skills is critical to raising productivity and increasing income so training is a key component of the IDEP. There are training components to twelve of the subprojects (Table 4.6.1) in areas such as agriculture, fishing, hydrology and forest management, all of which are intended to make possible better management and use of local resources. Reinforcement of KUD and farmers and fishermen's groups will also be supported by the three key agriculture and fishery projects. Similarly, part of the function of the IDEP Management Unit (IMU) is to improve long-term capabilities at the local government level, in addition to the general management of the project. Consequently, some training in financial management for public officers and in the area of land registration issues and procedures is included in the scope of work for the IMU.

(2) Spatial Implications

Because of the rural nature of the area, half of the projects contribute directly or indirectly to raising of income of farmers and fishermen, and therefore contribute to a goal of poverty alleviation. Rural electrification although not specifically listed as a project, could be included in the Manna-1 Hydropower project, the Small Rivers project and the Transmission Line Extension project. Two urban development master plans are proposed for Manna and at Bintuhan.

The logical pole for development of infrastructure networks is along the coast paralleling the coastal road, with branches extending inland to serve interior communities. In the more distant future, a second pole may develop extending from Manna on the coast inland to Lahat kabupaten and consist of the improved mountain road, a hydropower plant, and telephone and power network links. Trade links along these two poles will strengthen.

(3) Production Increases

The fourteen productive projects, those focusing on boosting agricultural and fishery output, mature at different periods. The agriculture projects mature by nature over extended periods beyond the year 2000 because estates take years to be designed, planted and harvested. With fisheries, the maturation period is much shorter with yields improving as early as 1995 or 1996 once training and motorization are accomplished. As regards forestry, increases in production (rattan, resins, fuelwood, etc.) could be achieved steadily as more areas are identified and brought under controlled exploitation as expansions to the initial pilot projects. In summary, the production increases for fisheries would be achieved earliest and possibly most quickly, while for agriculture and for forestry more gradually. No infrastructural bottlenecks that would hinder production are expected. Seven of the projects could result in export earnings for the area.

(4) Timing

Timing of projects is flexible, as most can be implemented largely independently from other projects. The key exception to this is the energy sector where the Manna-1 Hydropower project, the Power System Interconnection project and the Small Rivers project are relevant to electrification potential in the area and need to be coordinated. Six of the projects involve spatial planning of some kind, for urban areas, forests, swampland and riverbasins, and most of the projects are listed to begin by 1998, the end of Repelita VI.

(5) Implementation

An IDEP Management Unit is proposed to supervise the project over its 10 year lifetime. It will be staffed by both Indonesian and foreign experts, located in BAPPEDA Tk I, and coordinate closely with BAPPEDA Tk II, the Bupati's office, the relevant Dinas offices, and relevant kabupaten and kecamatan agencies. As mentioned above, in addition to the standard functions of project management in accordance with the normal requirements of foreign funded projects, some training of local (both kabupaten and kecamatan) officials in project management, financial management, and land issues is to be included. All of these areas require strengthening at the local government level. The training in land issues is designed to develop an awareness of the importance of land registration and titling in a modern society, to familiarize officials thoroughly with relevant regulations and institutions, and to prepare them to advance the process of land titling in their own areas.

4.5 DESCRIPTIONS OF KEY PROJECTS

Eight projects are identified as key ones since they well illustrate the types of programs that address major shortcomings of the area. They are drawn from each of the subprograms.

(1) On-Farm Land Development in Small Irrigation Systems and Rainfed Wetland (A-2)

- | | |
|------------|--|
| Agency | : Directorate General of Food Crops Agriculture, Ministry of Agriculture
Directorate General of Water Resources Development, Ministry of Public Works (as a supporting agency) |
| Location | : Bengkulu Selatan (Bengkulu) |
| Objectives | : 1) to maximize land resources potential benefits.
2) to achieve sustainable self-sufficiency in food crops.
3) to contribute to soil conservation in the mountaneous areas.
4) to create new employment opportunities.
5) to contribute to poverty alleviation in rural areas. |

Description : 1) Land development in the working irrigation schemes will be undertaken through rehabilitation and improvement of the existing tertiary systems.
 2) Village irrigation will be developed by expansion of the stable irrigated areas and rehabilitation and upgrading of village irrigation schemes.
 3) Institutional strengthening will include training of both governmental staff and farmers, with provision of necessary facilities/equipment. The establishment and strengthening of the farmers groups and KUDs will be also emphasized.
 4) Coordinating and monitoring capabilities will be strengthened through training of the staff and the possible support extended to the coordinating agencies' activities.
 5) A total of 4,200 ha is to come under this program in Bengkulu Selatan (An additional 12,000 ha in Lahat will also be improved.).

Duration : F/S : 12 months
 Implementation : 5 years

Cost : US\$3,200,000

Comments : There are 18,654 ha of agricultural wetlands (7,518 ha of rainfed wetland, 11,136 ha with a simple irrigation system) that need some rehabilitation of farming facilities including water irrigation system so as to increase the productivity. This area accounts for over 60% of total wetland, while only 3,881 ha are technically irrigated area (1990). Since the potential area for extensification of agricultural wetland is limited in Bengkulu Selatan unless new irrigation projects are launched, this type of project would be urgently implemented to increase the small-scale farmers income especially those of rural poor. The project is designed to make the best use of the limited wetland in the kabupaten (intensification) by promoting self help efforts of the farmers. In addition, a land title feature rewarding participating farmers is planned as a component. Production of rice for the Lampung market will become possible. Where Public Works systems are involved, coordination with the Dept. of Public Works will be necessary.

(2) Development of Small-holder Estate Crops (A-13)

Location : Bengkulu (in addition to Jambi, South Sumatra and Lampung)

Agency : Directorate General of Estate, Ministry of Agriculture

Objectives : 1) to raise the income and productivity of the traditional smallholder and the existing transmigrants by financing the planting/re-planting of high yielding varieties, and upgrading of farm management,
 2) to expand and strengthen the smallholder sector export, and
 3) to provide technical assistance to smallholder.

Description : 1) to plant/re-plant about 5,000 ha of rubber,
 2) to plant/re-plant about 1,500 ha of coconuts,
 3) to plant/re-plant about 1,500 ha of cocoa, and
 4) to plant/re-plant about 2,000 ha of coffee.

Duration : 15 years

Cost : US\$ 4,200,000

Comments : The project is designed to make use of and to supplement the existing government structures at the provincial and kabupaten levels, that promote treecrop agriculture. It will make available new crop varieties, adapted skills for cultivation and marketing, appropriate supplies and credit support. It will be implemented by means of project management units, one for every 500 ha brought under the program. Reinforcement of farmers groups and KUDs is included. Participation of established transmigration farmers is a clear possibility.

(3) Fishing Village Community Development Project (B-11, 12)

Agency : 1) Directorate General of Fisheries (DGF), Ministry of Agriculture
2) Directorate General of Cipta Karya (DGCK), Ministry of Public Works (as a supporting agency)
3) Directorate General of Water Resources Development (DGWRD), Ministry of Public Works (as a supporting agency)

Location : All coastal fishing villages in Kab. Bengkulu Selatan, with having a center in Pasar Bawah (Manna).

Objectives : 1) to upgrade living standard of artisanal fishermen with improvement of fishing village environment.
2) to increase fish catch introducing better fishing equipment and boats.
3) to organize and strengthen the fishermen's cooperatives for fish marketing, engine maintenance and other fishery related activities.

Description : The Project will include the following 3 components:
Component 1: Improvement of Fishing Environment
1) A community fisheries center will be established in Pasar Bawah (Manna), as a core facilities for promotion of small-scale fishery. The center will be comprised of office, meeting/training room, small workshop, small ice making plant/storage, retail market, radio station, toilet/shower, fishing gear storage, water/fuel supply, etc.
2) Coast line of Pasar Bawah, which has been eroded by sea wave, will be protected with installation of a floating breakwater.
3) Radio communication network among all fishing villages will be established for better fish marketing as well as for general use.
Component 2: Fishing Boats Motorization and Maintenance Service
1) A total of 200 units of outboard engines (10-40 hp) and 40 units of inboard engines will be supplied to small-scale fishermen by 1995 for creation of a revolving fund along with a 20-year fishing upgrading plan.
2) Engine repair and maintenance service system will be established using the proposed center's workshop.
Component 3: KUD-Based Fish Marketing Promotion
1) Pick-up trucks and insulated fish containers will be supplied for collection of fish from small villages using ice produced at the proposed center.

Duration : F/S : 4 months
Implementation : 24 months

Cost : F/S : US\$300,000
Implementation : US\$5,000,000

Comments : In the course of development of coastal village fisheries in this region, the upgradings of fishermen's technical skills as well as the KUD's management capabilities would be indispensable in terms of operation of the project facilities and equipment in sound manner. As for the KUD, in the near future, it may be needed to create a more sophisticated organization like an association of KUDs. In these connections, the strengthening of fishery education and training would be greatly emphasized. The proposed fishery senior high school (SPP Perikanan) at Kota Agung, Lampung Province will accept a number of new leaders from each village with provision of a local scholarship (Code No. B-22). The private enterprises, which are expected to start offshore fishery in Pulau Baai or Krui (Code No. B-13 and 15), would give a direct influence to local fishermen and KUD in technical development of fishing and fish marketing, and also activate local communities. Further, as another approach to develop KUD's management capabilities, it is recommended to promote an association with Japanese fisheries cooperatives (Code No. B-21). The participation of NGO such as HNSI (Himpunan Nelayan Seluruh Indonesia) would be also important to assist the KUD activities in managerial aspect.

(4) Peninjauan Swampland Development Project (F-29)

Agency : 1) BAPPEDA Tk I
2) Directorate of Swamp Reclamation, Ministry of Public Works

Location : Sukaraja kecamatan next to Pulau Baai seaport

Objectives : 1) to assess the long term development potential of the remaining phases of this project including nonagricultural uses
2) to assess the feasibility of irrigation development in this area
3) to reassess and complete the ongoing reclamation work for the scheme
4) to develop and provide to farmers and institutional management a crop diversification plan and operation and maintenance manual
5) to promote private investment in agroindustrial or other types of processing or manufacturing activities.

Description : 1) The team includes an agronomist, a soil/ irrigation expert and an agroindustrial expert.
2) A reassessment of the remainder of the scheme, to include reclamation of approximately half the total project area of 10,600 ha is to be made. Drainage of the area is to be completed.
3) An evaluation of the highest and best use in the long run for the land will be made taking into account its full potential in view of its unique advantage of proximity to Bengkulu City and to its seaport.
4) Any potential industrial or other type of use for the land, for example for cultivation of high value crops for shipment to Java or for export, will be assessed along with any relevant conditions influencing their feasibility such as private investment or availability of comparable land nearby.
5) A revised plan for completion of the overall swampland development project will be formulated in the light of the above findings.

Duration : Study: 6 months
Implementation: 5 years

Cost : US\$500,000 for the study
US\$10.7 million for draining

Comments : This swamp is located 20 km south of Bengkulu City adjacent to the Pulau Baai seaport, and covers an area of 10,600 ha. Over 3,400 families have been settled there as part of a transmigration scheme so far. The study is designed to take a fresh look at the project to see if any part of it can be reoriented to allow for cultivation of high value crops such as fruits, vegetables, flowers or plants requiring rapid transport to distant markets. In addition, any industrial or processing activity that may be feasible will be identified. Any additional viable uses in the short or long term, such as coal related industries, or processing of local agricultural output, can be incorporated into a revised master plan for completion of the project. The draining of the area is to be completed. Major infrastructure such as irrigation or continued settlement by new households can then be implemented in a way that is compatible with any new uses. The overall objective is to optimize this resource by injecting some flexibility into the master plan for these potential new activities. Although located at the extreme north end of the kabupaten, this area possibly more than any other appears to have some industrial potential at least in the long run.

(5) Cross Mountain Road Tanjung Iman to South Sumatra Border (G-64)

Location : Bengkulu Selatan, Kaur Tengah kecamatan

Agency : Dept of Highways, Ministry of Public Works

Objectives : 1) to extend market hinterland for agricultural output into South Sumatra and Lampung provinces
2) to improve access to the Lake Ranau area for tourism
3) to provide access roads around the Bukit Barisan Selatan National Park and protection forests for improved forest management and enforcement

Description : 1) reclassification of road to provincial status
2) upgrading 45 km to 4.5 meter width, 8 ton ESA
3) connection at border with Muaradua road for direct access to Trans-Sumatra Highway

Duration : 2 years

Cost : US\$3.3 million

Comments : This road will serve the agriculture industry broadening the market for Bengkulu produce into neighboring provinces. It also will benefit tourism in the region by linking the Lake Ranau area to the coast. It will also serve forest management. The First Nine Provinces Road Improvement program (OECF IP 348) has included improvement of the continuation of this road from the Bengkulu border to Muaradua for completion in the near future.

(6) Manna-1 Hydropower Development Project (F-28)

- Location : Kabupaten Bengkulu Selatan, Bengkulu Province
- Agency : Perusahaan Listrik Negara (PLN)
- Objectives : 1) To assess the feasibility for Manna-1 hydropower scheme together with transmission line plan of Bengkulu - Manna - Pagaralam.
- Description : 1) Manna-1 hydropower is a trans-basin scheme connecting Manna River with a catchment area of 460km² to Pino River through a diversion tunnel with a length of 7 km. The gross head between the intake and the tailrace of the power station is estimated 300 m. This scheme was identified in "Hydro Power Potential Study" financed by the World Bank in 1983, and was selected as one of the top schemes of a total of 1275 schemes (see Way Semangka prefeasibility study discussion). The proposed features of Manna-1 scheme are as follows;
- | | |
|---------------------|--------------------------------|
| Type of Development | : Run-of-river |
| Firm Discharge | : 20.8 m ³ /s |
| Net Head | : 270.2 m |
| Installed Capacity | : 77.2 MW |
| Energy Output | : 629.6GWh |
| Costruction Cost | : US\$ 132.2 mil. (as of 1983) |
- 2) From the standpoint of construction cost per unit of energy output, the Manna-1 scheme has the cheapest cost with .028 US\$/kWh of all the selected priority schemes in PLN's Region IV (Southern Sumatra). However, there has been no feasibility study of this potential project. This is because the demand for power in the vicinity of the site is too limited to justify such a large scale hydropower project; furthermore, the site is distant from existing transmission lines that could distribute power to the main consuming areas like Palembang or Bandar Lampung.
- 3) Recent developments may be improving the feasibility of this project, with the proposal of a circle transmission line on the route Bengkulu-Manna-Pagaralam-Lubuklinggau-Curup intended to provide a stable power supply to the region from the hydropower stations of Tes-1 and Musi. This transmission line could be routed through the site of the proposed Manna-1 hydropower project to improve the supply of energy to the region and to make possible rural electrification schemes in the region.
- 4) The proposed project includes ; (a) plan formulation of the project, (b) basic design of the scheme, (c) optimization of the project, (d) environmental impact assessment, particularly for the downstream of Manna and Pino rivers.
- Duration : 18 months with 150M/M for the feasibility study.
24 months with 300M/M for the detailed design.
48 months for construction.
- Project Cost : US\$ 6 million for the feasibility study.
US\$ 12 million for the detailed design.
US\$132.2 million (as of 1983) for the construction of the hydropower scheme
(US\$104 million for the construction of transmission line of Bengkulu - Manna - Pagaralam [project D-23] a separate project)

Comments : This project and the related power transmission line represent enormous investments for the kabupaten and must be coordinated and possibly combined for efficiency. At this stage it appears that no projects of a local nature such as flood control or irrigation schemes are essential to the feasibility of this project since it involves improvement of regional infrastructure. However, it may be possible to combine local level projects with this one, such as rural electrification. The Small Rivers Integrated Development Study can examine such local possibilities if these studies are coordinated. A final note is that a careful environmental impact assessment will be necessary since the water levels of the two affected rivers would be significantly changed.

(7) Management of Protection Forests (J-26)

Agency : Directorate General of Forest Protection and Natural Conservation, Agency for Forestry Research and Development, School for Conservation and Environmental Management-Bogor

Location : Kabupaten Bengkulu Selatan (Bengkulu)

Objectives : 1) to clarify and adapt a management policy for protection forest to guide regional and local planning
2) to assess the present legal and field status of protection forest in the area
3) to strengthen provincial and kabupaten level institutions responsible for these areas
4) to implement management activities in protection forests with regard to their hydrological functions

Description : 1) The team consists of a forester, soil scientist and forest hydrologist as consultants as well as members from the above agencies.
2) An accurate inventory is to be made with maps of the protection forests in all the kecamatan.
3) Experts are to prepare recommendations and guidelines for effective forest management in view of local and traditional practices in the area. Particular attention is to be given to the management of compatible farming activities in the forests.
4) Training seminars for provincial and kabupaten officials are to be conducted in the province.
5) Improved protection and management methods such as boundary demarcation, monitoring of activities and local extension are to be created.
6) The project will create or improve field stations for monitoring hydrological functions of forested watersheds.

Duration : 3 years

Cost : US\$500,000

Comments : This project focuses on preservation and the sustainable exploitation of a major natural asset for the area, its protection forests. If properly implemented it will facilitate this dual function by reducing the illegal activities currently going on, including logging, farming and living in the forests. Because tree crops are permitted in protection forests, this program can control commercial activities such as those

contained in other projects of the IDEP such as tree crops, rattan, resin or fuelwood.

Furthermore, as Bengkulu Selatan opens up to neighboring provinces, this program with proper enforcement can be effective in limiting any encroachment into forest areas if population pressures rise. The hydrological monitoring will create a database making possible future planning for watershed development programs. This is a planning study to be coordinated at the national level and possibly with neighboring provinces of South Sumatra and Lampung. It falls in the category of institutional strengthening.

(8) Establishment of IDEP Management Unit (IMU) (K-1)

Location : Jambi, Palembang, Bengkulu, Bandar Lampung

Agency : BAPPEDA Tk.I and Tk.II

Objectives :

- 1) To coordinate the central, provincial and kabupaten/kotamadya governments and foreign donor agencies in preparing and implementing the IDEP programs/projects
- 2) To assess, revise and prepare the annual and multiyear IDEP programs/projects, and submit them to the National and Local Steering Committee for IDEP (NSCI and LSCI)
- 3) To take budgetary measures and identify fund sources for the IDEP
- 4) To improve and strengthen institutional and financial capabilities in the provincial and kabupaten/kotamadya governments
- 5) To monitor the progress/results of the executed IDEP programs/projects and evaluate them

Description :

The project comprises of :

- 1) Establishment of the IDEP Management Unit (IMU) inside BAPPEDA Tk. I and Tk.II corresponding to each IDEP site
- 2) Dispatch of a foreign expert to each provincial IMU in order to support the IMU
- 3) Provision of some training programs for BAPPEDA Tk.I and Tk.II

Duration :

IMU	:	10 years
Experts	:	5 years

Cost : US\$1,750,000

Comments : Volume 2 provides a description of the workings of this project. In addition to management of the IDEP which extends over ten years, another responsibility of the IMU is to support private investment in the activities identified in the various subprograms by assisting investors in planning their own projects and facilitating liaison with local agencies. An additional responsibility of the IMU is one of institutional strengthening through the training of local officials on topics such as public finance and land registration.

