CHAPTER 4

UPGRADING OF THE TAYAN-PANGKALANBUN SECTION OF THE TRANS-KALIMANTAN HIGHWAY SOUTHERN ROUTE PROJECT

CHAPTER 4 UPGRADING OF THE TAYAN-PANGKALANBUN SECTION OF THE TRANS-KALIMANTAN HIGHWAY SOUTHERN ROUTE PROJECT

4.1 INTRODUCTION

This chapter is about "Upgrading of the Tayan-Pangkalanbun Section of Trans-Kalimantan Highway Southern Route Project", which is a recommended priority project and which is one of the projects constituting the Trans-Kalimantan Highway Program. The whole program is described in Chapter 8, Volume 2 of the Main Text of the Final Report.

This chapter is prepared to be utilized as the terms of reference for consulting engineering services and consulting supervisory services for the project.

4.2 BACKGROUND

The Ministry of Public Works (MPW) has the responsibility for infrastructure development throughout Indonesia. The Directorate General of Highways (Bina Marga) of MPW is the central government highway authority responsible for coordinating all the development and maintenance of all road links in the national and provincial road network.

In the Sixth National Five Year Development Plan (Repelita VI: 1994-98), regional development as an integral part of national development has been geared toward reduction of regional disparity especially in the eastern part of Indonesia in order to facilitate a more equal distribution of growth between urban and rural areas.

The road sector is expected to improve the accessibility of isolated areas in the eastern part of Indonesia. At present, Kalimantan's road infrastructure is limited compared to other provinces because its transport sector used to heavily depend upon river transport. Since early 1980s, the development of roads has slowly progressed into the middle and upper stream areas in the Kapuas river of West Kalimantan and in the Barito river basin of Central Kalimantan. On the other hand, recently the roads connecting major downstream towns (Palangkaraya, Sampit and Pangkalanbun) of adjacent river basins were constructed in Central Kalimantan.

Once the road connection is completed between upper stream areas and downstream areas, traffic demands of both passengers and goods tend to shift from river transport to road transport

very swiftly. Road development has a large impact on regional economy and landuse because roads can open the opportunities for economic activities requiring land development, such as oil palm plantations, pulp wood plantations and migrant commercial agriculture. The development of high-standard roads would have great impact for inducing and guiding economic development and landuses. Thus the adequate and timely development efforts of such roads are really essential for effective regional development.

The Trans-Kalimantan Highway is comprised of three different routes to connect the four provinces of Kalimantan (see Figure 4.1). The provincial governors of Kalimantan's four provinces have agreed that priority should be given to the development of the Southern Route of the Trans-Kalimantan Highway. The first round of construction works of about 80 percent of the road sections of the Southern Route of the Trans-Kalimantan Highway have been finished. except for the border sections between West Kalimantan and Central Kalimantan. The road sections from Tayan to the provincial border but their road conditions are not good enough to enable all-season transportation and to induce economic development activities.

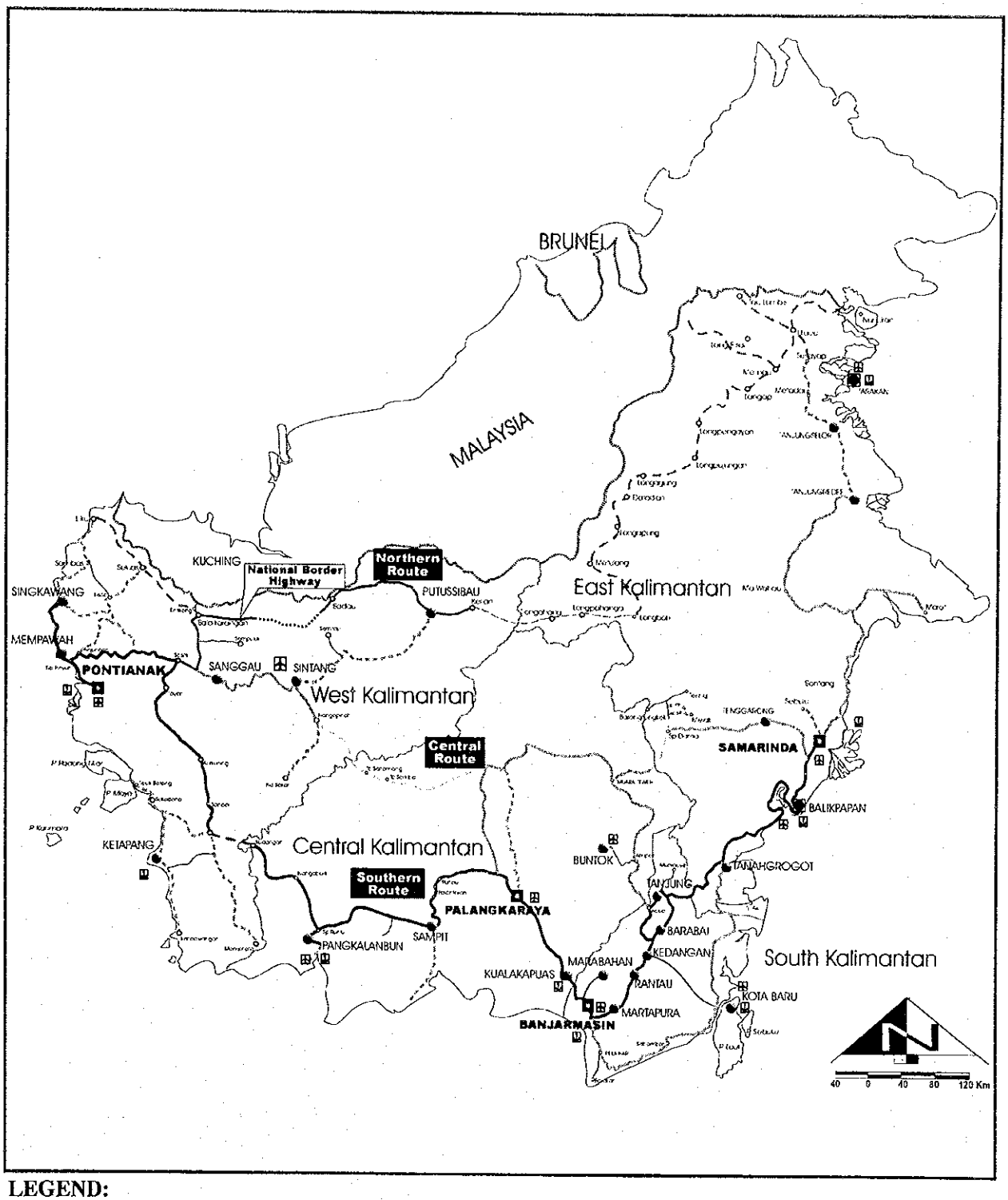
The Trans-Kalimantan Highway Southern Route starts at Pontianak (the west coast of Kalimantan) to Tanjungredep (the east coast of Kalimantan) connecting the towns of Pangkalanbun, Sampit, Palangkaraya, Banjarmasin, Balikpapan, Samarinda which is about 2,400 km in length with 400 km of the implementation of new construction and betterment works are scheduled through this project (Figure 4.2).

4.3 RATIONALE OF THE PROJECT

The development of the road sections of the Trans-Kalimantan Highway Southern Route between Tayan and Pangkalanbun has been delayed although they have been designated as one of the most promising parts of the highway. There are some existing roads without pavement. However, since no road connection has been available in the areas for a long time, any substantial road traffic to justify the upgrading the roads cannot be expected soon. According to this kind of reasoning, the road section crossing the provincial boundary between West and Central Kalimantan has the least potential in the upgrading of roads.

However, the situations surrounding road transport have changed greatly in the 1990s. The middle stream towns, Sanggau and Sintang, are connected to Pontianak by well paved roads. The new road connecting Pontianak and Tayan is under construction, resulting in reducing travel time between Pontianak and the middle stream areas. In the age of road development, further road development expanding the road network is considered to create more benefits than before.

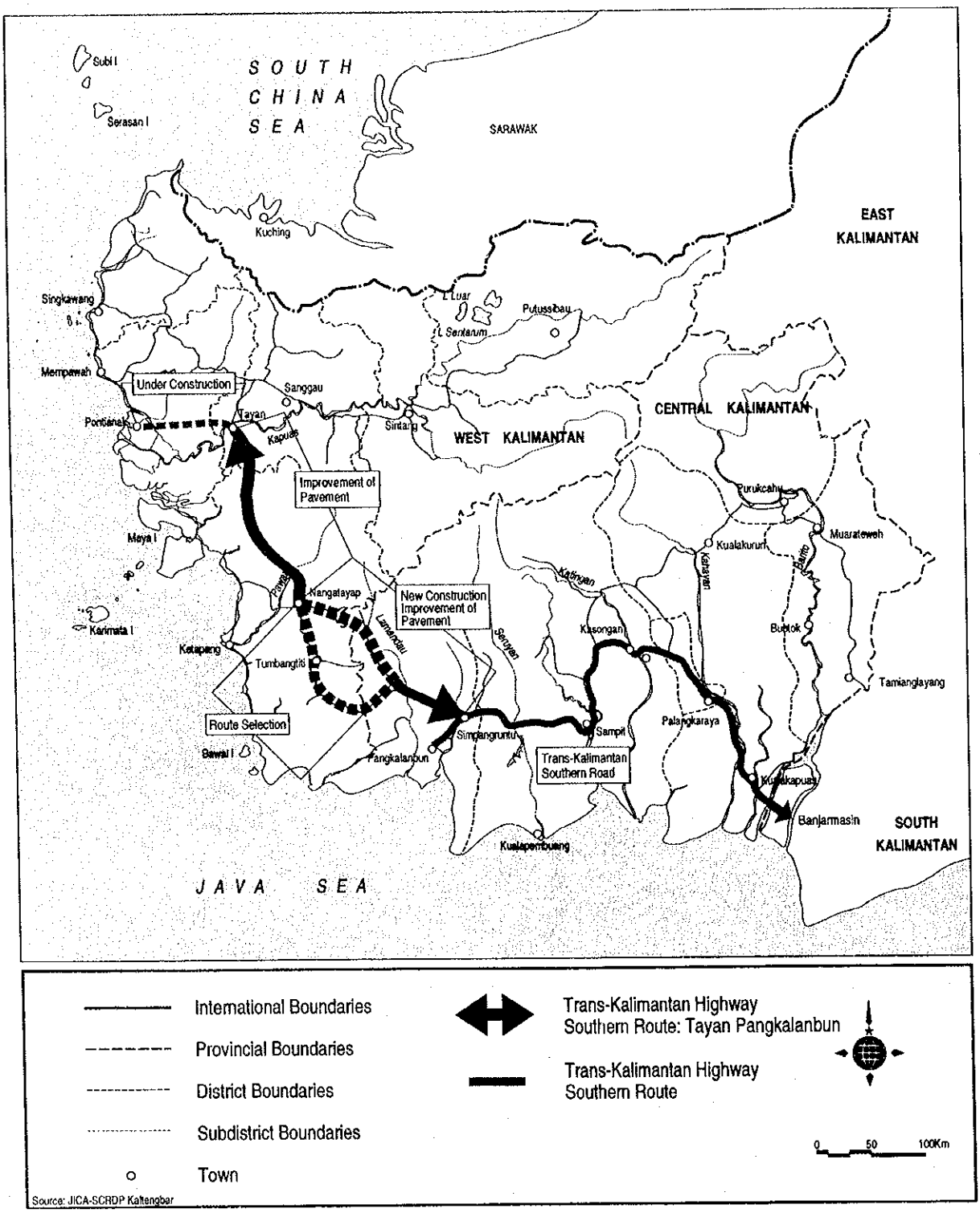
Figure 4.1 The Existing Plan: Trans-Kalimantan Highway System