4.6 KEY RELATIONS AMONG THE PROJECTS

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

1) In the Fishery subprogram, **Fisheries Education and Training Project** (B-21, 22) is a prerequisite to **Fishing Village Community Development** (B-11,12).

2) In the Energy subprogram, **Power System Interconnection** (D-23) will start with the completion of **Manna-1 Hydropower Development Project**.(F-28).

3) Four agroindustrial projects in the Agriculture Subprogram (C-16, 17, 18, 19) and **Briquettes Promotion Project** (D-16) may consider as their possible location the land reclaimed by **Peninjauan Integrated Swampland Development** (F-29).

4.7 SPECIAL CONSIDERATIONS

There is a significant amount of this program that is devoted to exploitation of forest resources but also to their conservation. There is some urgency regarding the conservation function, because if adequate management and protection of forests are not provided, it is probable that further deterioration and encroachment will occur in the short and medium term as the area is opened with new roads from Lampung and South Sumatra.

Table 4.7.1. Selected Project Attributes

ID. code	Project	K	P	I	R	E	X	T	Area of training
A-2	ON FARM LAND	X			X			X	wetland farming
A-13	SMALLHOLDER ESTATES	X			X	X	X	X	treecrop farming
A-17	Large-Scale Estates	X			X		X		
C-16	Canming of Fruits	X			X		X		
C-17	Dehydration	X			X		X		
C-18	Frozen Vegetables	X			X				
C-19	Instant Coffee	X			X		X		
J-20	Smallholder Rattan				X	X	X	X	rattan harvesting
J-21	Resin-based				X	X		X	resin production
B-11/12	FISHING VILLAGES	X			X			X	fishing/cooperatives
B-13/16	Offshore Fisheries	X					X	X	fishing offshore
B-21	Fisheries Education							X	fishing/marketing
C-24	Iodine Production	X			X				
C-25	Dried Seaweed Production	X			X		X		
F-29	PENINJAUAN DEV.		X		X		X	X	wetland farming
F-39	Small Rivers Development		X		X	X		X	hydrology
G-64	CROSS MOUNTAIN ROAD			X	X				
G-59	West Coast Road			X					
G-63	Local Roads			X	X				
F-28	MANNA-1 HYDROPOWER	X		X	X				
D-16	Briquettes Promotion	X					X		
D-23	Power System Interconnection	X		X					
J-26	PROTECTION FORESTS		X		X	X		X	forest management
J-8	Critical Forest Land			X	X	X			
J-23	Social Forestry		X		X	X		X	productive forestry
I-16	Spatial Plans (2)		X						
I-17	Development Projects (2)		X						
H-8	Rural Telecommunication			X	X				
K-1	IDEP Management Unit							X	financial management, land registration

Notes: K=Production, P=Planning, I=Infrastructure, R=Rural, E=Environment, X=Export, T=Training

Major population increases are projected for the kabupaten, so it must support programs that increase productivity and that preserve its environment. For this reason several of the projects contain major planning components intended for officials as well as low income groups living in or near forests.

Most of the projects are narrow in scope with relatively low budgets with two of the energy projects and the Large Scale Estate Development being the main exception. If the energy projects [F-28 and D-23] are undertaken as indicated, they would be managed according to PLN's (the power agency) customary procedures for infrastructure development. In that case, it would be the responsibility of the IMU to coordinate these very large projects with any other relevant ones in the kabupaten such as the Small Rivers Integrated Development Project, or with any relevant forest related projects, if forest areas are affected. It would also be the IMU's responsibility to see that any possible new projects that are local in scope, such as rural electrification or electrification in the Manna area, are given adequate consideration in the planning of these larger regional ones, in the interest of realizing benefits for the local population. The IMU would work with the relevant government agencies at all levels for this purpose.

If these energy and estate projects are excluded, the overall size of the IDEP is not large, amounting to a public investment of US\$70 million. In view of the relatively modest scale of the IDEP, it possibly could be launched after a relatively short preparation period and might even serve as a pilot IDEP to precede the larger and more complex ones proposed for other areas.

4.7.1 Damage to Farms by Wild Animals

The problem of damage caused by wild pigs and elephants entering farms in search of food is a very real one afflicting some farmers. It may be caused by two factors. Possibly the larger animals that prey on wild pigs (tigers) have fallen in population, leading to an increase in pig population. Secondly, the forests where these animals have their natural habitat may be subject to human encroachment forcing them to seek food outside the forests. In either case, the animals are fleeing the forests to settled areas in search of food.

This is in part a question of wildlife management, for which there is no apparent quick solution. As long as ownership of firearms is banned, shooting is not a ready possibility, except for shooting or hunting campaigns of authorized owners of arms such as military or policemen. These persons are few in number. Poisoning may be a more viable option, and would have to be evaluated by the Forestry Dept and the Agriculture Dept. In the more distant future, the problem can be addressed directly in the projects covering management of protection forests [J-26] and critical forest land [J-8]. These projects must focus in part on problems of wildlife and their natural habitat, but they will be conducted over a period of years, and probably the benefits derived from them will be realized some years later. As regards elephants specifically, a project on Elephant Migration Management [J-14, though not included in this IDEP] is designed to propose measures to redirect their migratory habits, which should provide a partial remedy to this problem.

4.7.2 The Problem of Coastal Erosion

Along the Indian Ocean coastline, there are spots that are suffering from seaside erosion, jeopardizing safety and forcing relocation of some housing and other installations. This is a long term condition that affects not only Sumatra but also some locations in Java. Within the scope of this Study there is no global solution for the problem. However, there are some relevant measures that can be taken to cope with some of the problems related to this condition.

In the environmental area, a project focusing on Protection of the West Coast is proposed [J-28] to evaluate just this problem in both Bengkulu and Lampung provinces. The

output of this project is protection program containing a series of recommendations on measures to counter erosion. Where the areas of Manna and Bintuhan are concerned, the urban studies proposed for them [I-16, I-17] can examine this situation to determine which land uses are suited for the threatened oceanside locations and propose measures that will retard or arrest further deterioration caused by erosion. In areas where the coastal road is threatened, the West Coast Road Improvement Program [G-57] is proposed specifically to solve this problem as it affects that important road. A floating breakwater is proposed as part of the Fishing Village Community Development Project [B-11/12] to counter the effect of heavy wave action upon the village's beach. In summary, although there is no one solution or project that can treat all aspects of the problem, it has not been overlooked and some of the projects contain components that deal with it where elements of infrastructure (roads, urban development, fishing villages) are in jeopardy.

Appendix

Table A-1 Bengkulu Selatan General Profile by Kecamatan

	unit	Seluma	Talo	Pino	Manna	Kaur U	Kaur T	Kaur S	Total	share
population:										
total	persons	65,819	53,870	29,438	77,536	30,560	19,171	23,241	299,635	
density/square km	persons	54	46	56	117	48	32	21	50	
number villages	villages	64	69	40	91	40	41	36	381	
transmigration pop	persons	13,735	6,450	0	1,032	0	0	0	21,217	
average village pop	persons	1,028	781	736	852	764	468	646	786	
topography:										
area hectares	ha	121,819	118,225	52,230	66,340	64,310	60,310	111,410	594,644	
area < 25% slope	ha	80,255	62,280	33,965	38,725	41,500	26,075	30,220	313,020	
share < 25% slope	%	66%	53%	65%	58%	65%	43%	27%	53%	
areas by elevation:										
under 500M	ha	98,219	91,425	50,230	51,540	36,310	36,310	54,664	418,698	70%
over 1,000M	ha	800	7,200	0	7,200	18,600	6,400	24,519	64,719	11%
quality of life indicators:										
puskesmas clinics		4	6	2	5	2	3	3	25	
doctors		6	9	3	14	3	3	5	43	
telephones		0	0	0	450	0	0	0	450	
villages with elect.	villages	25	23	4	27	4	5	17	105	
diesel generators		3	7	2	5	1	0	2	20	
paved roads	km	123	80	68	135	60	37	63	566	
PDAM water customers		57	0	0	1,500	202	59	161	1,979	
no of LKMD		64	69	40	91	40	41	36		
(village dev agencies)										
drinking water productn	M3	32	0	0	600	42	32	84		
registered companies		6	2	2	104	9	0	3		
KUDs		12	13	6	13	7	5	6		
KUD membership	persons	2,088	1,665	565	2,511	663	681	413		
Areas by land use:										
populated	ha	3,384	2,272	1,104	2,960	1,520	912	1,216	13,368	2%
tree crops	ha	5,648	4,048	2,112	2,752	1,392	1,376	1,472	18,800	3%
rice paddy	ha	5,760	8,384	1,040	4,128	1,536	1,216	1,008	23,072	4%
coffee	ha	2,448	2,272	1,072	2,105	688	448	382	9,415	2%
clove	ha	496	432	336	1,376	1,088	832	1,248	5,808	1%
rubber	ha	10,400	560	304	464	288	144	176	12,336	2%
swamp	ha	832	144	0	96	0	0	0	1,072	0%
swampy forest	ha	5,200	3,600	0	0	0	0	0	8,800	1%
brush forest	ha	27,600	21,896	33,158	18,675	24,022	20,404	15,600	161,355	27%
dense forest	ha	56,739	74,009	11,200	32,160	32,800	34,800	88,738	330,446	56%

Source: Kab Daerah Tkt II BenSel; Data Pokok Untuk Pembangunan Daerah

Note: Data on 2 new kecamatans not yet available.

Table A-2 Bengkulu Selatan Agriculture & Fisheries Profile by Kecamatan

	unit	Seluma	Talo	Pino	Manna	Kaur Ut	Kaur T	Kaur S	Total	share
Agriculture (1990 data) p128+129										
sawa paddy area	ha	3,866	7,336	3,148	7,447	3,823	2,012	1,752	29,384	
sawa paddy output	ton	11,368	32,748	12,688	26,694	15,900	10,249	10,443	120,090	
yield ton/ha	ton	2.9	4.5	4.0	3.6	4.2	5.1	6.0	4.1	
ladang paddy area	ha	2,171	781	196	11	280	112	170	3,721	
ladang paddy output	ton	2,366	1,364	510	24	908	368	458	5,998	
yield ton/ha	ton	1.1	1.7	2.6	2.2	3.2	3.3	2.7	1.6	
forested areas:										
protected	ha	22,457	40,145	11,879	12,625	30,925	20,569	0	138,600	23%
reserve & recreational	ha	15,125	0	0	0	0	0	66,010	81,135	14%
heavy production	ha	0	0	0	5,855	0	0	2,500	8,355	1%
light production	ha	8,750	12,895	10,181	9,528	6,750	9,876	14,750	72,730	12%
in conversion	ha	8,970	11,465	7,500	12,750	3,750	13,979	19,496	77,910	13%
other	ha	66,517	53,630	22,670	25,872	22,885	16,156	8,654	216,384	36%
total	ha	121,819	118,135	52,230	66,630	64,310	60,580	111,410	595,114	
Fishing Industry										
Fish Landing Places (TPI)		2	3	1	1	0	3	3	13	
powered boats	boats	0	0	0	48	0	0	87	135	
nonpowered boats	boats	15	85	2	18	12	35	172	339	
production	ton	33	212	6	530	13	66	463	1,323	
value per kg	Rp	1,200	1,700	1,750	1,900	1,700	1,700	1,500		
freshwater production	ton	118	82	40	240	31	23	12		

Source:

agriculture data - Kantor Statistik Bengkulu Selatan, Statistik Bengkulu Selatan 1990.

forested areas data - Kab Daerah Tk II BenSel, Data Pokok Untuk Pembangunan Daerah.

Table A-3 1990 Population of Kecamatan & Perwakilan Kecamatan

(unit: persons)

Kecamatan	Sub-area		
Seluma		30,867	30,867
Sukaraja		34,952	34,952
Talo		28,402	53,870
	Pwk Alas Barat	10,646	
	Pwk Alas Timur	14,822	
Pino		14,715	29,438
	Pwk Kelutum	14,723	
Manna		14,138	57,693
	Pwk Pasar Baru	30,366	
	Pwk Keban Agung	13,189	
Seginim		19,843	19,843
Kaur Utara		20,511	30,560
	Pwk Tj Kemuning	10,049	
Kaur Tengah		10,528	19,171
	Pwk Gedung Wani	8,643	
Kaur Selatan		13,661	23,421
	Pwk Linau	3,759	
	Pwk Muara Nasal	6,001	
total			299,815

Source : Kantor Statistik Kabupaten; Statistik BenSel 1990.

Note : Pwk means perwakilan kecamatan.

Table A-4 Situation of Fishing Village in Coastal Areas of Kabupaten Bengkulu Selatan (1991)

No.	Kecamatan	Name of Fishing Village	Total Population	Total No. Households	No. of Fishing Households			No. of Fishing Boats		Production (tons)		
					Full	Part	Total	PTM	KM		Total	
1.	Sukaraja											
2.	Seluma	Pasar Seluma	409	96	15	45	60	15	-	15	81.1	
3.	Talo	Muara Pering Muara Maras	1,537 1,550	374 248	24 3	48 7	72 10	24	-	24	271.7	
4.	Pino	Pasar Pino	953	191	3	7	10	2	1	3	50.9	
5.	Manna	Pasar Bawah	3,526	730	71	151	222	19	48	4	71	475.3
6.	Seginim											
7.	K. Utara	Tanjung Bulan	743	137	12	12	24	12	-	-	12	40.8
8.	K. Tengah	Mentiring Padang Baru Tanung Pandan	726 445 348	166 74 97	57	156	213	56	1	-	57	95.2
9.	K. Selatan	Sekunyt Pasar Lama Linau Merpas	1,213 1,679 821 2,427	201 329 156 535	212	678	890	172	51	1	224	339.6
Total			16,377	3,334	394	1,061	1,455	300	101	5	4061,358.6	

Source : Dinas Perikanan Tk. II (Kab. Bengkulu Selatan)

Note : PTM; non-motorized boat, MT; outboard engine type boat, KM; inboard engine type boat

5. LAMPUNG UTARA IDEP

This location is characterized as a highly potential part of the Sumatra Gateway Triangle, located along the eastern trans-Sumatra highway and between the two primary industrial centers, Bandar Lampung and Palembang. Potential is high for agricultural development combined with the local transmigration scheme. The strategic theme of this site is: How to best utilize the potential land while assisting farmers and new settlers.

5.1 PRESENT CONDITIONS

5.1.1 Geography

(1) Land, Rivers and Climate

Kabupaten Lampung Utara is located in the northern-most of Lampung Province with the area 14,783 km². It stretches east-west, and the northern border is next to South Sumatra Province, the southern border to Kabupaten Lampung Tengah, the western border to Kabupaten Lampung Selatan, and the eastern part stretches to the Java Sea. The area is roughly divided into four topographical zones: hills and mountains in the west, peneplains in the center of the kabupaten, alluvial land in the downstream area of Way Tulang Bawang, and tidal swamp area in the east. The highest mountain is Gunung Tebak at 2,115 m in Kecamatan Tanjung Raya.

There are two river basins in Kabupaten Lampung Utara, Tulang Bawang river basin and Mesuji river basin. The area of Tulang Bawang river basin is about 10,150 km², the length is 753.5 km with nine tributary rivers. The area of Way Mesuji is 2,053 km² and length is 220 km, excluding tributary rivers. Figure 5.1.1 is a map of Lampung Utara, showing the locations of the two river basins and Gunung Tebak. A more detailed map of the river systems is given as Figure 5.1.2.

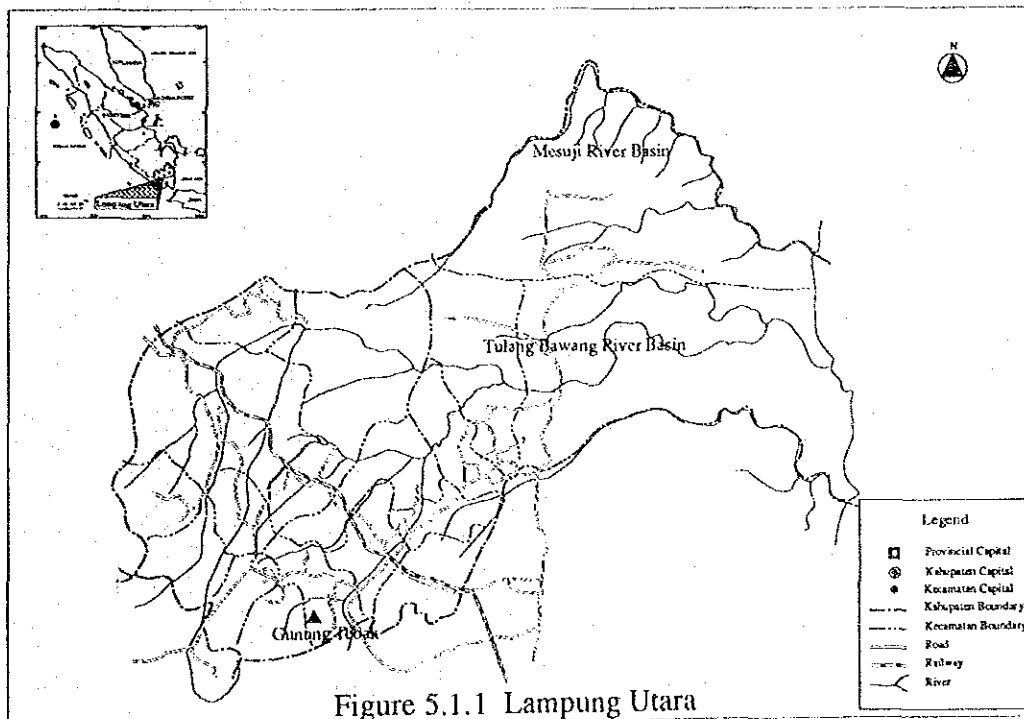


Figure 5.1.1 Lampung Utara

Lampung Province has a tropical humid climate. Annual rainfall varies from about 1,500 mm to about 4,000 mm. In the mountainous area, the annual rainfall ranges from

2,000 mm on the lower areas and 4,000 mm on the highest peaks, with the high rainfall between October and April, while large peneplain areas have an annual rainfall from 1,500 to 3,000 mm with a peak between December and January. The risk of drought is less than two months in the mountain areas, while it is more than half of a year in the peneplain. The direction of the wind is from the west and north-west between November and March, and from the east and south-east between July and August. The wind is generally mild but occasionally becomes stronger from both directions.

(2) Land Use

Table 5.1.1 and Figure 5.1.3 show the present land use situation of Kabupaten Lampung Utara. Total wetland area is about 30,000 ha, while total dryland area is about 1,400,000 ha. Irrigated wetland includes technical (about 11,700 ha), semi-technical (300 ha), simple irrigation (2,800 ha). Technical irrigation is dominant for irrigated wetland area. Non-irrigated wetland includes rainfed wetland (about 6,000 ha), tidal swamp wetland (1,700 ha), non-tidal swamp wetland (1,700 ha) and other wetland (5,200 ha). Rainfed wetland and other types of wetland are majority for non-irrigated wetland on the whole. Used dryland includes garden crops (about 64,000 ha), Tegal (continuously used upland) & Kebun (upland tree crops:) with about 131,000 ha, Ladang (not continuously used upland) & Huma (swidden) with about 114,000 ha, large-scale plantations (164,000 ha), fishpond (1,700 ha). Unused dryland includes grassland (4,800 ha), swamps (83,000 ha), fallow land (213,000 ha), wooded land (80,000 ha). The table shows dryland is dominant in Lampung Utara, and the area of used dryland is slightly more than unused dryland.