LEGEND:

- Arterial Road
- Collector Road 1
- Collector Road 2
- Collector Road 3
- International Boundaries
- Provincial Boundaries
- Provincial Capital
- Municipality Capital
- Kabupaten Capital
- Kecamatan Capital
- Airport
- Harbour/Port

Figure 4.2 Trans-Kalimantan Highway Southern Route: Tayan-Pangkalanbun



The road sections between Tayan and Pangkalanbun of Trans-Kalimantan Highway can be justified for the following three reasons. First, the highway development will improve social conditions by increasing access to public facilities, jobs and markets. Second, the highway expects to play a important function as a facilitator of regional development. The highway construction will be completed within two years between Pontianak and Tayan section which will improve access to Nangatayap areas where the palm plantation developments are in progress. The areas will become major economic centers for producing palm oil. Kumai has become a regional center of oil palm and its related industries with additional port facilities. Therefore, the road network could be economically justified by those development potentials of the region. Third, the road development in the uplands will relieve development pressures of the lowland peat swamp areas.

4.4 GOALS

The general goals of the development of national highways, such as the Trans-Kalimantan Highway, are to increase the integration of the region, to reduce transport costs and to induce economic development. The specific goals of the project are as follows:

- To integrate the areas of the region,
- To facilitate an orderly development pattern,
- To improve the service level of the highway,
- To connect major urban centers in the region,
- To provide easy accessibility for local people in upland communities, and
- To support oil palm plantation development in the area

4.5 IMPLEMENTING AGENCIES

The directorate General of Highways (Bina Marga) of the Ministry of Public Works would be responsible for the decision-making of planning and engineering design. Provincial departments of Public Works (Dinas PU) would also be in charge of implementing the project.

4.6 SCOPE OF WORK

The study is comprised of a) a review study of the feasibility, b) a detailed engineering design, and c) consulting supervisory services. The scope of work is detailed below:

4.6.1 Review of Feasibility Study Stage

(1) Objectives of the Study

- To carry out a review study of the economic, social and technical feasibility for the Tayan-Pangkalanbun section, including the existing feasibility study of the 85 km section from Nangatayap to Kudangan,
- To carry out an alternative route study for the road section crossing the provincial boundary between West Kalimantan and Central Kalimantan,
- To conduct a study of access roads from the downstream areas of Ketapang District to the upland areas where Tayan-Pangkalanbun road sections run through,
- To review and propose the improvement criteria with a rough design and cost estimates for the Trans Kalimantan Highway Southern Route, and
- To select priority road sections for engineering design and construction works

The above services are broken-down into the following study items:

(2) Site Reconnaissance and Data Collection

At this stage, the present physical and non-physical site conditions shall be investigated thoroughly. The results shall be properly incorporated in the subsequent design process. The team shall coordinate a series of discussions with the central government, local governments, NGOs and private sectors. The items covered in the process are summarized as follows:

1) Review of the Previous Reports

- By reviewing reports, the team shall get the following information.
- Recent development policy, activities and projects
- The conception strategies of the transportation system in the area
- The validity of the basic assumptions and socio-economic projections
- The validity of the basic assumptions and financial evaluation of the road

2) Socio-economic Analysis

- The overall social and economic analysis must be undertaken using the following data.
- existing social-economic data and information
- regional development plans in the areas
- future socio-economic framework

(3) Transportation and Traffic Study

Future traffic volume/demand shall be obtained from:

- collecting of the road network inventories (including traffic data)
- collecting of other transport planning and studies
- review at transportation planning and studies
- review and update the inter-kabupaten OD matrices by mode, and
- conduct the supplemental traffic count survey at major road links

(4) Route Selection

Route selection shall be identified to formulate a feasibility study of the new construction section. The items to be compared will be as follows:

- Future economic activities especially oil palm plantation development
- Regional development impact
- Environmental impact of the highway
- Future road network
- Construction and maintenance costs, and
- Implementation schedule

(5) Survey at Site

The following surveys and investigations shall be carried out by the study team.