Table 5.1.1 Land Use in Kabupaten Lampung Utara

Kecamatan	(unit: ha)									
	wetland				dryland				total	
	irrigated wetland	non-irrigated wetland	total wetland	used dryland	unused dryland	national forest	others	total dryland	total land	
Bukit Kemuning	262	466	728	12,165	1,791	7,307	2,813	24,076	24,804	
Kota Bumi	340	185	525	18,796	14,098	0	433	33,327	33,852	
Sungkai Selatan	373	0	373	30,220	2,810	10,000	600	43,630	44,003	
Kasui	126	114	240	16,331	9,658	8,012	1,297	35,498	35,738	
Blambangan Umpu	204	362	566	50,183	29,050	17,742	32,688	129,663	130,229	
Pakuon Ratu	0	2,741	2,741	21,893	22,472	34,630	47,375	126,370	129,111	
Tl. Bawang Udik	3,386	1,242	4,628	22,169	7,635	0	815	30,619	35,247	
Tl. Bawang Tengah	279	247	526	59,885	17,091	0	926	77,902	78,428	
Menggala	420	2,750	3,170	53,207	129,767	42,704	5,164	230,842	234,012	
Mesuji Lampung	0	1,102	1,102	34,362	129,417	40,283	225,733	429,795	430,897	
Tanjung Raya	485	0	485	16,559	2,127	13,491	508	32,685	33,170	
Abung Timur	4,590	257	4,847	14,657	181	33	1,780	16,651	21,498	
Abung Barat	280	157	437	27,900	3,100	5,800	1,854	38,654	39,091	
Abung Selatan	935	437	1,372	30,038	3,964	0	7,589	41,591	42,963	
Sungkai Utara	110	85	195	22,423	0	6,730	3,834	32,987	33,182	
Banjit	2,569	836	3,405	10,184	4,808	14,469	294	29,755	33,160	
Baradatu	418	317	735	15,567	2,242	0	8,181	25,990	26,725	
Bahuga	0	3,259	3,259	16,933	415	2,082	14,511	33,941	37,200	
total	14,777	14,557	29,334	473,672	380,626	203,283	356,395	1,413,976	1,443,310	

Source and Estimates: Luas Lahan Menurut Penggunaannya di Propinsi Lampung 1990, Kabupaten Statistic Office, Lampung

5.1.2 Socio-Economic Conditions

(1) Administration

As of 1991, Kabupaten Lampung Barat has become an independent Kabupaten. Currently Kabupaten Lampung Utara consists of 18 kecamatan. Their names, number and desas and kelurahans areas are set out in Table 5.1.2. The number of kelurahans is only 13, indicating rural areas are dominant in Lampung Utara.

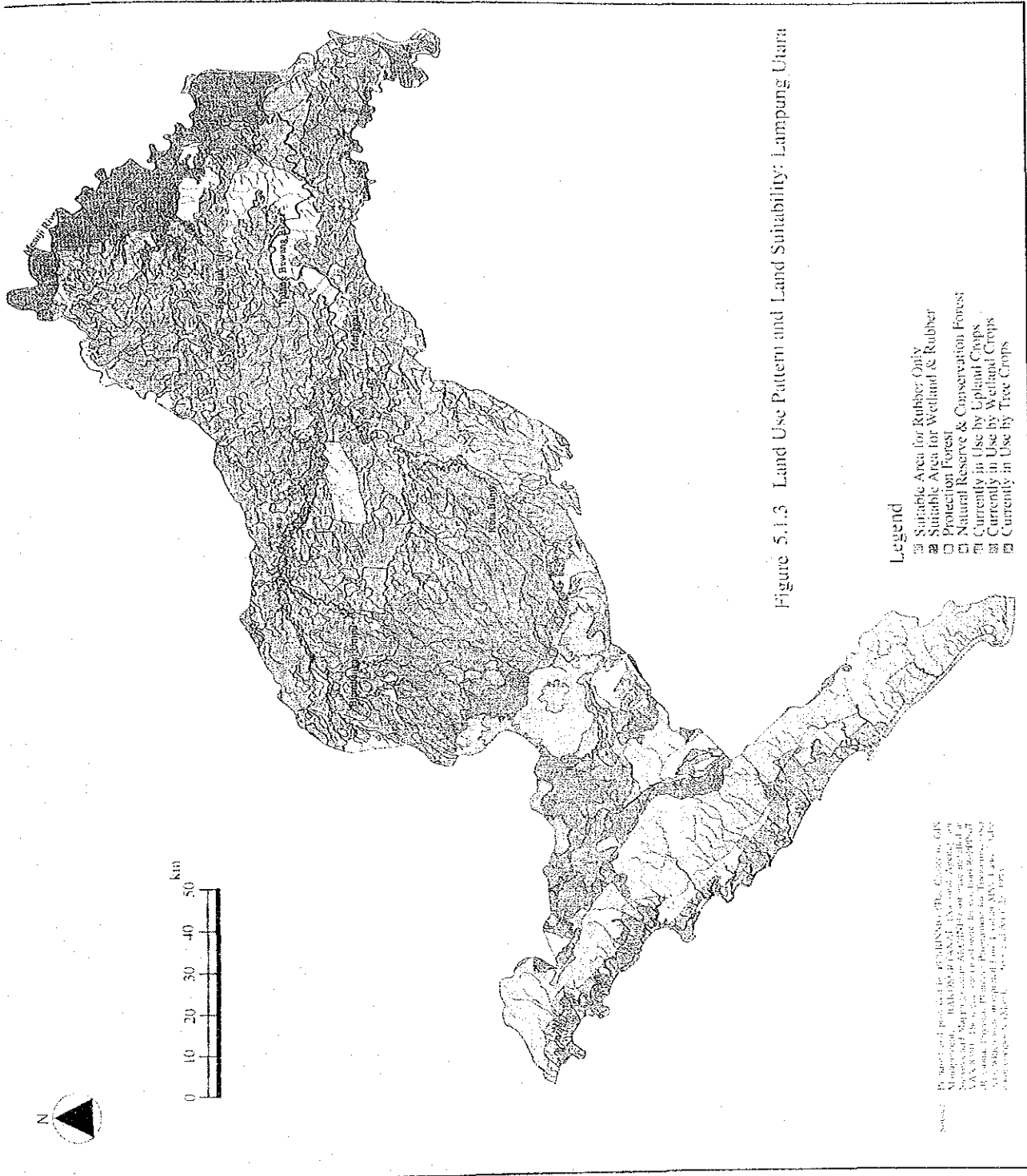


Figure 5.1.3 Land Use Pattern and Land Suitability: Lampung, Utara

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

Prepared and published by PT. BINA NUSANTARA (P.T.) for GIS Management, BAKOSURTANAL, Directorate of National Mapping and Mapping Administration, Jakarta, Indonesia. The work is a part of the project for the development of a National Geospatial Information System (NGIS) for the Indonesian Archipelago, funded by the Government of the United States of America, under the leadership of the USAID/PT. BINA NUSANTARA, Inc. (1997-2000).

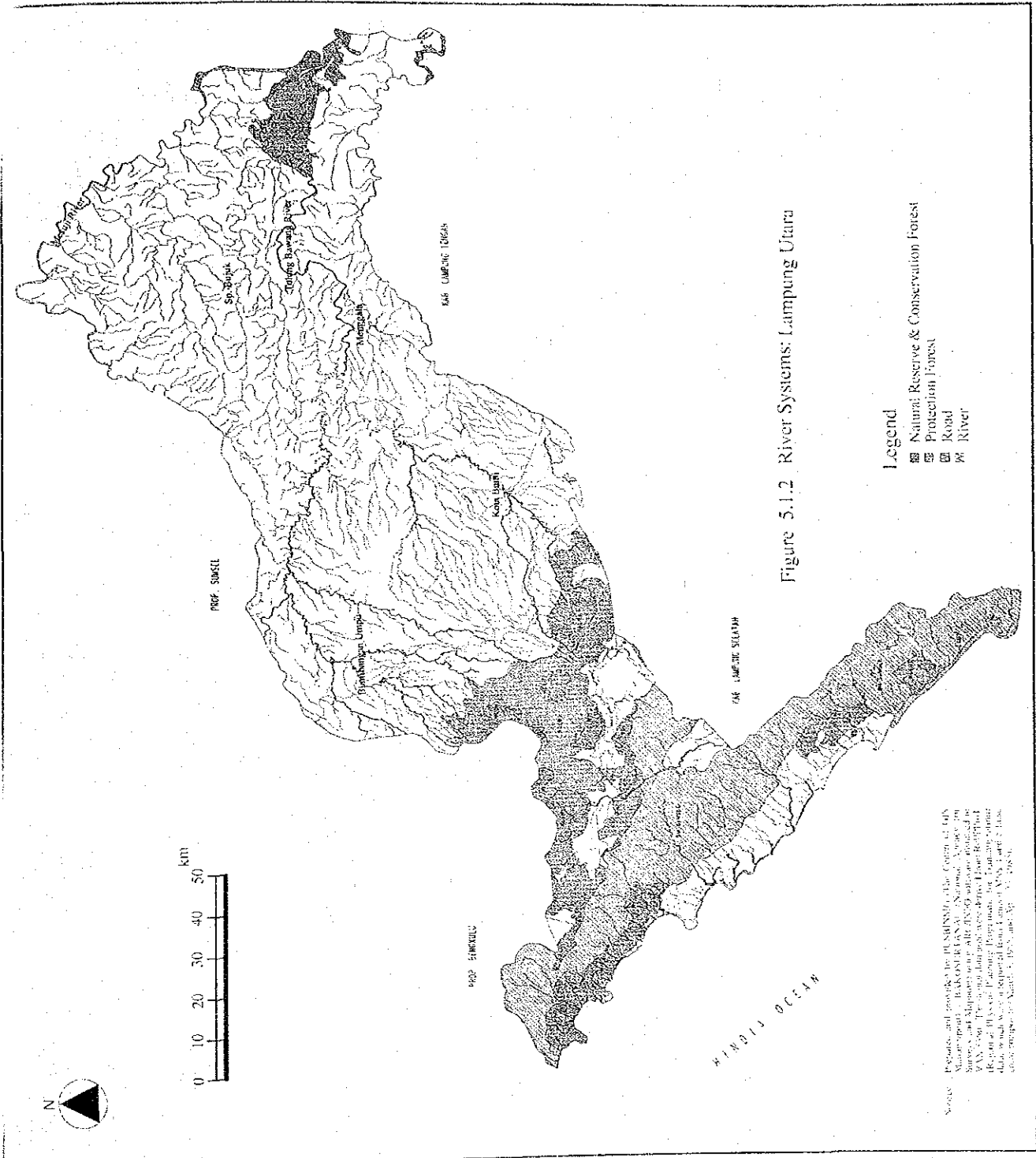


Figure 5.1.2 River Systems: Lampung Utara

Table 5.1.2 Administration of Kabupaten Lampung Utara

Kecamatan	Capital	No. of Desas	No. of Kelurahan	Area (km ²)	Proportion (%)
Bukit Kemuning	Bukit Kemuning	15	1	248.84	1.7
Kota Bumi	Kota Bumi	26	12	338.52	2.3
Sungkai Selatan	Ketapang	42	-	440.03	3.0
Kasui	Kasui	25	-	357.38	2.4
Blambangan Umpu	Blambangan Umpu	45	-	1,302.29	8.8
Pakuon Ratu	Pakuon Ratu	41	-	1,291.11	8.7
Tl. Bawang Udik	Karta	14	-	587.59	4.0
Tl. Bawang Tengah	Panaragan	38	-	784.28	5.3
Menggala	Menggala	64	-	2,340.12	15.8
Mesuji Lampung	Si. Pematang	45	-	4,308.97	29.1
Tanjung Raya	Tanjung Raya	17	-	331.70	2.2
Abung timur	Bumi Agung	21	-	214.98	1.5
Abung Barat	Ogan Lima	37	-	390.91	2.6
Abung Selatan	Kalibalangan	15	-	543.72	3.7
Sungkai Utara	Negara Ratu	24	-	331.82	2.2
Banjit	Banjit	20	-	331.60	2.2
Baradatu	Baradatu	38	-	267.25	1.8
Bahuga	Buni Harjo	22	-	372.00	2.5
total		549	13	14,783.11	100.0

Source: Lampung Utara Dalam Angka 1990-91, Kabupaten Statistic Office

(2) Demographic Condition

Demographic conditions of Lampung Utara are shown in Table 5.1.3. In 1990, total population was about 1,346,000 of which males comprise about 693,000 and females about 653,000. According to 1990 Census, population growth from 1980 to 1990 in Lampung Utara including the current Lampung Barat was 6.42% which is the highest in Lampung Province. This is mainly because of local transmigration from other kabupatens to Lampung Utara especially Kecamatan Menggala and Mesuji Lampung.

Table 5.1.3 Demographic Situation of Kabupaten Lampung Utara

Kecamatan	population 1990	density (No./km ²)	No. of household	No. per household
Bukit Kemuning	45,345	183	9,029	5.0
Kota Bumi	131,475	388	25,225	5.2
Sungkai Selatan	72,571	165	15,379	4.7
Kasui	52,354	146	12,113	4.3
Blambangan Umpu	86,484	66	18,479	4.7
Pakuon Ratu	77,484	60	17,414	4.4
Tl. Bawang Udik	57,708	98	12,328	4.7
Tl. Bawang Tengah	151,526	193	32,241	4.6
Menggala	177,871	76	38,696	4.6
Mesuji Lampung	99,978	23	23,217	4.3
Tanjung Raya	26,303	79	5,707	4.6
Abung Timur	56,378	262	11,746	4.8
Abung Barat	53,953	138	11,451	4.7
Abung Selatan	69,708	128	14,092	4.9
Sungkai Utara	50,783	153	10,513	4.8
Banjit	33,939	102	7,143	4.7
Baradatu	50,612	189	10,935	4.6
Bahuga	51,496	138	10,936	4.7
total	1,345,968	91	286,644	4.7

Source: Lampung Utara Dalam Angka 1990-91, Kabupaten Statistic Office

Whereas prior to 1971 most of Lampung Utara was a zone of out-migration, from 1971 immigration steadily increased. Most of Northern Lampung Utara experienced immigration at over 4% per annum during the 1980s (both Translok and spontaneous), which represents a major demographic shift.

The number of households is about 287,000 with the average family member of 4.7 persons. Population density is the 91/km², which is the lowest in Lampung province. As for urban and rural population, the total functional urban population defined by BPS was only about 52,000 in Kota Bumi and Bukit Kemuning. This is consistent with the number of kelurahans in Lampung Utara and these show that most parts of Lampung Utara are rural.

Lampung Utara has received transmigrants since 1959. National transmigration finished in 1978/79. Since then transmigration has been all local transmigration. The number of transmigrants from 1959 to 1992/93 will amount to 69,025 households. The number of transmigrants have increased especially since 1980 receiving more than 200,000 people during the time. Transmigration will continue up to 1997/98 receiving another about 7,000 households in 20,000 ha land in Kecamatan Mesuji Lampung and Menggala. Since the early 1980s, Kecamatans Mesuji Lampung and Menggala have been major receiving areas followed by Kecamatans Blambangan Umpu and Pakuon Ratu. During the period of national transmigration, Way Abung was the biggest receiving area.

(3) Economic Condition

Lampung Utara is a predominantly agricultural kabupaten. The kabupaten GDP at 1983 prices, percentage distribution and GDP growth rate during 1983 and 1989 are set out in Table 5.1.4. This includes Lampung Barat. As the table shows, agriculture is dominant contributing more than 65% in gross domestic product, of which foodcrops and estates contribute about 57%. Trade, hotels and restaurants follows agriculture with the ratio of about 13%. The growth rate overall was a high 13.2%. Banking and Financing, Utilities, and agriculture sector are the fastest growing sectors.

Table 5.1.4 Kabupaten GDP of 1983 constant prices and its percentage distribution in 1989

Origin	1983 million Rp.	1989 million Rp.	ratio to total GDP in 1989	growth rate(%)
Agriculture	105,907	253,093	65.5	15.6
(foodcrops & estate	84,381	219,687	56.8	17.3)
(forestry	2,684	3,516	1.0	4.6)
(livestock	13,747	19,710	5.1	6.2)
(fisheries	5,095	10,180	2.6	12.2)
Mining and Quarrying	226	404	0.1	10.2
Manufacturing	8781	17,520	4.5	12.2
Utilities	261	740	0.2	19.0
Construction	6,143	7,685	2.0	3.8
Trade, Hotel & Restaurant	27,497	48,826	12.6	10.0
Transportation & Communication	9,688	14,215	3.7	6.6
Banking & Financing	697	2,108	0.5	20.3
Service	1,861	3,599	0.9	11.6
Others	22,514	38,458	9.9	9.3
Total	183,616	386,649	* 100.0	13.2

Source and Estimate: Lampung Utara Dalam Angka 1990-91, Kabupaten Statistic Office

* The sum is not 100 owing to round up.

1) Agriculture

As shown in Tables 5.1.5, 5.1.6, 5.1.7, 5.1.8, in Lampung Utara, palawija is dominant in terms of the planted area, followed by dryland rice and wetland rice field, and

coconuts. Recently large sugarcane plantation is being developed amounting to 120,000 ha. Regarding the area, palawija crops are produced mainly in Kecamatan Menggala, Mesuji Lampung, Talang Bawang Tengah, and Pakuon Ratu. Menggala is the biggest producing area for cassava and sugarcane, Mesuji Lampung is the second biggest area for cassava. For coffee and pepper, western parts are major producing areas, with Abung Barat the biggest for pepper and Blambangan Umpu the biggest for coffee in terms of production. For wetland paddy, Kecamatan Abung Timur which has irrigation from Way Rarem is the biggest producer, followed by Talang Bawang Udik, while Kecamatan Menggala and Mesuji Lampung are the big producing areas for dryland rice.

Table 5.1.5 Planted Area and Production of Palawija Crops

Kecamatan	cassava			corn			soybean		
	area (ha)	produc- tion(ton)	yields vity(t/ha)	area (ha)	produc- tion(ton)	yields vity(t/ha)	area (ha)	produc- tion(ton)	yields vity(t/ha)
Bukit Kemuning	32	604	18.9	45	131	2.9	-	-	-
Kota Bumi	1288	31229	24.2	1481	5610	3.8	-	-	-
Sungkai Selatan	1080	22739	21.1	1730	4924	2.8	418	462	1.1
Kasui	339	6742	19.9	389	1148	3.0	220	225	1.0
Blambangan Umpu	442	11065	25.0	298	1145	3.8	2559	2981	1.2
Pakuon Ratu	3318	82310	24.8	7470	28976	3.9	15635	18418	1.2
Tl. Bawang Udik	3180	72889	22.9	3128	11924	3.8	278	331	1.2
Tl. Bawang Tengah	5275	138754	26.3	7535	30517	4.1	18214	23405	1.3
Menggala	12073	326034	27.0	12134	43634	3.6	15325	19463	1.3
Mesuji Lampung	9920	222922	22.5	5021	18603	3.7	14070	18260	1.3
Tanjung Raya	59	725	12.3	151	541	3.6	12	15	1.3
Abung timur	1467	32827	22.4	1480	5474	3.7	255	287	1.1
Abung Barat	259	2841	11.0	387	1438	3.7	30	31	1.0
Abung Selatan	3307	83455	25.2	7645	29677	3.9	148	196	1.3
Sungkai Utara	1372	29189	21.3	1554	5932	3.8	2686	2957	1.1
Banjit	60	1430	23.8	128	481	3.8	12	12	1.0
Baradatu	480	11047	23.0	585	2255	3.9	24	26	1.1
Bahuga	5372	116395	21.7	1501	5479	3.7	12280	16750	1.4
total	49323	1193197	24.2	52662	197889	3.8	82166	103819	1.3

Source and Estimation: Lampung Utara Dalam Angka 1990-91, Kabupaten Statistic Office

Table 5.1.6 Planted Areas and Production of Estate Crops by small holders

Kecamatan	rubber			coffee			pepper		
	area (ha)	produc- tion(ton)	yields (ton/ha)	area (ha)	produc- tion(ton)	yields (ton/ha)	area (ha)	produc- tion(ton)	yields (ton/ha)
Bukit Kemuning	170	100	0.6	2768	1950	0.7	2550	900	0.4
Kota Bumi	630	506	0.8	1406	800	0.6	2775	1861	0.7
Sungkai Selatan	575	380	0.7	1230	700	0.6	2420	1500	0.6
Kasui	230	150	0.7	3408	2256	0.7	2900	1990	0.7
Blambangan Umpu	2885	1000	0.3	3218	2861	0.9	3700	2350	0.6
Pakuon Ratu	530	200	0.4	262	31	0.1	17	5	0.3
Tl. Bawang Udik	675	300	0.4	240	10	0.0	50	15	0.3
Tl. Bawang Tengah	1010	600	0.6	230	15	0.1	-	-	-
Menggala	824	300	0.4	510	175	0.3	-	-	-
Mesuji Lampung	294	150	0.5	233	20	0.1	-	-	-
Tanjung Raya	125	80	0.6	3085	2350	0.8	1000	670	0.7
Abung timur	1060	430	0.4	750	348	0.5	1023	315	0.3
Abung Barat	395	170	0.4	3321	2700	0.8	5800	3800	0.7
Abung Selatan	2705	1825	0.7	1197	550	0.5	865	500	0.6
Sungkai Utara	1473	1025	0.7	775	375	0.5	1676	1000	0.6
Banjit	300	225	0.8	1157	930	0.8	1651	1110	0.7
Baradatu	735	450	0.6	889	400	0.4	3705	2215	0.6
Bahuga	25	15	0.6	560	250	0.4	13	6	0.5
total	14637	7909	0.5	25249	16721	0.7	30145	18237	0.6

Source and Estimation: Lampung Utara Dalam Angka 1990-91, Kabupaten Statistic Office

Table 5.1.7 Planted Area and Production of Estate Crops by small holders

Kecamatan	clove			coconut		
	area (ha)	produc- tion(ton)	yields (ton/ha)	area (ha)	produc- tion(ton)	yields (ton/ha)
Bukit Kemuning	430	18	0.04	600	375	0.6
Kota Bumi	526	21	0.04	3160	1435	0.5
Sungkai Selatan	332	12	0.04	2855	1100	0.4
Kasui	415	15	0.04	460	418	0.9
Blambangan Umpu	415	15	0.04	1775	575	0.3
Pakuon Ratu	92	3	0.03	475	147	0.3
Tl. Bawang Udik	142	4	0.03	1105	498	0.5
Tl. Bawang Tengah	110	4	0.04	2416	996	0.4
Menggala	112	5	0.04	1982	547	0.3
Mesuji Lampung	166	5	0.03	772	223	0.3
Tanjung Raya	596	24	0.04	455	307	0.7
Abung timur	340	13	0.04	4042	1690	0.4
Abung Barat	400	12	0.03	865	188	0.2
Abung Selatan	379	15	0.04	3623	1480	0.4
Sungkai Utara	222	6	0.03	3351	1275	0.4
Banjit	200	8	0.04	1395	912	0.6
Baradatu	422	15	0.04	3710	1828	0.5
Bahuga	117	2	0.02	595	460	0.8
total	5416	197	0.04	33636	14454	0.4

Source: Lampung Utara Dalam Angka 1990-91, Kabupaten Statistic Office

Table 5.1.8 Area and Production of Rice

Kecamatan	Area (ha)	Wetland		Area (ha)	Dryland	
		Production (ton)	Yields (ton/ha)		Production (ton)	Yields (ton/ha)
Bukit Kemuning	572	2,328	4.1	405	1,118	2.8
Kota Bumi	401	2,365	5.9	1,070	3,546	3.3
Sungkai Selatan	520	1,901	3.7	1,957	5,104	2.6
Kasui	175	627	3.6	1,189	3,047	2.6
Blambangan Umpu	507	1,564	3.1	1,351	3,810	2.8
Pakuon Ratu	475	1,781	3.7	4,709	12,987	2.8
Tl. Bawang Udik	5,331	26,708	5.0	1,210	3,402	2.8
Tl. Bawang Tengah	909	3,656	4.0	4,503	13,104	2.9
Menggala	4,708	18,587	3.9	5,311	15,136	2.8
Mesuji Lampung	722	2,661	3.7	6,202	17,049	2.7
Tanjung Raya	813	3,435	4.2	993	2,552	2.6
Abung Timur	6,712	38,918	5.8	1,382	3,441	2.5
Abung Barat	718	2,784	3.9	1,305	3,396	2.6
Abung Selatan	1,233	6,812	5.5	5,170	14,102	2.7
Sungkai Utara	169	621	3.7	1,160	3,383	2.9
Banjit	4,424	24,867	5.6	1,764	4,823	2.7
Baradatu	819	3,699	4.5	1,565	4,445	2.8
Bahuga	5,985	28,997	4.8	1,613	4,812	3.0
total	35,193	172,311	4.9	42,859	119,257	2.8

Source and Estimate: Lampung Utara Dalam Angka 1990-91, Kabupaten Statistic Office

Table 5.1.9 shows the area and production of main tree crops by large estates. Since this data are in 1991 and not disaggregated by each kecamatan, it includes Kabupaten Lampung Barat. It seems that Lampung Barat does not produce rubber. Its main production is coffee, coconuts and coffee. Therefore when we refer the data in Table 5.1.9, we should consider the contribution of Lampung Barat.

Table 5.1.9 Area and Production of Estate Crops by Large Scale Plantation

Item	area (ha)	production (ton)	productivity (ton/ha)
rubber	10,400	4,193	0.4
clove	310	200	0.6
hybrid coconuts	1,538	865	0.6
sugarcane	18,000	1,350,000	75

Source and Estimation: Lampung Utara Dalam Angka 1990-91, Kabupaten Statistic Office

2) Livestock

Livestock is a relatively large industry with gross production Rp. 29,978 million including Lampung Barat in 1989. The ratio of livestock production to the kabupaten's GDP was 5.1% at 1983 constant prices. For excluding production of Lampung Barat, egg production was 24,245 quintal (100 lb. or 100 kg), poultry 44,047 quintal, cow 7,768 quintal, sheep 13,398 quintal, and total production including buffalo and pig was 68,138 quintal.

3) Fisheries

Gross fisheries production in 1989 amounted to Rp.19,139 million including Lampung Barat, which consists 2.6% of the kabupaten's GDP at 1983 constant price. In 1991, Kabupaten Lampung Utara produced about 15,106 tons of fish excluding the west coast marine fish catch in Lampung Barat. Of those marine fisheries production was about 4,980 tons, inland fisheries production was about 5,968 tons and aquaculture production was about 4,158 tons. At present 16,000 ha of shrimp culture is under development in local transmigration areas along the eastern coast.

4) Industry

Industry especially manufacturing is very limited in the economy of Lampung Utara. Its gross domestic production was 28,769 million in 1989, occupying only 4.5% of the total production. Industry is mostly related to agriculture. There are cassava factories, sugar factories, sawmill factories located in Kecamatan Menggala, crumb rubber processing and drinking factory.

5.1.3 Infrastructure

(1) Transportation

The transportation system of Kabupaten Lampung Utara basically relies on the road network while there are railway system mainly for transporting coal from Bukit Asam to Tarahan of Lampung Selatan, and also there is incomplete waterway transportation system along rivers. The road network consists of Trans-Sumatra Highway and Lintas Timur (eastern highway) which is currently improvement. The road network including bridges of eastern part of Lintas Timur (Kecamatan Menggala and Mesuji Lampung) and upper central parts of the kabupaten (Kecamatan Pakuon Ratu, Tulang Bawang Udik, Tulang Bawang Tengah) are bad and many can be considered isolated. For Kecamatan Menggala and Mesuji Lampung, there are a few unpaved transmigration roads which require upgrading.

(2) Electricity

PLN currently supplies electricity to 10 kecamatans out of 18 kecamatans. The numbers of unit and consumer household are shown in Table 5.1.10. Kecamatan Bukit Kemuning has a high electrification ratio about 33%. Beside the electricity supplied by PLN, some desas have their own motor for electricity.

Table 5.1.10 Situation of Rural Electrification

Kecamatan	No. of Unit	No. of Consumer Household	Electrification Ratio (%)
Bukit Kemuning	9	2,971	32.9
Abung Barat	3	597	5.2
Tanjung Raja	5	553	9.7
Baradatu	5	570	5.2
Blambangan Umpu	2	341	1.8
Tulang Bawang Tengah	2	183	0.6
Tulang Bawang Udik	4	882	7.2
Abung Timur	5	208	1.8
Abung Selatan	3	642	4.6
Menggala	9	1,440	3.7

Source: Bidang Migas, Listik dan Energi Baru, Ministry of Mines & Energy, Palembang

(3) Water Supply

At present there are water supply enterprises in three cities, Kota Bumi, Menggala and Blambangan Umpu, while majority of people depend on wells. The water use of the population is shown in Table 5.1.11.

Table 5.1.11 Number of People and Service Ratio of Water Supply in Major Cities

City	population	well	water enterprise	river
Kota Bumi	77,267	75,233 (97.4)	2,034 (2.6)	- (-)
Menggala	23,373	22,000 (94.2)	839 (3.6)	480 (2.2)
Blambangan Umpu	7,749	7,500 (96.8)	180 (2.4)	69 (1.8)

Source: Inception Report for SCUDP II, 1992

(4) Sanitation

As for sanitation, many people in cities have some kinds of toilet, WC with septic tank or pit latrine. WC with septic tank are more hygienic. The present situation of sanitation is set out in Table 5.1.12. Those cities have high coverages of toilets with a septic tank.

Table 5.1.12 Sanitation Situation in Major Cities

City	population	WC septic tank	pit latrine	river
Kota Bumi	77,267	77,087 (99.8)	112 (0.1)	68 (0.0)
Menggala	23,373	22,868 (97.8)	85 (0.3)	420 (1.8)
Bukit Kemuning	10,971	10,816 (98.6)	78 (0.7)	77 (0.7)
Blambangan Umpu	7,749	7,600 (98.1)	42 (0.5)	107 (1.4)

Source: Inception Report for SCUDP II, 1992

5.1.4 Social Development

(1) Education

The numbers of national and private schools are set out in Table 5.1.13. Those numbers are in 1990/1991 and include Lampung Barat. There are 1,210 elementary schools, of which the majority of schools are national, while private schools are dominant for high school and private junior high schools are also more than national schools, although the numbers of students are more in national schools. In several kecamatans there are no national

high schools but only private high schools. This implies that it might cost is high if they continue studying in upper school, working against the poor people. The quality of private schools is unclear, the ratios of students to teachers is lower than national ones especially for junior high school and senior high school, however the ratios of students to classrooms are higher than national ones except senior high school. On the other hand, the dramatic decrease of the students number in junior high school indicates that many people finish only elementary school.

Table 5.1.13 The Numbers of Schools, Students, and Teachers by School Type

Type of school	National			Private		
	elementary	junior high	senior high	elementary	junior high	senior high
No. of school	1,181	71	19	29	173	141
No. of students	257,445	25,476	8,043	3,591	12,099	4,423
No. of class rooms	7,232	510	160	67	205	200
students/classes(%)	35.6	50.0	50.3	53.6	59.0	22.1
No. of teachers	7,204	1,192	336	181	1,295	1,292
students/teachers	35.7	21.4	23.9	19.8	9.3	3.4

Source: Lampung Utara Dalam Angka 1990-91, Kabupaten Statistic Office

The enrollment ratio by gender is not clear because of data limitations. As shown in Table 5.1.14, comparing the absolute student numbers among boys and girls, there are more male students than female counterpart for elementary school (SD), junior high school (SMP), senior high school (SMA). This indicates female enrollment ratio is lower than male enrollment ratio.

Table 5.1.14 The Numbers of Students by gender

	total no.	male	female	difference between gender
no. of students of SD	261,046	132,849	128,197	4,652
no. of school age (6 to 11) children	275,780	-	-	-
enrollment ratio (%)	94.7	-	-	-
no. of students of SMP	37,575	20,256	17,319	2,937
no. of students of SMA	12,376	6,632	5,744	888

Source: Lampung Utara Dalam Angka 1990-91, Kabupaten Statistic Office

(2) Health

Lampung Utara and Lampung Barat together amount to 27.5% of the population of Lampung Province (1990 census). However, they had only 7% of provincial hospital services and 10% of maternity clinics (1990). In contrast Puskesmas levels of service are relatively good, as these 2 Kabupatens have 27% of Puskesmas Induk (Central Puskesmas) and 34% of Puskesmas Pembantu (secondary Puskesmas) services. The main health problems reported at Kota Bumi hospital (1990/91) are, in order of magnitude, amoebic dysentery, tuberculosis and respiratory diseases, typhus, malaria tropica, blood circulation problems, anaemia, tetanus and burns.

(3) Gender

Gender disaggregated data at Kabupaten level are few. For Lampung Province as a whole women are lagging behind on several key social indicators. 20% of women in Lampung (1985) were illiterate compared to 9% of men. 56% of rural women had good nutritional status compared to 64% of rural men (1987). 32% of women earned less than

Rp.25,000 per month in compared in 11% of men (1986). Nonetheless, there were some women household heads and Kepala Desa.

(4) Cultural Groups

Pre-20th century population groups were sparsely distributed, generally along river banks. Now, the original inhabitants constitute a majority in only 3 kecamatans now in Lampung Barat: Pesisir Utara, Pesisir Tengah and Pesisir Selatan. The ethnic groups are described below.

Abung are located in the areas of Gunung Sugih and Kota Bumi. There are 9 Abung groups. Abung were influenced by the Sultanate of Banten to form a social hierarchy, headed by a Bandar, who represented the Sultan. Status rankings are represented in the papadon initiation ceremonies. Abung were organized around exogamous patrilines headed by a penyimbang. Villages traditionally had a central adat house with seasonal working settlements (umbulan), which moved according to the swidden cycle of rice and pepper cultivation. Menggala-Tulang Bawang are located around Menggala and towards the East Coast. The two groups, inhabiting the river banks of the Way Tulang Bawang, merged via trade and intermarriage. Adat was patrilineal and patrilocal, but is shifting towards the Islamic inheritance system and reduced brideprice. Splinter groups sought out new lands to open up during this century, for example in Kecamatan Tanjung Raja, but these communities maintain close links with the parent villages, especially in adat matters.

Semendo were spurred on by their matrilineal adat in which the oldest girl (tunggu tubang) receives most inherited land, younger siblings moved south from their homeland in Muara Enim from 1876 onwards. They preferred pioneer agriculture on fertile upland soils of the Barisan range, settling in Kasui and elsewhere to farm dry rice and coffee, with Javanese laborers. Ogan people from South Sumatra moved south from 1927 to 1938 to settle in Ogan Lima and Bukit Kemuning, again moving south to Kota Bumi and Abung Selatan from 1950 to 1968. Ogan and Semendo people together account for over 40% of the populations of Kecamatan Kasui, Banjit, Baradatu and Bukit Kemuning. Orang Way Kanan people were originally a Pasisir group. Mesuji people are located along the Mesuji river in low density settlements. Other groups include Javanese, Sundanese and Madurese who now form a significant proportion of the population, following official and spontaneous migration. Chinese, Minangkabau, and Batak are included in the group. Chinese focus on urban areas and established transmigration sites, but not in Translok areas, which are still too new. Many of Minangkabau are working in government and trading in urban centers. Batak work in government service and sometimes as traders, for example in less well established Translok sites.

In religion, the population is predominantly Islamic (97%) with some Christians (2%) and other groups (1%).

5.2 KABUPATEN LAMPUNG UTARA IN PERSPECTIVE

5.2.1 Roles in the Regional/Provincial Development

Kabupaten Lampung Utara has a role to provide agricultural raw materials and food crops as a part of agro-industrial zone which is decided in the region's framework. In broad spatial terms, the eastern parts which are less developed and upper western part are suitable for agro-industry, while the upper center to the west can be developed for producing paddy with irrigation system. The western parts are suitable for relatively high altitude estate crops such as coffee, pepper and clove.

Lampung Utara has had a major role to have received transmigrants and it will continue receiving transmigrants. However, since there will not be enough space for newcomers anymore, they will finish receiving transmigrants in the fiscal year 1997 providing about another 7,000 households in about 20,000 ha until then.

Lampung Utara is expected to be a connecting point of the two big cities, Palembang and Bandar Lampung, not only because of its location but also because of its potential for increasing economic activities in the future. Kabupaten Lampung Utara supplies agricultural raw materials and/or agricultural products to those neighboring areas while it receives industrial products from those areas, thus it can contribute to integrating the region functionally. Also what should be noted is Lampung Utara will produce higher value-added products to meet the demand outside in the future.

5.2.2 Provincial and IDEP Objectives

(1) Provincial objectives

Provincial objectives can be found in Repelita V, showing issues with high priority. Those issues are as follows:

- a) agriculture and irrigation,
- b) infrastructure especially transportation,
- c) industry especially agro-industry,
- d) human resource development,
- e) population problems such as employment, high fertility rate, migration, resettlement, etc.,
- f) rural and urban development,
- g) participatory development,
- h) cooperatives (KUD),
- i) upgrading capability of local government, and
- j) creation of new kabupaten and kecamatan.

Besides those issues, BAPPEDA has supplemented the above issues with the following:

- a) environmental conservation, such issues as protected forests, land degradation, water pollution,
- b) conflicts over land title,
- c) development of manufacturing and services,
- d) agriculture, particularly large-scale estates and smallholder agriculture under the transmigration scheme,
- e) tourism development,
- f) improvement of transportation and other infrastructure
- g) reduction of income disparities,
- h) institutional strengthening, e.g., adjusting government's span of control, improving officers' capability.