- Soil surveys along the corridor of the highway
- Aerial photo taking at a scale of 1/10,000 for proposed alignment and enlarged to a 1/5,000 scale photo mosaic
- Spot height survey as the photographic survey for the route of the project roads at interval of 200 meters combined with terrain survey near by drainage/rivers along the route and a land use survey along the corridor.
- Construction cost, construction equipment and technical ability investigation

4.6.2 Engineering Design Stage

(1) Definitive Plan

Preparation of definitive plans using a base map a with scale of 1/5,000 in the reconstructed roadway stretches and bridge replacement points. The study shall cover the following items:

- Selection of horizontal and vertical alignment
- Standard design to be applied to the detailed engineering design
- Plans and profiles
- Typical cross sections
- General plans of structure
- Preliminary construction cost estimates

The definitive plan shall cover the following construction method and schedule:

- Determination of proposed contract sections
- Construction method/criteria
- Construction scheduling

The definitive plan shall be discussed with the Bina Marga and related government and subject to reviewing permission from the Bina Marga.

(2) Engineering Design

The consultants shall undertake detailed engineering design presenting their findings and recommendations in separate reports.

Preparations of detailed engineering designs including:

- Location plans
- Plans and profiles of the highway
- Typical cross sections
- Detailed drawing of structures
- Detailed drawing of lighting and signal facilities
- Construction cost estimates, and
- reparation of Bidding Documents.

4.6.3 Supervisory Services

Besides the preparation of a detailed design and documents, consultants shall provide the following services as supervisors:

- Provide the Contractor with necessary datum points and bench marks for the setting out the work and the subsequent check and acceptance of the detailed setting out.
- Check and recommend for the approval of the Employer's Project Manager any design changes proposed by the Contractor to reduce the cost of the work as is technically acceptable within the acceptable standards of the design and contract specifications for the work.
- Check and evaluate the Contractor's work plans and progress schedules for the most effective and expeditious method of carrying out the works and advise the Employer's Project Manager on the approval of such plans.
- Issue instructions to the Contractor as required by the Contract and check and control the work to ensure that it is carried out in accordance with the contract documents.
- Provide general guidance to the Contractor as may be necessary to ensure that the works are carried out expeditiously according to schedule and within the terms of the Contractor's contract.

- Carry out, during the execution of the works, inspections of all working areas and installations.
- Carry out all necessary testing of soils, materials, operations and completed work to ensure that the works comply with the specifications and drawings.
- Examine the Contractor's installation, accommodation canteens, medical clinics or dispensaries, construction equipment and laboratories and ensure that all these conform to the agreed specifications and proposals.
- Check the Contractor's working programs for all quarries and burrow pits and ensure that the characteristics of the materials to be extracted from them meet the specifications.
- Ascertain and agree with the Contractor on the work measurements and payment claims and certify these within the terms of the Contract.
- Check and approve all working drawings prepared by the Contractor.
- Evaluate all claims for additional payments or extension of time submitted by the Contractor and make recommendations on these to the Employer's Project Manager.
- Assist the Employer's Project Manager in any dispute that may arise with the Contractor and give a firm opinion on any claim the Contractor may put forward, by drawing up a report giving all the elements on which the judgment is based.
- Prepare the necessary reports.

4.7. TIME SCHEDULE

The period required for the project is 36 months. In these months, the period of the first 18 months is for consulting studies and engineering services, and the period of the second 18 months is for supervisory services.

4.8 STAFFING REQUIREMENTS

(1) Consulting Studies and Engineering Service (18 months)

- Review of Feasibility Study Stage
- Detailed Design Stage

The staff requirements are shown in the following table:

- Expatriates: 110 person-months
- Indonesian Professionals: 200 person-months
- Sub-professionals: 160 person-months

Table 4.1 Personal Input of Consulting Studies and Engineering Services

Unit: person-months

Assignment	Expatriates	Indonesian Professionals
Team Leader (Highway Engineer)	18	18
Transport Planners	6	6
Traffic Engineer	6	6
Regional/Urban Planners	4	6
Transport Economist	4	6
Highway Engineers	16	32
Senior Structure Engineers	16	16
Structure Engineer	-	24
Facilities Engineer	6	10
Drainage/hydrological Engineers	6	20
Geo-technical Engineers	6	12
Geodetic Engineer	6	12
Cost Estimator	4	6
Document Specialists	6	8
Environmental Specialists	6	18
Total	110	200

(2) Consulting Supervisory Services

The staff requirements are as follows:

- Expatriates: 66 person-months
- Indonesian Professionals: 140 person-months
- Sub-professionals: 160 person-months

The staffing assignment is as follows:

Table 4.2 Personal Input of Consulting Supervisory Services

Unit: person-months

Assignment	Expatriates	Indonesian Professionals
Chief Engineers	24	18
Highway Engineers	18	6
Structure Engineers	14	6
Facilities Engineers	-	6
Materials Engineers	10	6
Geodetic Engineer	-	32
Site Inspection Engineers	-	16
Total	66	140

CHAPTER 5

THE PLANNING STUDY FOR THE UPLAND ECOLOGICAL DEVELOPMENT CORRIDOR IN CENTRAL KALIMANTAN

CHAPTER 5 THE PLANNING STUDY FOR THE UPLAND ECOLOGICAL DEVELOPMENT CORRIDOR IN CENTRAL KALIMANTAN

5.1 INTRODUCTION

This chapter is about a recommended priority project (planning study project), which is one of the projects constituting "the Upland Ecological Development Corridor Program", of which outline is given in Chapter 8 of Volume 2: the Main Text of the Final Report.