(2) IDEP objectives

When setting IDEP objectives, we need to consider both the provincial objectives and potential of Lampung Utara. We think Lampung Utara has a large potential for development in terms of area and resources, however at the same time, we should keep in mind environmental impacts and social impacts, minimizing the negative impacts and maximizing positive effects. Considering those issues, the objectives of Kabupaten Lampung Utara can be set as follows:

- a) Development of potential resources
- b) Sustainable development of swamp areas
- c) Improvement of transportation network
- d) Reduction of disparities in income and social services

In Lampung Utara there is rich potential resources especially in swamp areas. The concrete sectors are agriculture, irrigation, agro-industry, and fisheries. Before development, we need an environmental study to consider conservation of swamp areas to maintain and enhance its value by appropriate management as implicated in the first objective. And then we can start planning development of potential resources. With regard to the first objective, we should match resource development strategy with appropriate places. The third objective is an important premise for development, at the same time this can open up isolated areas and give people in those remote areas road access. The fourth objective can be achieved in part by development strategy indicated in the first three objectives above, however, by themselves these are not enough to reach poor people. We need to not only increase production and economic activities but also consider the impact on people and take appropriate measures to spread the benefits of development and/or take special measures to reach poorer and disadvantaged people.

5.3 DEVELOPMENT STRATEGY FOR KABUPATEN LAMPUNG UTARA

5.3.1 Main Theme of Kabupaten Lampung Utara

Kabupaten Lampung Utara is a less developed kabupaten especially the eastern and upper western parts, although it has received many transmigrants. The main theme for this kabupaten is "development through maximizing local resources with due consideration for local people and the natural environment." Concretely this includes development of potential resources and areas, development of transportation network which also means development of isolated areas for people living in those areas, while considering social and environmental impacts. Development should contribute to bettering the social and economic condition of local people while improving their capability to sustain development. It is necessary to consider how the positive effects on people can be maximized as well as to consider the negative impacts on people.

5.3.2 Strategy

It is important to develop the potential appropriately according to the resources and area. In Kabupaten Lampung Utara, strategic development efforts should be placed on agriculture development including agricultural raw materials, agro-industry with higher value-added, and irrigation. Since the eastern parts of Lampung Utara have enough room for development, they can be developed extensively in a sustainable manner. They have potential for estate crops by both small holders and large scale plantations, irrigation, livestock, fishery and agro-industry. This area should be given higher priority for development. The upper western parts along Tulang Bawang River has the potential for irrigation for paddy fields, while western parts around Pakuon Ratu and Blambangan Umpu are good for estate crops. In the hilly areas of the west conservation measures such as agro-forestry should be considered.

Regarding development of swamp areas, there are some research on swamp development in other areas. The resesarch by the World Bank deals with coastal swamp development, especially in Riau, Jambi and South Sumatra. Agency for Agricultural Research and Development (AARD) covers research on fisheries in swamp areas. It has a research sub-station in Mariana in Palembang. FAO did a feasibility study on tree crops development in swamp areas for South Sumatra in 1990. Bogor Research Institute for Food Crops of AARD is doing several researches on food crop development and farming system development in swamp areas. Findgins of those researches can be utilized for swamp area development in Lampung Utara.

To achieve effective and sustainable development for people, people's participation in the process of development is important. It is the learning process for people and is expected to mobilize their incentives and responsibility. We include a pilot project of participatory rural development, whose approach can be replicated for local level development in other areas.

5.4 LAMPUNG UTARA IDEP

5.4.1 Identified Subprograms and Their Logical Relationship

Taking account of the IDEP objectives, main theme and development strategy, Lampung Utara IDEP consist of 9 subprograms: agriculture development, agro-industry development, irrigation development, transportation, environment, fishery, participatory rural development, urban development, and institutional support. The logical relations between Region's objectives, IDEP's objectives and subprograms are depicted in Figure 5.4.1. Environmental project, sustainable development of swamp areas, should be done before development effort. It is to achieve the environmentally sustainable development in the swamp areas and it includes research component on what kind of products, that is, food crops, tree crops, livestock, fisheries, and so on are suitable for the swamp areas. Projects of agriculture, agro-industry, irrigation, and fisheries will contribute to developing potential resources, which is the first objective of Kabupaten Lampung Utara. Transportation projects are to support those development activities and also it will contribute to opening up isolated areas. Participatory rural development is to achieve bottom-up development through farmers' participation. This project is a pilot project and it is expected that the projects of the same approach will be replicated in other areas later. Urban development projects are to improve urban infrastructure in Kota Bumi and Menggala. Those cities are important since the former is the kabupaten capital and the latter is expected to be strategically important after the eastern highway completes. Urban development will contribute to stimulating economic activities through aggregating industry, services, information, infrastructure, and so on. A certain degree of concentration has multiplier and spread effects. Urban development includes an energy project to secure the stable supply of regional energy. Institutional support project is to implement those sub-programs effectively.

(1) Agriculture Development

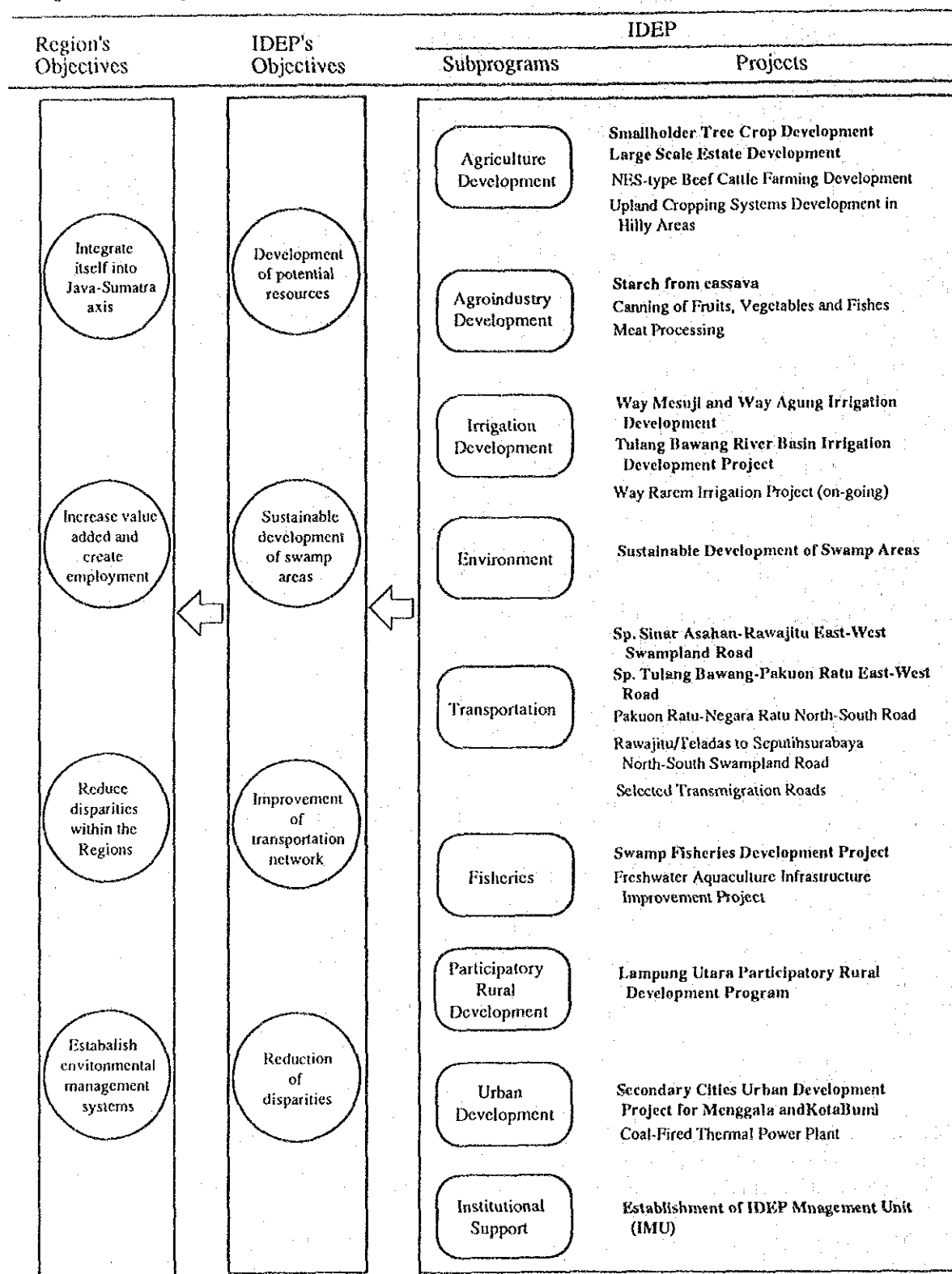
Lampung Utara has a big potential for agriculture in terms of space and resources. The subprogram consists of 4 projects (small scale tree crops, large scale estates, livestock development, and agro-forestry development in hilly areas) with the former two as key projects. The aim of this subprogram is to secure land for people and increase their income through PIR or other systems for small scale holder, to increase agricultural production for raw materials for industry through private investment for large scale estates, and to diversify agricultural production through livestock and agro-forestry development. Regarding large scale estates, many companies have got concession and/or developed plantations. Active private estates under concession have amounted to 243,920 ha, of which 120,000 ha is sugarcane plantation owned by one company group in the south of Way Tulang Bawang in Kecamatan Menggala. Out of the remaining areas 123,920 ha, only 15,328 ha has been developed. The locations and areas of large scale estate under concessions are set out in Table 5.4.1.

Besides small scale tree crop development and large estate development, Lampung Utara has a potential for livestock development. This can be done by both small scale farmers and large scale development. For agro-forestry, hilly areas in the west should develop a conservation type development because of the possible soil erosion. Regarding paddy development, we will deal with it in the subprogram of irrigation development.

(2) Agro-industry Development

Since Lampung Utara has a potential for estate crops such as rubber, coconuts, oil palm, and palawija like cassava, it also has a potential for agro-industry utilizing those agricultural raw materials. The aim of the subprogram is to produce higher value-added products for dynamic economic development, to create employment, and to increase the tax base for local government. The basic policy to develop agro-industry is to improve technology

Figure 5.4.1 Objectives, Subprograms and Projects: Lampung Utara IDEP



Note: In bold letters are key projects.

including human resource development through vocational training centers and give the private sector incentives for investment.

Table 5.4.1 The location and Areas of Large Estate under Concession

Kecamatan	coconuts (hybrid)	rubber	oil palm	cocoa	sugarcane	cassava	total
Menggala	8,000	-	-	2,500	120,000	-	130,500
Pakuon Ratu	8,000 (&cocoa)	-	-	6,000	30,000	-	44,000
Mesuji	-	-	34,000	-	-	-	34,000
Blambangan	12,500	-	-	400	-	-	12,900
Umpu	(&cocoa)	-	-	-	-	-	-
Tl. Bawang Tengah	3,500	4,500	-	-	-	-	8,000
Sungai Utara	6,500	-	-	-	-	-	6,500
Sungai Selatan	900	-	-	-	-	-	900
Kota Bumi	3,800	-	-	-	-	-	3,800
Abung Timur	-	-	-	300	-	unknown	300
			(& clove)				
Abung Selatan	-	2,820	-	-	-	-	2,820
Bukit Kemuning	-	200	-	-	-	-	200

Source and Estimate: Dinas Perkebunan, Lampung Province

(3) Irrigation development

Lampung Utara has a huge potential for irrigation development and it will be able to contribute to not only the regional development but for the national rice production. The aim of the irrigation development subprogram is to increase self-sufficiency of staple foods and surplus, increase production and farmers' income. At present The World Bank funds irrigation project under Provincial Irrigated Agricultural Development Project (PIADP). This project includes Way Tul. Mas, Way Umpu, Way Rarem, Way Kulur, and Way Jerinjing. Also there is a feasibility study for irrigation projects along Way Tulang Bawang Basin, which will be conducted by EEC this year. Besides this it is possible to development a potential irrigation scheme along Way Mesuji, which is also selected as a high priority project by EEC. This project will contribute to increasing paddy production and increasing the incomes of farmers currently suffering from the low productivity in the swampy area.

(4) Environment

The aim of this subprogram is to achive environmentally sustainable development. Kabupaten Lampung Utara has swamp areas in the east and hilly areas in the west. Before we start to make a development plan, we need to investigate the location to be conserved and to be developed, and find out an appropriate management for conservation and development for swamp areas to maintain and enhance the value, and an appropriate agro-forestry scheme for hilly areas which is dealt with in agriculture subprogram.

(5) Transportation

The transportation system is less developed and this is major constraints for many parts of Lampung Utara, especially the eastern and central parts north of Kota Bumi. The aim of this subprogram is to open up isolated areas for better access to people and for facilitating increase of economic activity including private investment.

(6) Fisheries

The aim of the subprogram is to increase fish production, to enlarge fishing opportunities, to increase employment opportunities, and to improve incomes and living

conditions in villages. It is possible to develop swamp fisheries especially in Kecamatan Menggala and Tulang Bawang Tengah, and lesser extent in Kecamatan Tulang Bawang Udik, and Mesuji. Another possible project is to improve infrastructure for freshwater aquaculture.

(7) Participatory Rural Development

The aim of the subprogram is to increase incomes and the living standards of farmers by identifying suitable and sustainable agriculture to increase production based on farmers' participation (both men and women) and by giving skill training. This program consists of agricultural research and extension, skill training for women, provision of credit, and improvement of rural infrastructure. The targeted area, Kecamatan Blambangan Umpu, is defined as one of the poorest kecamatan by BANGDES (Directorate General of Rural Development in Ministry of Home Affairs) and the targeted farmers are mainly local transmigrants and the majority have to obtain temporary off-farm employment because they cannot survive only with on-farm income owing to the declining soil fertility. Therefore this subprogram is rural development for poverty alleviation with a participatory approach. This project is a pilot project of participatory development and it is expected that this type of projects will be replicated in other areas later.

(8) Urban Development

Secondary Cities Urban Development Project aims at improving urban infrastructure in Menggala and Kota Bumi so that they can function as strategic cities. Currently the areas surrounding Menggala are growing fast. After the eastern highway improves, Menggala and those surrounding desas are expected to grow faster. Menggala as the capital of Kecamatan Menggala and surrounding desas as a producing and trading centers will become a strategically important urban center. On the other hand, Kota Bumi, the capital of Kabupaten Lampung Utara, requires a long term urban infrastructure plan based on a long term urban master plan. Coal-Fired Thermal Power Plant contributes to securing the stable energy supply and diversifying power source and power generation site.

(9) Institutional Support

This subprogram aims at establishing an effective management unit to manage and coordinate the IDEP called IDEP Management Unit (IMU). Its objectives are 1) to coordinate the central, provincial and local governments, and foreign donor agencies, in implementing IDEP programs; 2) to prepare and update the annual and multiyear IDEP programs; 3) to take budgetary measures and identify fund sources for IDEP; 4) to develop institutional and financial capabilities in the provincial and local governments.

5.4.2 Lampung Utara IDEP: Subprograms and Projects

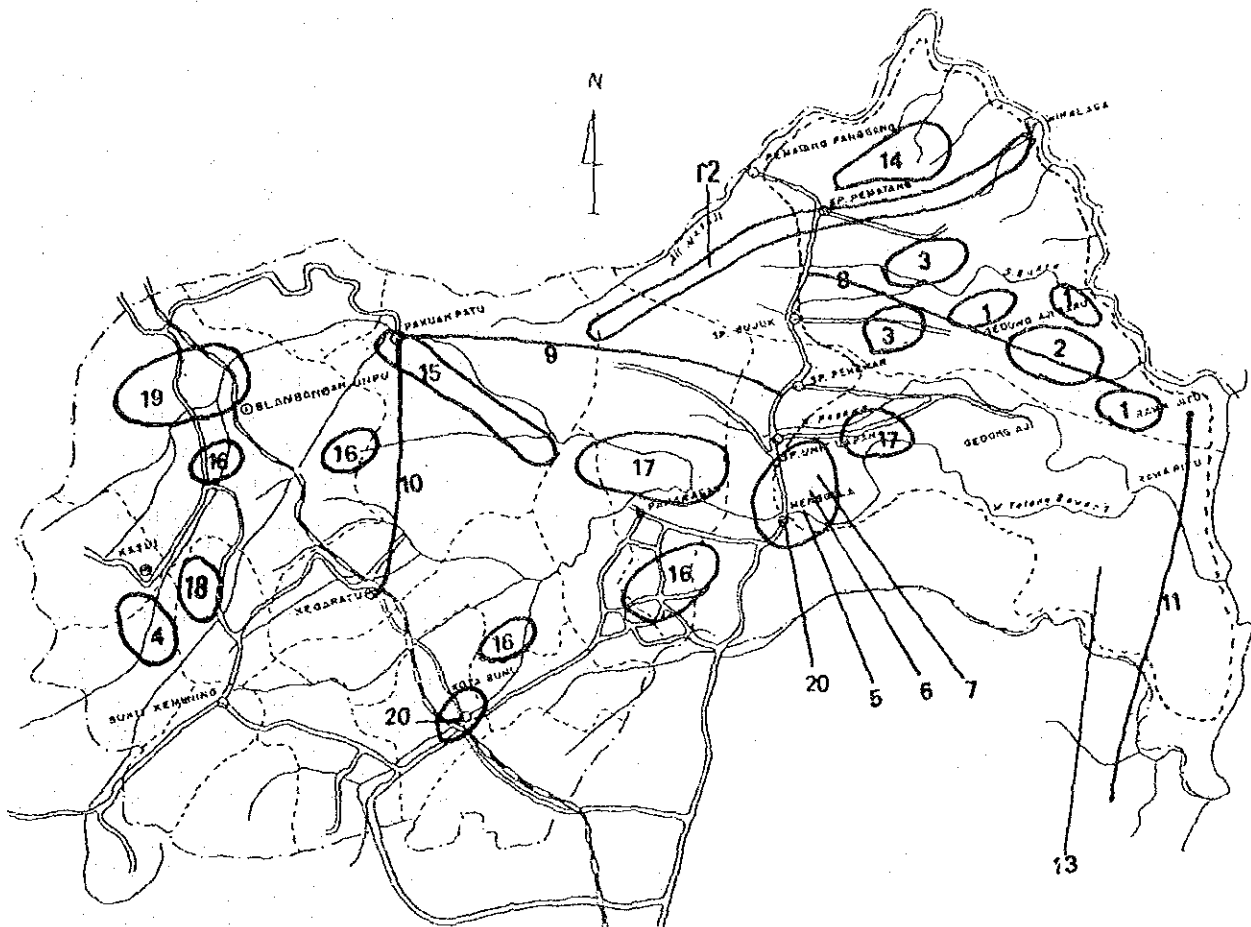
The list of IDEP subprograms and projects are depicted in Figure 5.4.2. It also shows phasing in 20 year term and estimated costs. Figure 5.4.3 shows the image of IDEP in terms of spatial structure.

5.5 DESCRIPTIONS OF KEY PROJECTS

5.5.1 Agriculture Development

Key projects of agriculture development are Development of Small Holder Estate Crops (Code No. A-13) and Large Scale Estate Development (Code No. A-17). The objective of the first key project is to raise the income and productivity of original smallholders and transmigrants. This will be done by financing the planting/re-planting of high yielding varieties, upgrading farming management, and providing technical assistance to smallholders.

The objectives of the second key project are 1) to increase production of estate crops for local and export purpose, and 2) to create employment opportunities since it is labor




1. Smallholder Tree Crop Development
2. Large Scale Estate Development
3. NES-type Beef Cattle Farming Development
4. Upland Cropping Systems Development in Hilly Areas
5. Starch (or modified starch) from Cassava
6. Canning of Fruits, Vegetables and Fishes
7. Meat Processing
8. Sp. Sinar Asahan-Rawajitu East-West Road
9. Pakuon Ratu-Sp. Tulang Bawang East-West Road
10. Pakuon Ratu-Negara Ratu North-South Road
11. Rawajitu/Teladas to Seputihsurabaya Swampland Road
12. Selected Transmigration Roads
13. Integrated and Sustainable Development of Swamp Areas
14. F/S for Way Mesuji and Way Agung Irrigation Development
15. F/S for Tulang Bawang River Irrigation Development
16. Irrigation Project of Way Rarem
17. Swamp Fisheries Development Program
18. Freshwater Aquaculture Infrastructure Improvement Project
19. Participatory Rural Development Program
20. Secondary Cities Urban Development Project and Coal-Fired Thermal Power Plant in Kota Bumi


Figure 5.4.2 Image of Lampung Utara IDEP


Figure 5.4.3 Phasing of IDEP Projects: Lampung Utara 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
Agriculture Development	A-13	Smallholder Tree Crops	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	5.0
	A-17	Large Scale Estate Development	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	85.0
	A-20	NFS-Type Beef Cattle Farming	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	3.0
	A-4	Upland Cropping Systems Development	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	1.5
		Sub-total																				94.5
Agro-industry	C-13	Starch/Modified Starch	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0.2
	C-16	Canning of Fruits, Vegetables and Fishes	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	1.5
	C-12	Meat Processing	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0.2
		Sub-total																				1.9
Irrigation Development	F-35	Way Mesuji and Way Agung Irrigation Development	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	60.0
	F-34	Tulang Bawang River Basin Irrigation	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	196.1
	F-33	Way Rancu Irrigation Project	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	24.0
		Sub-total																				280.1
Transportation	G-73	Sp. Sinar Asahan-Rawajitu Road	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	7.4
	G-71	Pakuan Ratu-Sp. Tulang Bawang Road	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	9.5
	G-72	Pakuan Ratu-Negara Ratu Road	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	4.2
	G-75	Rawajitu/Teladas to Sepuluh Surabaya Road	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	11.0
	G-74	Selected Transmigration and Private Roads	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	7.5
		Sub-total																				39.6
Environment	J-15	Integrated and Sustainable Development of Swamp Areas	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0.5
		Sub-total																				0.5
Fisheries	B-18	Swamp Fishery Development	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	24.5
	B-19,20	Freshwater Aquaculture Infrastructure	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	6.6
		Sub-total																				31.1
Participatory Rural Development	I-27	Participatory Rural Development	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	1.3
		Sub-total																				1.3
Urban Development	I-18	Secondary Cities Urban Development (Kota Bumi, Menggala)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	6.0
	D-22	Coal-Fired Thermal Power Plant	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	151.0
		Sub-total																				157.0
Institutional Support	K-1	IDEP Management Unit	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	1.8
		Sub-total																				1.8
		IDEP Total																				607.8

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.

intensive project. It consists of land development, planting of estate crops, and construction of processing facilities.

5.5.2 Agro-industry Development

The key project of this subprogram is Starch (or modified starch) Production from Cassava Project (Code No. C-13). The objective of this project is to realize higher value-added production. There are already some cassava factories in Lampung Utara and many of them produce starch. This area has potential to produce modified starch for export. This project consists of acquisition of land, building a factory, and operation.

5.5.3 Irrigation

The key project of irrigation development is Way Mesuji Irrigation Development Project (Code No. F-35) which is defined as one of priority projects by EEC but has not been picked up for feasibility study yet. Its location is along Way Mesuji between Sp. Pematang and the tributary of Tul Busung River with an area of 20,980 ha. In the study stage, environmental impact analysis should be included. This also should include land development component.

5.5.4 Environment

The key project of environment is Integrated and Sustainable Development of Swamp Areas (Code No. J-15). This includes the research on the location to conserve and develop, and identification of an appropriate management for conservation and development, so that we can maintain and enhance the value of swamp areas. This also includes the research on appropriate production of agriculture, fisheries, livestock, and so forth, for swamp areas, with reviewing the research of several agencies mentioned in Section 5.3.

5.5.5 Transportation

The key project of transportation is to upgrade Simpang Sinar Asahan-Rawajitu East-West Swampland Road (Code No. G-73) and Pakuon Ratu-Simpang Tulang Bawang Road (Code No. G-71). The first road goes through transmigration sites and there are some plantation plans, while the latter also goes through transmigration sites. Both will contribute to opening up the currently isolated areas.

5.5.6 Fisheries

The key project of the subprogram is Swamp Fisheries Development Project (Code No. B-18). The project consists of 3 phases: Phase 1 is research and development including improvement of facilities; Phase 2 is a master plan and feasibility study; and Phase 3 implementation. In the first phase, it will strengthen activities of existing Freshwater Aquaculture Research Sub-center in Mariana, and establish inland fishery stations in Menggala for research, demonstration and extension services to small-scale fishermen/farmers. The second phase include survey of swamp areas, screening of priority areas, and preparation of appropriate models. During the third phase, fry restocking, legal establishment of conservation zones, physical rehabilitation of swamps, and village-based swamp fishery management will be carried out.

5.5.7 Participatory Rural Development

Participatory Rural Development Program (Code No. I-27) consists of four components: agricultural research and extension service, skill training for women, provision of credit and improvement of rural infrastructure. For the extension service, it is planned not to be top-down nor centralized, but both bottom-up and top-down by listening to farmers' voices and ideas. Farmers' organizations are important for their participation and NGO has a major role to support them. With sarjana (university graduates) working together and later

consultants and PPL (extension service staff) joining, farmers will participate in developing and testing the suitable mix of production which is also environmentally sustainable. Skill training for women aims to improve their skills in various rural business activities such as food processing, marketing, book keeping, and so on. Provision of credit to farmers is expected to give incentive to get necessary inputs for more suitable crops and to start or expand women's business. This is expected to contribute to sustainable agricultural production and increase of farmers' productivity and income. The fourth component, rural infrastructure, will provide farmers with appropriate transportation and facilities necessary for their work. Where necessary, this project will make access roads and small bridges between farmland and markets, improve markets, and make storage facilities in an appropriate rural town.

5.5.8 Urban Development

Secondary Cities Urban Development Project (Code No. I-18) is to extend the urban infrastructure plan in Kota Bumi and Menggala for longer term development. At present there are plans for SCUDP (Secondary Cities Urban Development Program which is one type of IUIDP) for Kota Bumi, Menggala, Bukit Kemuning, Blambangan Umpu. It has not decided yet when to start implementation but the target year to finish is proposed to be 2000. The subprogram is to be based on these SCUDP plan and extend its components which will still require more investment after 2000. We have selected Menggala and Kota Bumi, because Menggala should be an important city after the eastern highway is completed, and Kota Bumi is the capital of Kabupaten Lampung Utara.

5.5.9 Institutional Support

IDEP Management Unit (IMU) will be established inside BAPPEDA Tk.I and Tk.II, with some Indonesian staffs corresponding to each IDEP site. To support the IMU, an expert will be dispatched to each provincial IMU. Its Code No. is K-1.

5.6 KEY RELATIONS AMONG THE PROJECTS

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

1) A comprehensive environmental project, **Integrated and Sustainable Development of Swamp Areas (J-15)**, must precede those agriculture, fisheries, and irrigation projects: **Smallholder Tree Crop Development (A-13)**, **Large Scale Estate Development (A-17)**, **NES-Type Beef Cattle Farming Development (A-20)**, **Swamp Fishery Development (B-18)**, **Way Mesuji and Way Agung Irrigation Development (F-35)**, and **Tulang Bawan River Irrigation Development (F-34)**.

2) Road projects generally come first in this IDEP site where the road network remains rudimentary. **Simpang Sinar Asahan - Rawajitu East - West Swampland Road (G-73)** provides access to three major agricultural projects: **Smallholder Tree Crop Development (A-13)**, **Large Scale Estate Development (A-17)**, **NES-Type Beef Cattle Farming Development (A-20)**, and **Swamp Fishery Development (B-18)**.

3) Another road project, **Pakuan Ratu - Sp. Tulang Bawang Road (G-71)**, must be finished before **Swamp Fishery Development (B-18)** can enter the implementation stage.

4) **Pakuon Ratu - Negara Ratu Road (G-72)** is a prerequisite to the major irrigation project in this site, **Tulang Bawang River Basin Irrigation Development Project (F-34)**.

6. BANDAR LAMPUNG/LAMPUNG SELATAN IDEP

This location is characterized (1) as the primary agro-industrial center located at a corner of the Sumatra Gateway Triangle and (2) by its high potential of tourism development. Infrastructural development is needed to support industrialization and rapid urban growth as well as to serve as the Region's access point to Java. The strategic theme of this site is: How to fully develop high-potential economic sectors while better organizing itself as the Gateway to Sumatra.

6.1 PRESENT CONDITIONS

6.1.1 A Brief History

This IDEP site consists of Kotamadya Bandar Lampung and Kabupaten Lampung Selatan. As is seen on a map (Figure 6.1.1), Bandar Lampung totally borders on Lampung Selatan, a situation which suggests a close relationship between the two municipalities. Moreover, what is now Kotamadya Bandar Lampung used to be two separate cities--Tanjungkarang and Telukbetung--whose historical symbiotic evolution itself exemplifies the strong undercurrent ever flowing beneath this part of Indonesia. A brief history will help understand their relationship:

- 1948 Tanjungkarang and Telukbetung joined to form a small city (2 kecamatan) separate from Kabupaten Lampung Selatan, then part of the province of South Sumatra. The new city's name: Tanjungkarang Telukbetung.
- 1964 As the province of Lampung was newly created, Tanjungkarang Telukbetung became its capital city.
- 1982 Tanjungkarang Telukbetung expanded its administrative territory annexing part of Kabupaten Lampung Selatan (land area increased seven times from 22.6 km² while the number of kecamatan from 4 to 9).
- 1983 Tanjungkarang Telukbetung changed its name to become Bandar Lampung.

The 1982 annexation calls for a special caution in dealing with statistics when before-1981 and after-1982 figures are compared.

6.1.2 Geography

Gateway. The site is located at the southernmost end of Sumatra Island, separated from Java by the Sunda Straits, only about 20 km wide. This condition has naturally made the site the prominent gateway to Sumatra. In the past, Oosthaven (Panjang) was the primary landing place for settlers and Telukbetung, a busy trading post, become the terminal when a railway was built to Palembang in 1913; today most passengers leave and arrive at Bakauheni, a ferry port facing the Sunda Straits, while the Panjang port in Bandar Lampung serves as a major deep sea port in the southern part of Sumatra. Gateway close to Java is the single most significant factor that characterizes this site in many ways.

Land. Total land area is 6,819 km² (Bandar Lampung 169 km²; Lampung Selatan 6,649 km²). The site stretches east-west and, so to speak, saddles two major bays: Lampung Bay in the east and Semangka Bay in the west. The whole area can be roughly divided into two zones along a line from Bandar Lampung northward. The eastern zone is basically flat or rolling plains whereas the western half is mountainous forming the southern end of the Barisan Range. In this western zone, however, two exceptions exist: large alluvial plains centered around Pringsewu and also alluvial flats along the down stretch of the Semangka River. Those two areas as well as the eastern part constitute a wetland paddy zone marked with high population densities.

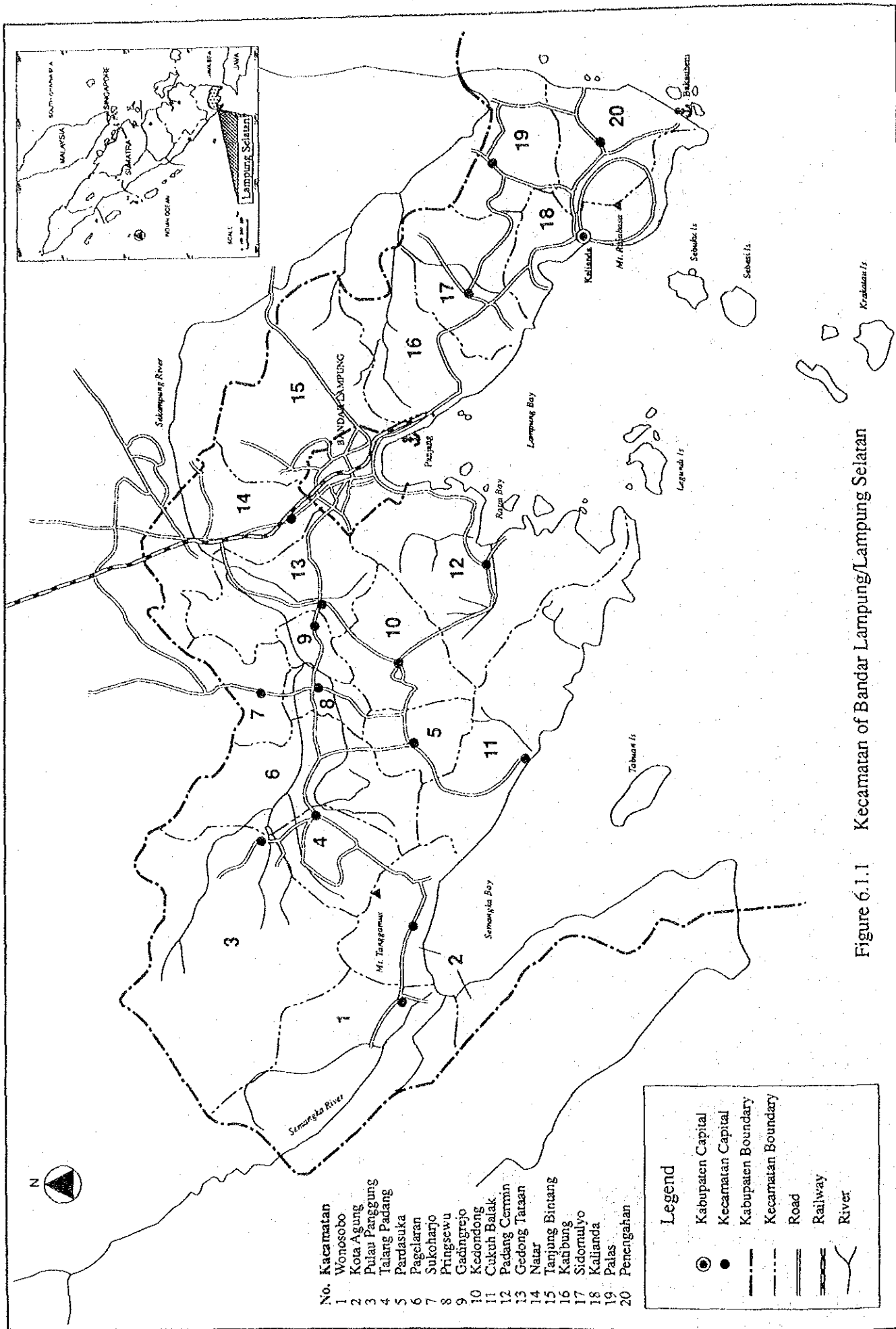


Figure 6.1.1 Kecamatan of Bandar Lampung/Lampung Selatan

Rivers. Two major rivers flow through this IDEP site: Sekampung and Semangka (Figure 6.1.2). The Sekampung River originates in the mountains of the northwestern corner of Kabupaten Lampung Selatan and flows down eastward to Java Sea. Its length is 623 km with a total basin area of 5,675 km². In the long run, this river may become the only major water source for Bandar Lampung. The Semangka River's headwaters are located near Liwa, Kabupaten Lampung Barat. The river goes straight down the Semangka rift valley to flow into the Semangka Bay (length: 189 km; river basin: 1,525 km²). There are also numerous small, short rivers running down the mountain slopes. Their steepness is the major cause of violent floodings during the rainy season. Most prone to such floods are Kecamatan Wonosobo, Kotaagung, Cukuh Balak, Padang Cermin, Kalianda and Kotamadya Bandar Lampung.

Climate. A tropical humid climate prevails over this site. The amount of rainfall is fairly reasonable even during the dry months (around July and August). Annual total ranges from about 1,700 mm (areas along the Lampung Bay) to 4,000 mm (in the Barisan Range). The monsoon is generally mild but can become strong occasionally. The wind changes its direction twice a year and this seasonal alternation very much dictates fishing practice in this area (November--March: from the west and northwest; July--August: from the east and southeast).

6.1.3 Population

Kabupaten Lampung Selatan is administratively divided into 20 kecamatan (Figure 6.1.1) and Kotamadya Bandar Lampung into 9 (as of July 1992). According to the 1990 census, total population in this site is 2.46 million of which about one quarter (0.64 million) belongs to Bandar Lampung (Table 6.1.1). Two distinct characteristics may be noted about this population: first, population density has already reached a quite high level which can be compared to that of Java in the 1950s and 60s; second, as a natural result, population growth in rural Lampung Selatan has almost stagnated while urban Bandar Lampung continues a respectable growth.

Seen kecamatan-wise, the population dynamics reveals a more diverse pattern (Table 6.1.2). Generally, stagnation is prevalent throughout the western zone while kecamatan bordering Bandar Lampung (Natar, Tanjung Bintang) and the very end of Sumatra Island (Palas, Penengahan) -- among the few frontiers left in this province -- are still drawing a sizable number of spontaneous migrants.

6.1.4 Society and Culture

Cultural groups. Like Lampung Province as a whole, this IDEP site has a long history of mixing cultural groups. Major groups present in the site are as follows: **Pesisir** is one of the original Lampung groups. Originated in areas around Lake Ranau, the group gradually spread southward forming scattered settlements mostly along the Semangka and the Lampung Bay to reach the foothills of Mt. Rajabasa, Kalianda in particular. They traditionally are producers of dryland rice and pepper. Fishing has never become their specialty despite their coastal habitation. **Pubian** represents another original group in Lampung. Their distribution in the mid-19th century roughly covered the central part of now Kabupaten Lampung Selatan except the mountainous zone between the two bays. Also dryland rice and pepper growers, they lost land heavily to other groups during the 19th and 20th century migrations. Today Pubian nucleus only subsists north of Bandar Lampung and west of Pringsewu. Overall, original Pesisir and Pubian inhabitants in this IDEP site are no longer the majority. They still remain dominant in only two kecamatan: Cukuh Balak and Kalianda.

Semendo, originally from Kabupaten Muara Enim in South Sumatra, is an upland group who practiced very extensive slash-and-burn farming techniques. They had been moving southward along a pioneer front in the Barisan Range from 1867 onwards. In the 1920s they reached what is now Kecamatan Pulau Panggung, where they formed 18 desa

Table 6.1.1 Population: Bandar Lampung/Lampung Selatan

	Land Area (km ²)	Population 1980	Population 1990	Annual Growth Rate (%) 1980-90	Population Density 1990
Bandar Lampung	169	468,518*	636,706	3.11	3,767
Lampung Selatan	6,649	1,582,841*	1,824,162	1.43	274
IDEF Total	6,819	2,051,359	2,460,868	1.84	361
Lampung	35,377	4,624,785	6,017,573	2.67	170

Note: * Adjusted to reflect the 1982 annexation.

Source: Lampung Dalam Angka 1990/91, Tables 1.1 and 3.1.1.