This chapter is prepared to be utilized as the Terms of Reference of the study project.

5.2 BACKGROUND

JICA's Technical Assistance Study, the Development Study on Comprehensive Regional Development Plan for the Western Part of Kalimantan (JICA-SCRDP-Kaltengbar) identified a wide upland area which has relatively high development potential for intensive agricultural development in Central Kalimantan. The characteristics of the area are as follows:

- The height of the area varies from 100 m to 300 m from the sea level. The area is located in the middle stream areas of several river basins between peat swamp and mountainous areas, both of which are in fragile ecological conditions. (See Figure 5.1.) Therefore, good locational planning of roads is important to control access to those ecologically sensitive areas.
- The area has been left behind in the recent road network expansion. The area is characterized as having poor accessibility by road and river because of being situated in the middle stream of the river basins.
- The population density is relatively low, less than 10 persons/km^2 in most areas and the income level is low for most of the population. Small-scale upland farming communities are scattered throughout the area and grow upland paddy , rubber trees and rattan. Poor conditions of rural roads and underdeveloped urban centers have hindered the utilization of the rural development potential.

Figure 5.1 Land Potential Existing and Planned Oil Palm Plantations in the Study Area

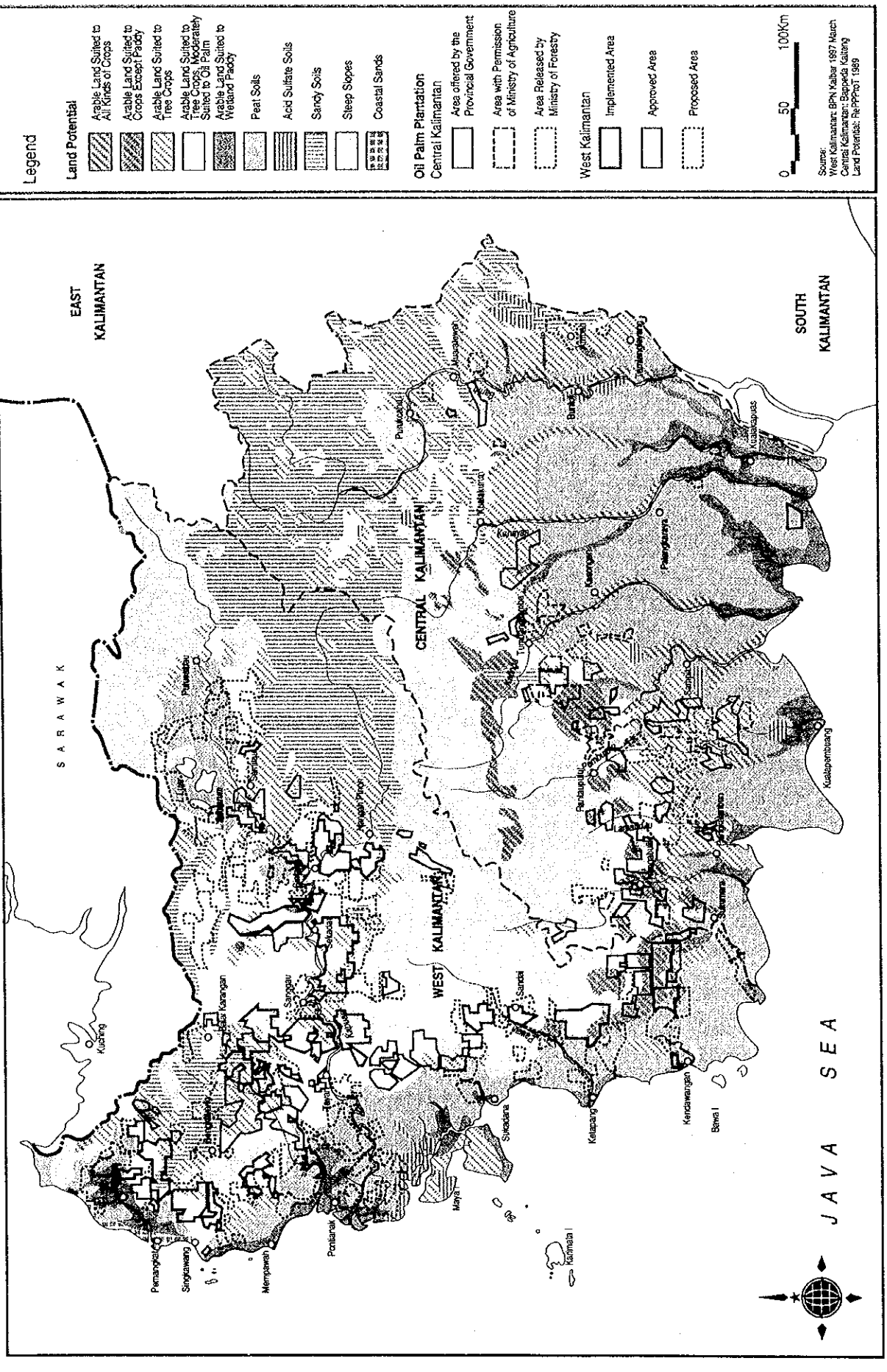


Figure 5.2 Landuse Framework and Upland Development Corridor

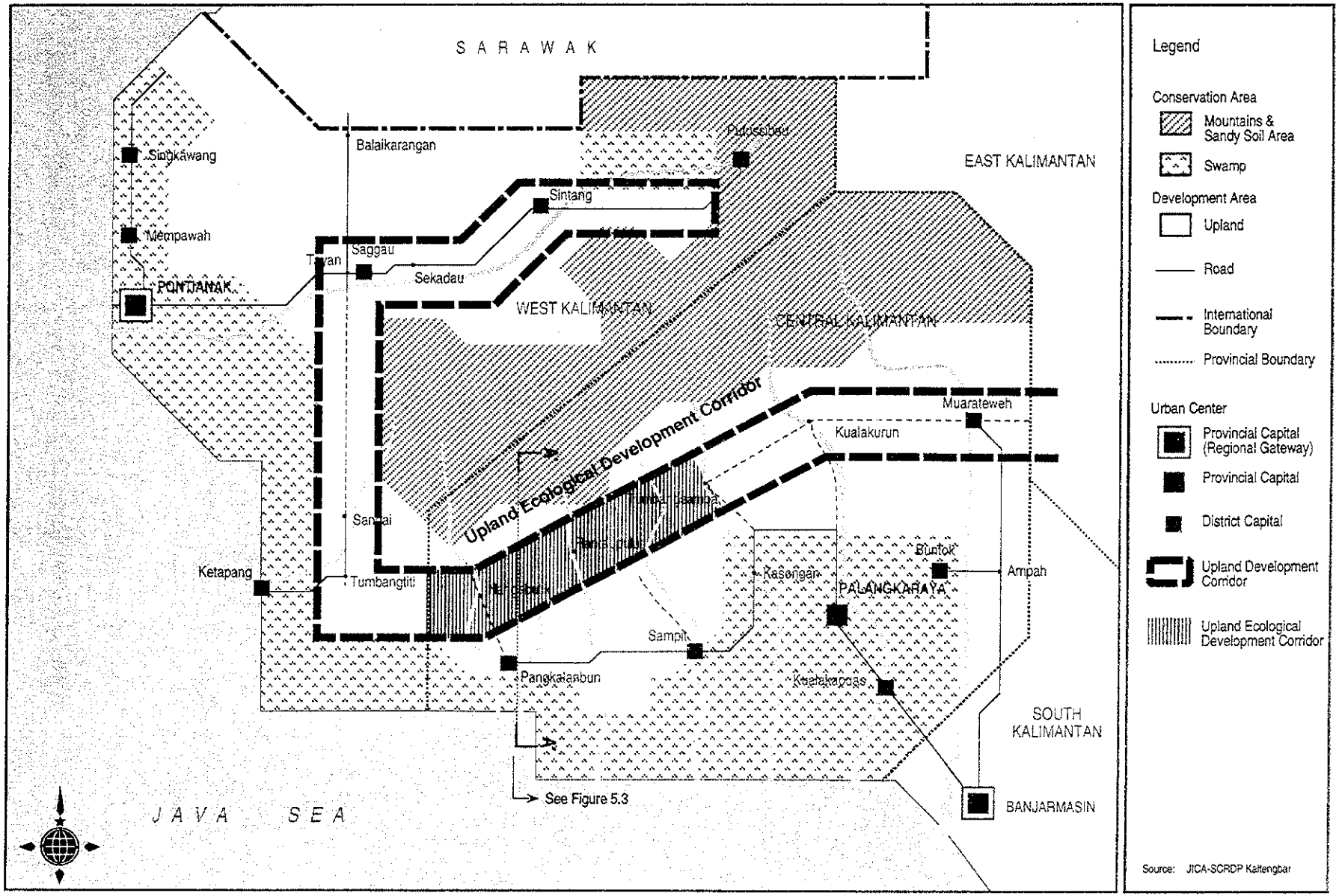
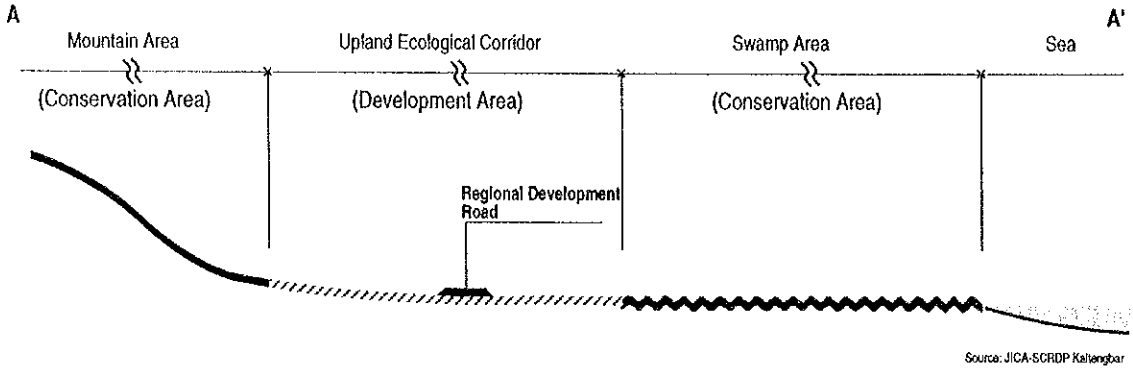