Table 6.1.2 Population by Kecamatan: Lampung Selatan

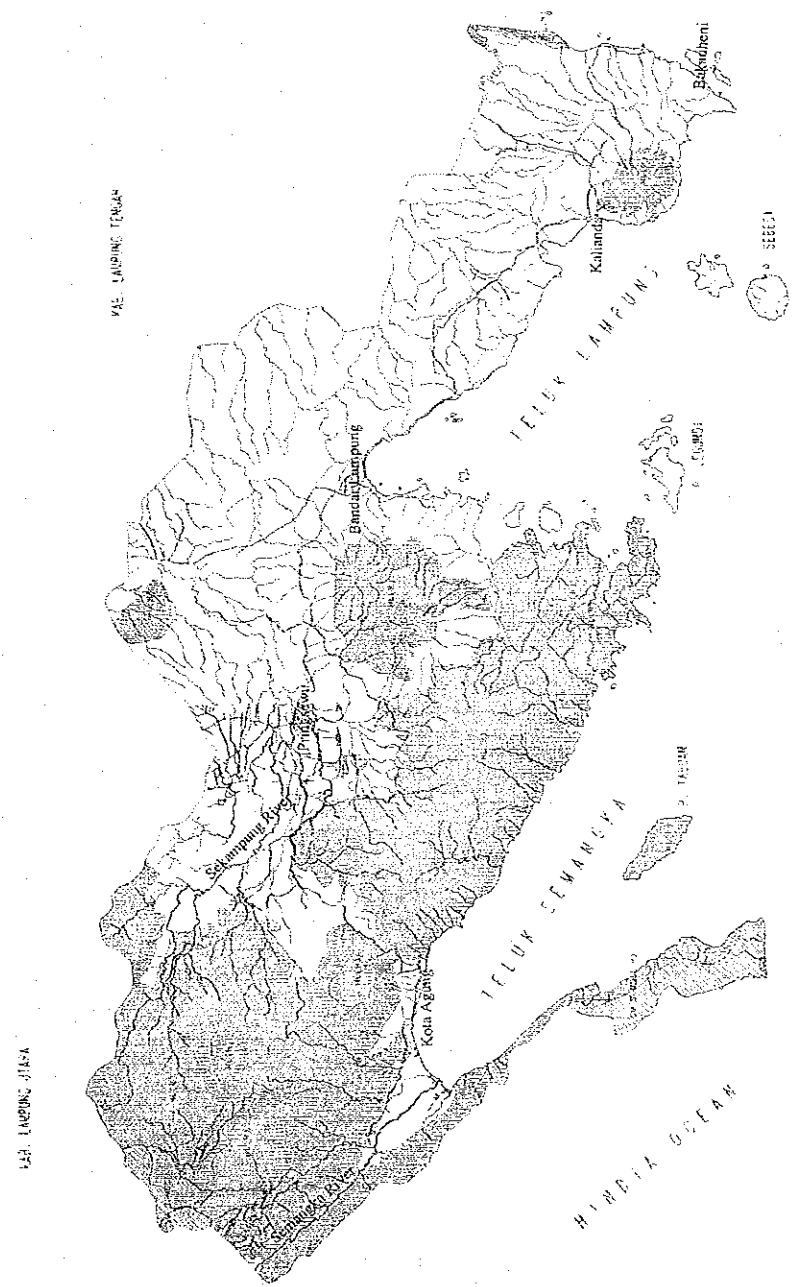
Kecamatan	Land Area (km ²)	Population 1980*	Population 1990	Annual Growth Rate (%) 1980-90	Population Density 1990
Wonosobo	479	94,748	84,596	-1.13	177
Kotaagung	437	63,276	73,227	1.47	168
Pulau Panggung	947	84,534	81,356	-0.38	86
Talang Padang	160	109,917	113,088	0.28	707
Pardasuka	86	42,816	44,567	0.40	518
Pagelaran	396	95,774	100,535	0.49	254
Sukoharjo	160	76,082	81,068	0.64	507
Pringsewu	67	74,946	88,417	1.67	1,320
Gadingrejo	76	51,649	58,105	1.18	765
Kedondong	231	67,625	76,007	1.18	329
Cukuh Balak	549	45,438	53,683	1.68	98
Padang Cermin	601	86,621	102,332	1.68	170
Gedong Tataan	302	115,988	125,430	0.79	415
Natar	365	123,315	162,448	2.79	445
Tanjung Bintang	398	102,825	136,430	2.87	343
Katibung	336	90,519	106,999	1.69	318
Sidomulyo	246	90,392	106,388	1.64	432
Kalianda	262	59,449	76,430	2.54	292
Palas	253	51,879	71,994	3.33	285
Penengahan	299	54,747	80,887	3.98	271
No fixed residence	-	301	175	-	-
Total	6,649	1,582,841	1,824,162	1.43	274

Note: * Adjusted to reflect the 1982 Annexation.

Source: Lampung Selatan Dalam Angka 1990, Tables 1.1 and 3.1.2.



Source: Prepared and provided by PUSKINISG (The Center of GIS Management) - BAKOSURTANAL (National Agency for Surveys and Mapping) using ARCGIS® software installed on VAX VMS. The digital data used were derived from R.P.P.P. (Regional Physical Planning Programme) for (Indonesia) on data which were prepared at the LAMKAS (2005) base color composite (March 5, 1985, and April 25, 1985).



Legend

- Natural Reserve & Conservation Forest
- ▨ Protection Forest
- Road
- River

Figure 6.1.2 River Systems: Bandar Lampung/Lampung Selatan

between 1918 and 1930. Behind this incessant progression is their matrilineal, matrilocal inheritance rule (most land goes to the eldest daughter), which spurred other children to seek new lands for rice and coffee cultivation. Semendo now buy new lands for family members, in the absence of uncultivated, empty lots, but some still illegally practice their traditional way of farming on the very steep slopes classified as conservation forest.

Javanese and Sundanese started arriving in this site, or Lampung for that matter, in 1905 under the Dutch program of *Kolonisatie*. In that year the first 155 families from Kedu, Central Java, were settled in Bagelen, Kacamatan Gedong Tataan, then in Pubian Land. Early *Kolonisatie* sites include Gading Rejo (since 1906), Pringsewu (around 1910?) and Wonosobo (since 1921). Many spontaneous migrants also arrived. Javanese and Sundanese, for instance, accounted for 62% of the population of Telukbetung in 1933. Following Independence, Lampung remained a priority for the new transmigration program and a massive inflow of migrants continued. As a result Javanese and Sundanese now constitute a significant portion of the population of the IDEP site.

Two pressing social issues: landlessness and deforestation. After a nearly century of migrations, agricultural land is practically saturated in this IDEP site. This is all the more so in the western part where oldest *Kolonisatie* sites and early frontiers exist. Rising population pressure leads to two distinct social problems in the area: landlessness and deforestation. In villages around Pringsewu and Gedong Tataan, where paddy farming is the dominant form, land fragmentation and landlessness are becoming serious. (In Bagelen, for instance, paddy owners totals only 100 out of 1,200 household heads.) Unable to find any remunerative job locally, high-school educated young people are already moving to West Javanese factories to seek employment. A hint of irony: descendants of Javanese/Sundanese migrants are now, after generations of hardship, migrating back to Java. In socio-economic terms, the need is urgent to find alternative development strategies and employment opportunities drawing on the province's comparative advantage.

Deforestation, by contrast, has long been serious in hilly watershed areas of the Sekampung and Semangka rivers, where coffee is extensively planted. Older established groups such as the Semendo and more recent Javanese/Sundanese arrivals (in the 1950s and 1960s, and after the coffee boom in the late 1970s) reduced the forest cover considerably in those areas. Alarmed by the extent, the Government launched a new program called "local transmigration" (*transmigrasi lokal: translok*) in 1980. Under this program, illegal coffee growers in the protected forests are resettled in other areas, notably Kabupaten Lampung Utara. Its implementation has been impressive: so far an estimated 50,000 people were transferred from Kabupaten Lampung Selatan. The population decrease recorded by Kecamatan Wonosobo and Pulau Panggung between 1980 and 1990 (Table 6.1.2) is a direct consequence of this program. Its real effects, however, are much subdued because new arrivals are still appearing to fill the vacated lots. In Kecamatan Pulau Panggung, for example, 75% of *translok* outmigrants were already replaced by new immigrants. Furthermore, the capacity of the *translok* program itself to absorb more settlers seem to be limited, as the empty land in Lampung Utara is being used up. In fact, the program in Lampung Utara is scheduled to terminate in 1997/98, by then a total of 7,000 new households being settled over 20,000-ha land in the Kabupaten. Deforestation in the highlands thus calls for another approach which can, above all, broaden the economic base of this coffee-monocultural area.

6.1.5 Economy

GDP. Table 6.1.3 shows GDP figures for 1983 and 1987, the most recent year for which consistent statistics are available. Two things seem worth mentioning here: first, growth is relatively fast (in Lampung Province as a whole, too); and second, Bandar Lampung and Lampung Selatan together form a manufacturing base of the province. One should not overlook the significance of manufacturing in Lampung Selatan even though the kabupaten's economy is still predominantly agricultural (details later). In fact manufacturing is the fastest growing sector (except for utility, which is almost negligible) in the kabupaten.

Table 6.1.3 GDP by Sector: Bandar Lampung/Lampung Selatan

(Unit: Rp billion, 1983 constant prices)

Origin	1983				1987				Annual Growth Rate 1983-87 (%)			
	Bandar Lampung	Lampung Selatan	IDEF	Lampung	Bandar Lampung	Lampung Selatan	IDEF	Lampung	Bandar Lampung	Lampung Selatan	IDEF	Lampung
Agriculture	12.9	169.3	182.1	474.9	15.4	229.6	245.0	710.4	4.6	7.9	7.7	10.6
(Fisheries)	(2.3)	(7.2)	(9.5)	(23.8)	(2.3)	(10.6)	(12.9)	(32.5)	-(0.1)	(10.1)	(7.9)	(8.1)
Mining	0.2	1.0	1.2	2.9	0.1	1.2	1.3	3.5	-8.7	4.5	2.6	4.6
Manufacturing	32.1	13.2	45.3	80.3	52.3	25.3	77.6	151.1	12.9	17.7	14.4	17.1
Utility	2.3	0.1	2.4	2.8	4.3	0.4	4.8	6.0	17.4	39.8	18.8	20.4
Construction	13.1	12.3	25.4	46.1	11.7	11.1	22.8	41.3	-2.8	-2.5	-2.7	-2.7
Trade/Hotel	62.3	38.7	101.0	176.8	68.9	50.4	119.3	225.0	2.5	6.9	4.3	6.2
Transportation	35.5	13.4	48.9	66.1	53.2	15.5	68.7	98.0	10.6	3.6	8.9	10.3
Bank/Finance	21.8	0.3	22.1	23.8	33.7	0.4	34.1	38.0	11.5	11.8	11.5	12.4
Dwellings	13.9	14.2	28.1	52.2	20.7	19.0	39.7	74.7	10.6	7.5	9.0	9.3
Public Administration	30.8	22.0	52.9	98.0	38.2	30.8	69.0	130.4	5.5	8.8	6.9	7.4
Services	4.6	4.3	8.9	15.7	8.5	6.6	15.2	27.2	16.4	11.4	14.1	14.8
Total	229.5	288.8	518.3	1,039.6	307.1	390.4	697.5	1,505.5	7.5	7.8	7.7	9.7
Population (1,000)	516.0	1,659.0	2,175.0	5,004.8	583.4	1,756.2	2,339.6	5,560.6	3.1	1.4	1.8	2.7
GDP per capita (Rp mil)	0.44	0.17	0.24	0.21	0.53	0.22	0.30	0.27	4.3	6.3	5.8	6.8

Sources: BPS (for GDP) and Lampung Dalam Angka 1990/91 (for population)

Table 6.1.4 Manufacturing: Bandar Lampung/Lampung Selatan

	1986	1987	1988	1989	1990	1991				
	Bandar Lampung					Bandar Lampung	Lampung Selatan	IDEF	Lampung	
Large- and Medium-Scale										
<i>Chemical Industry</i>										
Enterprises		3	4	5	5	8	14	12	26	41
Employees		500	508	758	758	871	1,042	638	1,680	6,016
Acc Investment (Rp mil)		16.4	16.6	19.0	19.0	22.3	25.5	16.7	42.2	271.4
Output (Rp mil)		30.5	24.0	18.5	21.3	63.6	66.5	22.7	89.2	104.6
<i>Machine, Electricity, Metal</i>										
Enterprises		3	4	5	5	5	6	7	13	13
Employees		199	214	235	235	235	465	949	1,414	1,414
Acc Investment (Rp mil)		1.8	1.9	2.0	2.0	2.0	22.2	67.8	90.0	90.0
Output (Rp mil)		0.9	0.9	2.6	2.8	2.7	12.0	0.5	12.5	12.4
<i>Miscellaneous</i>										
Enterprises		138	136	133	150	166	167	71	238	365
Employees		6,903	7,925	7,970	9,106	10,002	13,325	7,961	21,286	43,397
Acc Investment (Rp mil)		80.6	110.8	131.8	166.2	217.6	235.4	135.9	371.3	897.1
Output (Rp mil)		414.5	547.4	674.4	648.1	635.4	627.4	200.1	827.5	1,051.0
Small Industry										
Enterprises		2,696	2,796	2,769	2,855	2,890	2,927	7,081	10,008	18,579
Employees		10,078	10,625	10,962	11,502	11,704	11,924	21,526	33,450	61,167
Acc Investment (Rp mil)		4.0	10.0	10.5	11.5	11.7	13.9	12.0	25.9	44.3
Output (Rp mil)		18.6	24.6	26.6	37.4	35.7	39.2	46.5	85.7	282.0
Total										
Enterprises		2,840	2,940	2,912	3,015	3,069	3,114	7,171	10,285	18,998
Employees		17,680	19,272	19,925	21,601	22,812	26,756	31,074	57,830	111,994
Acc Investment (Rp mil)		102.8	139.3	163.4	198.8	253.6	297.0	232.4	529.4	1,302.9
Output (Rp mil)		464.4	597.0	722.1	709.6	737.3	745.1	269.8	1,014.9	1,450.0

Note: "Acc Investment" stands for Accumulated Investment.

Sources: Kotamadya Bandar Lampung Dalam Angka 1990/91.

Kanwil Perindustrian Lampung, Annual Report 1991.

Agriculture. In terms of GDP or employment, agriculture is the largest sector of this IDEP economy. Farming practice, however, shows a considerable regional variation. Basically, four farming systems are observed in the site:

- 1) tree crop gardening ("kebunan")
- 2) wetland rice ("sawah") combined with home garden ("pekarangan") farming
- 3) rain-fed arable crop farming ("tegalan")
- 4) large estate

The first system is dominant in the mountainous areas in the western part (main crop: coffee) and in the foothills of Mt. Rajabasa in the east (main crop: clove). Coffee growers are currently hard hit with the low price (around Rp 1,100/kg) presumably as a result of the collapse of the International Coffee Agreement in 1989. A more deeprooted problem facing them is the steadily declining productivity as the coffee trees age without proper rejuvenation treatment. Clove has its own problems, too. A disease has devastated most clove producing areas in southern Sumatra since mid-1980s. To worsen the situation, the price is artificially kept low nationwide and no improvement is in sight. Consequently, many clove farmers have abandoned their clove trees and switched to other crops, notably banana in Kecamatan Kalianda.

The second system, in which rice is the single most important crop, is basically of Javanese origin, introduced by migrants. It is found in the alluvial flats around Wonosobo, in the alluvial plains around Pringsewu and in the eastern plains bordering Kabupaten Lampung Tengah. The third system -- rain-fed arable crop farming, with cassava and maize being two typical crops -- is not widespread in this site. Most plots under this system concentrate in the areas north to east of Bandar Lampung where the crops can be supplied to nearby processing factories.

Eleven large estates, the fourth system, are located in Kabupaten Lampung Selatan (eight are owned by PTP X, a state company, and three others private). They together cover 20,924 ha mostly in those kecamatan around Bandar Lampung. The primary crop is rubber, accounting for more than half of the land area. Other crops are oil palm, clove, cacao and coffee.

Fisheries. In this IDEP site, a sector which has particularly good future prospects is fisheries. Stretching from Java Sea to the Indian Ocean and holding two bays inbetween, the coastal zone of the site is a showcase of marine environments. Taking the advantage of proximity to Jakarta and given rich resource potential as well as abundant manpower, a variety of fishing activities, both traditional and non-traditional, are already well established.

Fishery production in Kabupaten Lampung Selatan in 1991 was 39,771 tons, of which marine fisheries accounted for 35,791 tons (about 90%), inland fisheries 927 tons and aquaculture 3,054 tons. Marine fishing, however, is generally a small-scale operation by traditional fishermen. Techniques most common in the area include gill-net (jaring), hook-and-line (pancing), and lift-net (bagan). During the west-wind season (September through March) some fishing boats migrate from Java to the coastal waters of Lampung Selatan. Some are based at Ketapang to catch anchovies (ikan teri nasi) using seine nets (payang) while other purse seine fishing boats operate in the Semangka Bay catching small pelagics to land at kotaagung.

One notable characteristic of this site is that fisheries cooperatives (KUD) are relatively well organized and active. Fish auction is routinely carried out by KUD at major fish landing centers (PPIs) like those at Ketapang, Lempasing and Kotaagung. This is so because in Lampung province few private fish landing facilities (so-called toke) exist and most fishermen are originated in South Sulawesi or Java. Given this fact, it is highly possible that

small-scale traditional fisheries will be further developed by promoting KUD-based fish marketing.

Aquaculture production has been rapidly increasing in recent years, particularly that from brackishwater ponds (tambak). There are 946 ha of tambak in Lampung Selatan, of which 886 ha are traditional ones located on the east coast. The rest (60 ha) are intensive or semi-intensive farms operated by private companies. At present, about 1,000 ha of intensive tambak are under construction in Kecamatan Kotaagung near the Semangka River.

Lampung Selatan also has good potential for mariculture such as marine fish cage culture, seaweed culture and shellfish culture (oyster, green mussel, bloody cockle). Currently, however, their development is still limited. According to the DGF's Seafarming Center (BBL) in Hanura, there are only 25 units of fish cages (3 x 3 x 3 m) at Lempasing, Hanura and Sebesi Island (as of July 1991). As for seaweed culture, there were three private companies at Ketapang 5-6 years ago, growing *Eucheuma cottonii* and *E. spinosum* and employing about 300 women workers locally. Among the companies, only one (CV. Tongkat Permata) is still in operation now (total 19 employees, 15 women) due to a sharp drop in the price of dried seaweed from Rp 1,000/kg to Rp 400/kg.

Industry. Industry, large- and medium-scale manufacturing in particular, must be and is quickly becoming the leading sector of the IDEP economy. As seen in Table 6.1.3, manufacturing accounted for 11% of IDEP's GDP in 1987, rising from 8.7% in 1983. Though agriculture still keeps a far larger share (35% in 1987), industry's rising prominence seems an irreversible trend. In fact, if seen sectorally within the province, this IDEP site is clearly transforming itself into the province's manufacturing base (Table 6.1.4). Combined together, Bandar Lampung and Lampung Selatan in 1991 accounted for 54% of enterprises, 52% of employment and 70% of production of the manufacturing sector provincewide.