Figure 5.3 Cross Section of Central Kalimantan



- The development potential is high because of relatively high soil fertility. The analysis of land potential shows that the area is suitable for the cultivation of tree crops, including oil palm. In fact, many oil palm plantation development permits have been issued by the government to private companies in the areas. However, due to lack of roads, little actual investment in oil palm plantations has been realized yet.
- In the lower stream areas, very unorderly development of oil palm plantations has been conducted, resulting in massive unnecessary destruction of natural forests. More orderly development of oil palm plantations and some preventive measures against unnecessary environmental destruction should be implemented.

As seen above, there are some difficulties in developing the upland area in a sustainable manner. To achieve sustainable and balanced development in the middle stream upland areas, JICA-SCRDP-Kaltengbar recommended to formulate "the Upland Ecological Development Corridor (UEDC)" by comprehensively planned efforts at multi-sectoral area development.

5.3 IMPLEMENTING AGENCIES

This planing study project has two focuses. One is overall planning for area development at the provincial and district level. The other is planing and design of concrete measures and formulation of implementation programs. These two focuses of study works are interweaned each other.

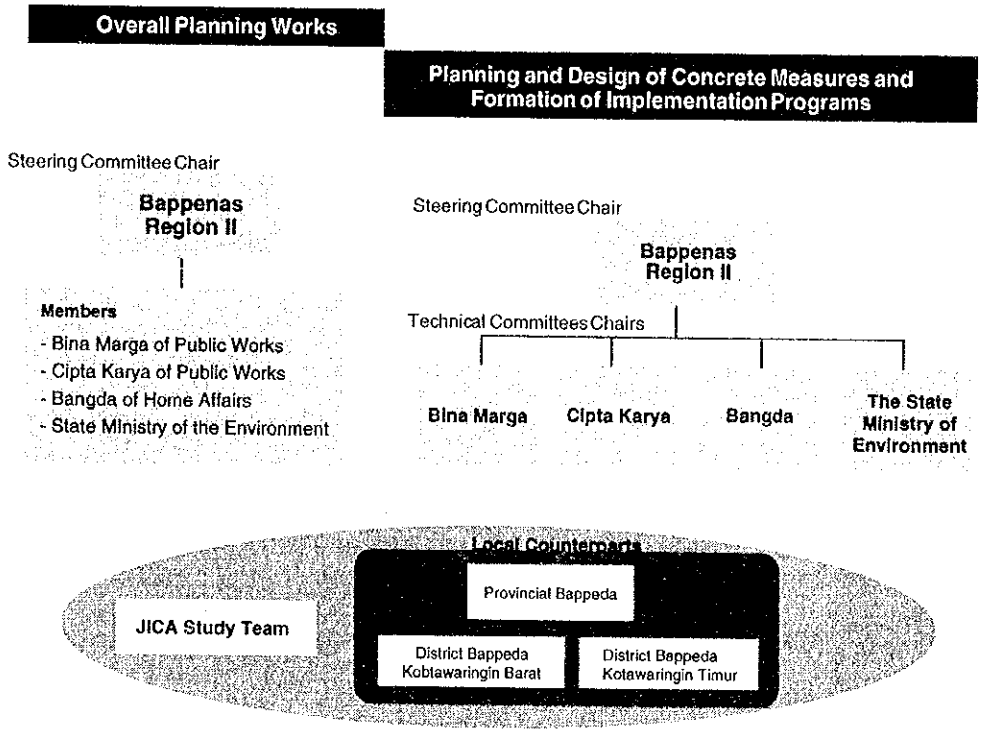
The first part should be coordinated by a central government level planning coordinating agency, such as Bappenas. The second part should be managed by technical committees chaired by different sectors' technical divisions. For the Upland Ecological Development Corridor, the following four government agencies are relevant as chairing agencies of technical committees.

- Bina Marga of the Ministry of Public Works
- Cipta Karya of the Ministry of Public Works
- Bangda of the Ministry of Home Affairs

- State Ministry of the Environment

The study team should mainly work in Central Kalimantan Province. Their local counterpart agencies at the local government level should be provincial Bappeda and distric Bappeda. The recommended study organization is shown in Figure 5.3.1.

Figure 5.4 Recommended Study Organization



5.4 GOALS OF FORMULATING THE UPLAND ECOLOGICAL DEVELOPMENT CORRIDOR

The conditions to be achieved by establishing the Upland Ecological Development Corridor (UEDC) are given in this section. The general image of the UEDC is shown in Figure 5.4.1.

Physical conditions to be achieved

- An axis road running through the corridor will be built, integrating adjacent river basins in the middle stream areas.
- Selected subdistrict centers will be upgraded to be tertiary urban centers with improved urban services and infrastructure.
- The formation of the corridor will guide orderly development of the upland areas.
- The transport of fresh fruit bunches of oil palm will use the axis road.
- The transport of CPO from CPO factories to prospective downstream processing centers will rely on the axis road.

Economic conditions to be achieved

- Substantial investment in agricultural development, including oil palm plantations, will be attracted to the corridor.
- Orderly and well coordinated oil palm plantation development will be realized depending on the development of the axis road.
- The formation of the corridor will increase the level of economic integration of the upland areas.
- Oil palm plantation and other types of development activities will get a stable supply of labor from local communities and transmigration settlements.

Social conditions to be achieved

- Many local people will participate in smallholder plantation development of oil palm, in good relations with large-scale oil palm plantation development.
- At the same time, many local people still keep the conventional livelihood means, such as rubber groves, rattan gardens and upland paddy fields.
- The size of transmigration settlements will be smaller than the standard size in order to achieve the peaceful integration of new cultures into the area.
- Local communities will be able to secure their territory and resources for their own community development after giving up some portion of their lands to other economic development activities.

Environmental conditions to be achieved

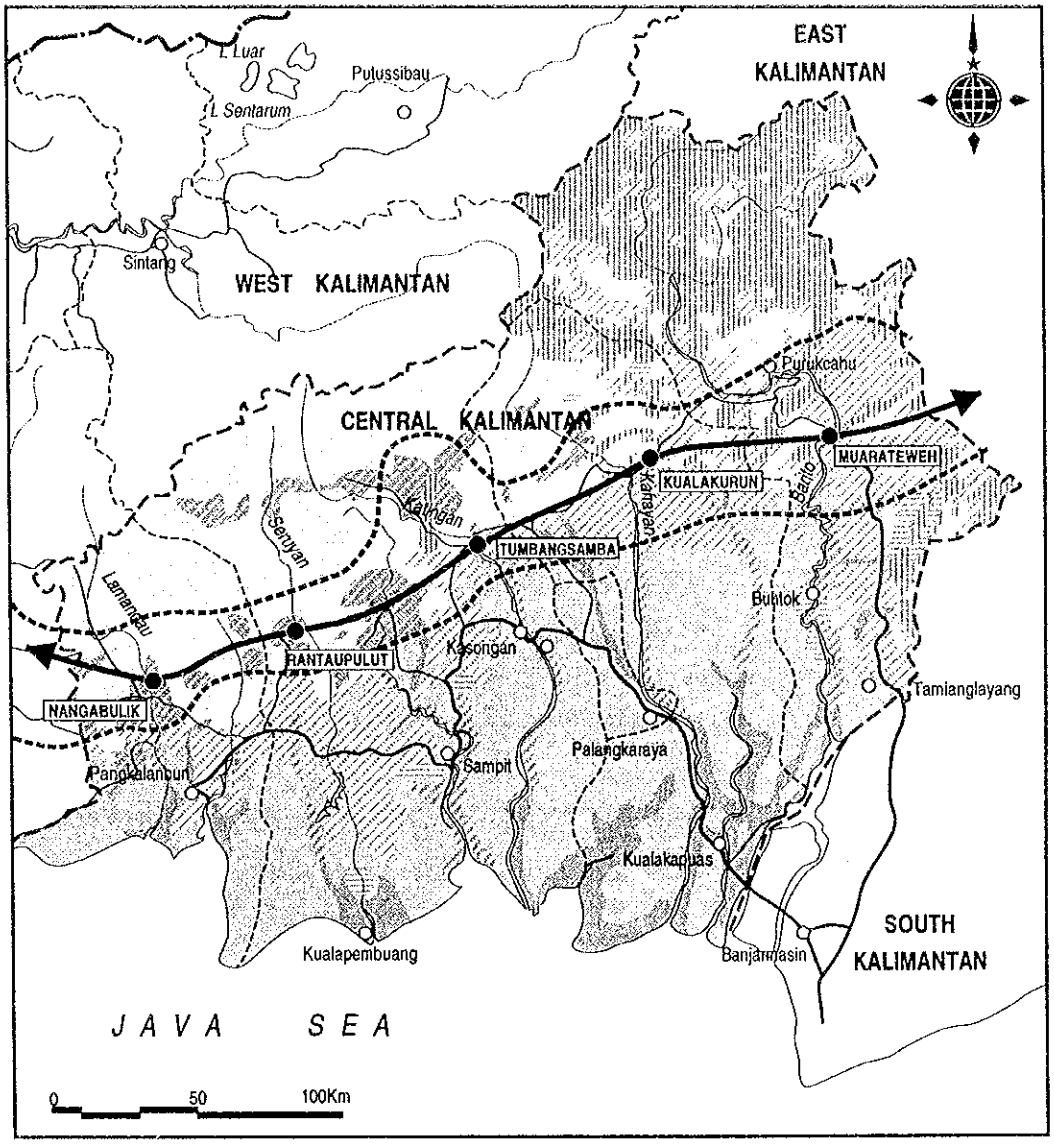
- Landuse changes in the corridor will take place in accordance with a general guideline of landuse of the corridor.
- Conservation areas within the corridor and outside the corridor will be clearly designated.
- Environmental managers of each area or each resource are clearly designated.
- Local governments and local communities, acting as environmental managers, will be responsible for environmental management over their areas or resources.

Table 5.1 General Information on Upland Ecological