Bandar Lampung has shown a remarkable development in the recent five years (again Table 6.1.4). In total, employment increased by 50%, output by 60% and accumulated investment almost tripled between 1986 and 1991. What should be noted here is the fact that those increases were largely brought about by large- and medium-scale industries. Small-scale industries are striving in their own ways, but they are by and large stagnant particularly in terms of employment. Out of 9,000 new jobs created during the same period, 7,000 came from the larger factories.

Contrary to the common perception, Lampung Selatan is by no means a minor player in the manufacturing sector. Its contribution to the provincial output was 19% in 1991. Thanks to its location, the kabupaten receives much of the upper scale spillover from Bandar Lampung. This is particularly the case with two kecamatan, Natar and Tanjung Bintang, where high-grade artery roads pass through. On the other hand, small enterprises spread throughout the kabupaten, though their productivity is low even by the provincial standards.

As the leading subsectors indicate (Bandar Lampung: food processing, rubber processing, plywood; Lampung Selatan: rubber processing, food processing, plywood), industry in this IDEP site has a strong orientation toward agro-industry, naturally taking advantage of abundant agricultural resources available.

The industrial development here indeed seems quickening its pace, spurred by the undisputable locational advantage this site can offer. In 1991 alone, the site recorded 23 new entries (excluding small units), a 5.5% increase in the number of enterprises. The newcomers included manufacturers of such unconventional products: iodine, fulfural acid, acetic acid, parquet flooring and granite flooring. This trend is most visible along two main roads, Jl. Soekarno Hatta (a city bypass of the trans-Sumatra highway) and Jl. Sutami/Way Gubak, connecting the eastern inland of Kabupaten Lampung Tengah to the Panjang port. Lately located there are, among others, rubber processors, cattle feed processors, pepper processors, sorters, a concrete pile manufacturer, a beverage bottler and a glutamic acid producer.

The Lampung Industrial Estate (KAIL) is situated along Jl. Sutami/Way Gubak, Kecamatan Tanjung Bintang, in the middle of those secondary processing factories lining up the road. Only 14 km away from the Panjang port and complete with utilities, the estate (total planned area: 300.24 ha) has a good appeal to prospective investors. So far, however, only four factories have moved in: one mineral solution factory run by LIPI (Indonesian Research and Science Institute), one ginger processing firm, one activated carbon processing firm (utilizing coconut shells) and one instant coffee factory. Currently (as of August 1992) the LIPI factory is the only one in operation.

Tourism. This sector's potential is enormous here in this IDEP site. In fact private investors are queuing up with novel plans. Most projects are related in some way or other to marine tourism, exploiting the unspoiled beauty of the islands, beaches and sea, but attractions are by no means limited to them. Among the private investment proposals:

- | | | |
|----|-----------------|--------------------------------|
| 1) | Panjit Island | - resort |
| 2) | Mt. Rajabasa | - hotel, golf course (250 ha) |
| 3) | Merak Belantung | - beach resort (500 ha) |
| 4) | Sebuku Island | - agro-tourism (pearl culture) |
| 5) | Sebesi Island | - transit center for Krakatau |
| | | - camping ground |
| 6) | Legundi Island | - fishing/diving resort |
| 7) | Tampang | - game hunting (100 ha) |

The single most famous object is Krakatau Island, off the Lampung Bay, which, however, is considerably underacting its flagship role. Another underachiever in tourism is Bandar Lampung. Lacking tourist attractions of its own and without one-stop information center functions, the city has so far failed to become the hub of tourism in this attraction-rich zone. Since the key to successful tourism development here is to well organize those scattered destinations, Bandar Lampung's responsibility to serve as the hub appears all the greater.

6.1.6 Infrastructure

Roads. The road system in this IDEP site is relatively well developed. The trans-Sumatra highway, starting from Bakauheni and via Kalianda and Bandar Lampung, forms the backbone of the eastern part. In the western half, an asphalt provincial road extends westward from Bandar Lampung to Pringsewu, Talang Padang, Kotaagung and up to Sanggi, on the Semung River in the Semangka valley. Nonetheless, unaccessible parts still remain: swampy areas near the rivermouth of the Sekampung River; the coastal zone between Padang Cermin and Putihdoh; the coastal strip on the westernmost peninsula. Also, many kabupaten roads are in poor condition. On the other hand, two major road projects are in progress. One is the eastern trans-Sumatra highway, whose exact route has yet to be decided; the other is a provincial road crossing the Barisan Range from Sanggi to Bengkuntat, Kabupaten Lampung Barat. Both roads will have profound implications to this IDEP site.

Railway. The railways in Lampung and South Sumatra practically specialize in transporting coal from Bukit Asam to Tarahan, located south of the Panjang port. At the Tarahan coal terminal, part of the coal is supplied to a thermal power plant located there while the bulk is transhipped further to Java, also for power generation. Passenger trains leave twice a day at the Tanjungkarang station for Palembang. The number of passengers could increase drastically if the line was extended to Bakauheni. In any case the sections between Tanjungkarang and Panjang which now pass through crowded quarters of the city pose safety problems. A new bypass line is under consideration by the railway company (PERUMKA) but its financial situations may prove prohibitive.

Port. Panjang (Oosthaven in the colonial times) is a good deepwater port capable of container handling. Bakauheni is a relatively new ferry terminal complete with two ro-ro berths and passenger facilities. Ten ferries ply between Bakauheni and Merak, West Java. Canti, a small village south of Kalianda, is another ferry dock from which small passenger boats leave regularly for the islands of Sebuk and Sebesi. Currently, this small ferry dock is also the only access point on the Sumatra mainland to reach Krakatau.

Telecommunications. Telephone services are only available in those cities listed in Table 6.1.5. A large backlog is a pressing problem with Bandar Lampung whereas Kalianda callers are experiencing difficulty to make long distance (or inter-local) calls. Their only means for outside calls is satellite transmission, but available channels are limited. To aggravate the situation, the system automatically assigns majority of calls to Jakarta first, where due to the limited exchange capacity some portion of traffic is routinely cut. Unable to call up Bandar Lampung, some government offices in Kalianda have resorted to radio to keep day to day communications.

Table 6.1.5 Telephone Services (1992)

Station	Subscriber			Cable Line to BDL* (# of Channels)	Satellite (# of Channels)
	Capacity	Used	Waiting		
Bandar Lampung	23,984	18,082	3,141	--	--
Kalianda	388	330	--	--	out 4/in 4 (installed in 1990)
Gedong Tataan	100	95	--	3	--
Pringsewu	500	470	--	1	--
Talang Padang	200	197	--	2	--
Kota Agung	200	200	50	1	out ?/in ? (installed in 1990; out of operation due to technical trouble)

Note: *Bandar Lampung
Source: Telkom Witel III

Electricity. Electrification has reached a fairly advanced level in this IDEP site. By now most major settlements have electricity, supplied either through transmission from Tarahan or by isolated generators. Transmission lines currently connect such western towns as Talangpadang, Pringsewu and Kedondong to the Bandar Lampung power generation system. A problem left is power shortage. For example, in Kecamatan Kalianda and Penengahan, where a plant in Kalianda (maximum capacity: 1,260 KW) serves 4,000 consumer units, power shortage is so rife that PLN has initiated a system of scheduled blackout. The entire service area is divided into four, which rotate daily in enduring a blackout (5--10 pm) once in every four nights. Power shortage is also serious in Bandar Lampung, though to a lesser extent. This situation may not improve, however, unless new major power plants are installed or an extensive network of transmission lines (from Bukit Asam, in particular) even covers rural areas.

Water supply. Presently, water supply poses no serious problem in this site thanks to a reasonable amount of rainfall, to forest-covered mountains and to the absence of

major peat soil swamps. In the long run, however, it is very likely that water supply becomes a bottleneck to Bandar Lampung's development. With its population and economic activity growing fast, the city will sooner or later outgrow the current water supply system dependent on a few streams in the western edge of the city. If this happens, the only remaining source capable to supply that large volume will be the Sekampung River. The problem is that the river is already heavily tapped to irrigate rice fields around Metro. Since industrialization cum urbanization is well under way in Bandar Lampung, this imminent bottleneck deserves special attention in this IDEP.

Sewage and human waste. In contrast to water supply, these aspects need quick and decisive action particularly in Bandar Lampung. It is true that IUIDP contains those components to treat them, but proposed programs seem too small and, worse, too late to arrest the water pollution rampant in the Lampung Bay. Clean water in the bay must be the vital element to this site's development if tourism and fisheries are the highest potential sectors there. Untreated sewage flowing down small rivers into the bay and human waste dumped directly into the bay are something to be stopped soon before everything becomes too late.

Flood control. Another aspect which deserves particular attention is recurrent flooding. Damage is severe in the western half where steep topography is coupled with gravelly geology, a situation in which downflow can easily become violent. Typical examples are the Meja, Awi and Bulu Rivers in Kecamatan Kotaagung and Wonosobo, which as recently as in 1986 claimed human lives and left hundreds of villagers homeless. Bandar Lampung is also prone to flooding particularly because of the rapid urbanization without proper drainage systems. By and large flood control measures taken so far are at best minimal (e.g., 1-km embankment on the Meja River) and much as yet to be done in this respect.

6.1.7 Social Services

Education. Table 6.1.6 shows the numbers of elementary schools and attending pupils. As can be seen, primary education has been fairly standardized nationwide at least in quantity terms. One remaining problem is its quality. As Table 6.1.7 indicates, elementary school teachers are mostly (about 90%) graduates from junior or senior high schools (special schools for teachers, education/training, in particular). Although available statistics are fragmentary, they also suggest that attendance to secondary education is still limited especially in rural Lampung Selatan.

Health. This is an area where development efforts can directly and effectively improve people's well-being. Given a very limited number of doctors throughout the country, the number of hospitals remains generally small relative to population (Table 6.1.8). The main stay in health service is Public Health Centers and Sub-Centers (Puskesmas Induk and Puskesmas Pembantu). Combined, they number 228 in this IDEP site, or roughly one unit per 10,000 population.

6.1.8 Environment

Protected forests ("hutan lindung"). Figure 6.1.3 depicts the distribution of 1) national park and natural reserve and 2) protected forest, in the IDEP site. There are forest areas in Bandar Lampung, too, some of them being designated for conservation, but none of them actually qualify as either of the above three categories. Land area by category is listed in Table 6.1.9. As is seen, about 30% of IDEP land is under strict protection (categories 1 and 2) and most of it covers the watersheds of the Sekampung and the Semangka River. This is a sensible arrangement in view of the fragile nature of volcanic slopes as well as the vital need to stabilize the river runoff. One problem with protected forest, however, is the coffee growers creeping into the conservation areas, as described earlier in Section 6.1.5. To do justice to at least some of them, one should note that the forest boundary was redefined by the Ministry of Forestry some time ago, in some cases shifting the border several kilometers down the

Table 6.1.6 Primary Education (1990/91)

		Bandar Lampung	Lampung Selatan	IDEP	Lampung	Indonesia (1989/90)
Elementary School						
Public	Number of units	206	1,464	1,670	4,150	146,558
	per 100,000 population	32.4	80.3	67.9	69.0	81.7
Private	Number of units	25	22	47	132	n.a.
	per 100,000 population	3.9	1.2	1.9	2.2	n.a.
Total	Number of units	231	1,486	1,717	4,282	n.a.
	per 100,000 population	36.3	81.5	69.8	71.2	n.a.
Elementary School Pupil						
Public	Number	79,704	396,085	475,789	1,114,597	26,528,590
	per 100,000 population	12,518	21,715	19,333	18,522	14,789

Sources: Kantor Statistik, Lampung Dalam Angka 1990/1991, Tables 4.1.5 and 4.1.7.
BPS, Statistik Indonesia 1991, Table 4.1.2.

Table 6.1.7 Number of Teachers at Public Elementary Schools
by Educational Level (1990/91)

	Bandar Lampung	Lampung Selatan	IDEP	Lampung
Elementary School Level	-	31	31	182
Junior High School Level	371	971	1,342	3,066
Senior High School Level	2,808	9,931	12,739	32,367
College/University Level	193	384	577	1,360
Master Level	144	23	167	431
Total	3,516	11,340	14,856	37,406

Source: Kantor Statistik, Lampung Dalam Angka 1990/1991, Table 4.1.6.

Table 6.1.8 Health Facilities (1990)

	Bandar Lampung	Lampung Selatan	IDEP	Lampung	Indonesia (1990/91)
Hospital					
Unit (private)	6 (4)	3 (1)	9 (5)	14 (8)	1,552
per 100,000 population	0.94	0.16	0.36	0.23	0.87
Maternal Center					
Unit (private)	13 (13)	2 (2)	15 (15)	20 (18)	n.a.
per 100,000 population	2.04	0.11	0.61	0.33	n.a.
Public Health Center*					
Unit (private)	17 (0)	36 (0)	53 (0)	138 (0)	5,656
per 100,000 population	2.67	1.97	2.15	2.29	3.15
Public Health Sub-Center**					
Unit (private)	38 (0)	137 (0)	175 (0)	450 (0)	15,497
per 100,000 population	5.97	7.50	7.11	7.48	8.63
Dispensary***					
Unit (private)	25 (25)	2 (2)	27 (27)	35 (35)	2,730
per 100,000 population	3.93	0.11	1.10	0.58	1.52

Notes: *Puskesmas Induk

**Puskesmas Pembantu

***Apotik

Sources: Kantor Statistik, Lampung Dalam Angka 1990/1991, Table 4.2.6.

BPS, Statistik Indonesia 1991, Tables 4.2.1 and 4.2.2.

Table 6.1.9 Forest Areas: Bandar Lampung/Lampung Selatan (1990)

Category	(Unit: square km)			
	Bandar Lampung	Lampung Selatan	IDEP	
1 National Park and Natural Reserve	-	111	111	(1.6)
2 Protected Forest	-	1,830	1,830	(26.8)
3 Production Forest	-	613	613	(9.0)
Total Forest	-	2,554	2,554	(37.5)
Total Land	169	6,649	6,819	(100.0)

Source: BPN Lampung Selatan

mountain slopes without prior consultation with other parties involved. If blame should not entirely be on the "illegal" squatters, the problem is real and deserves serious attention.

Water pollution. If the current level of pollution in the Lampung Bay is less than alarming, some safeguards are obviously in urgent need. As explained earlier in Section 6.1.6 above, chief pollutants are sewage and human waste (also solid waste and industrial waste to a lesser extent) originating in the urban concentration of Bandar Lampung. Another aspect which requires careful monitoring is the two land reclamation projects in the Lampung Bay licenced to two private concerns. Considering their magnitude, potential disturbance is large both during reclamation and after planned housing and commercial development is completed (more on this, later). Since the water in the Lampung Bay is the crucial element in the development of tourism and fisheries, pollution is certainly among the high priority issues.

6.2 BANDAR LAMPUNG/LAMPUNG SELATAN IN PERSPECTIVE

6.2.1 Roles in the Regional/Provincial Development

JICA Team has identified the following roles for Lampung Province to play in the regional development :

- 1) Sumatra's access point to Java
- 2) Bandar Lampung: primary agro-industrial center
- 3) Agro-industrial zone: part of the "Sumatra gateway triangle" and agricultural base for Java
- 4) Agro-zone 3: agricultural base for the "Sumatra gateway triangle" and for Java
- 5) Major tourist destination which is environmentally conscious

Repelita V of Lampung Province also broadly defines the directions of development for Bandar Lampung and Lampung Selatan as follows :

Kotamadya Bandar Lampung (* major issue)

- Industrial base
- Service center
- Gateway-to-Sumatra transportation development
- * Lack of urban land use plan

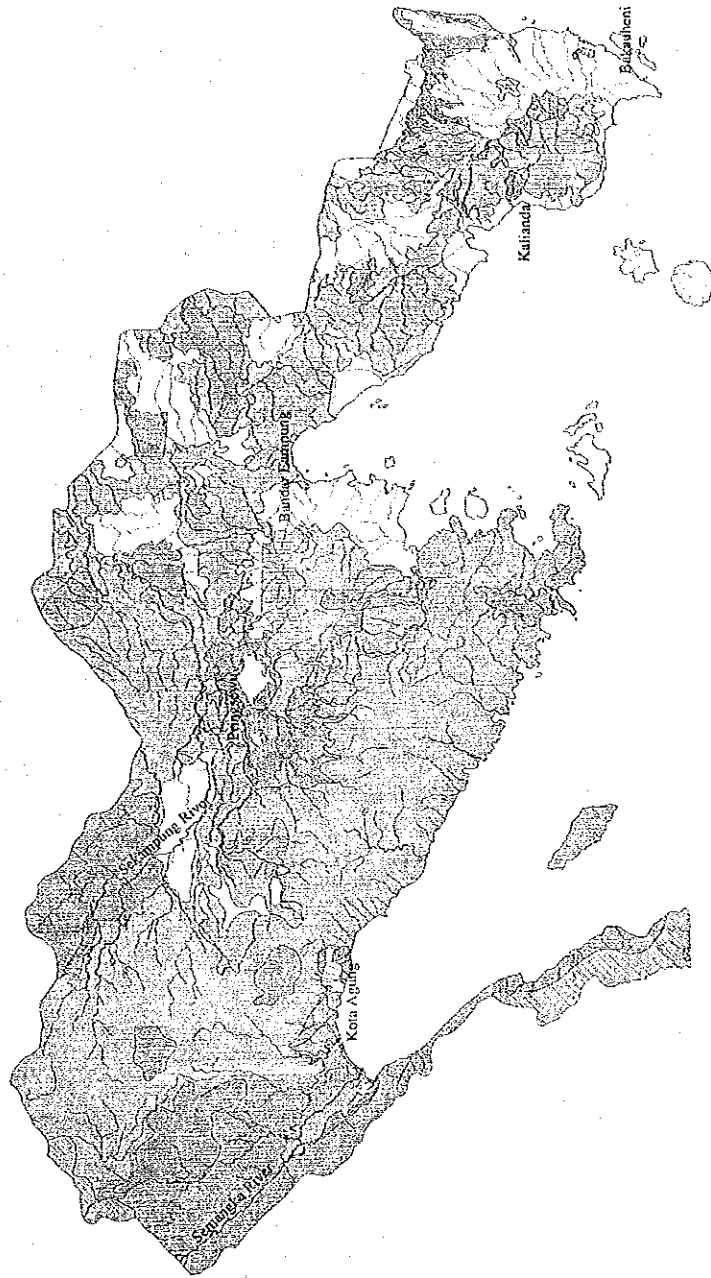
Kabupaten Lampung Selatan

- Swamp reclamation (small irrigation)
- Tree crops (coffee, clove, coconut)
- Fisheries (marine, tambak)
- Live stock
- Tourism
- Transportation development
- * Forest conservation and resettlement
- * Inadequate urban centers

In accordance with those roles and directions, the following roles are specifically assigned to this IDEP site:

- 1) Sumatra's southern tip that is strong and dynamic enough to literally form the integral part of the Java-Sumatra axis and to stimulate development northward; and

Source: Prepared and provided by PUSBINSIG (The Center of GIS Management) - BAKOSURTANAL (National Agency for Survey and Mapping) using ARC/INFO software installed in VAX 8330. The digital data used were derived from ROPPHOT (Regional Photogrammetric Programme for Topographic Data), which were acquired from Landsat MSS 4 and 5, false color composite (March 3, 1985, and April 23, 1985).



Legend

- 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 6.1.3 Land Use Pattern and Land Suitability:
Bandar Lampung/Lampung Selatan

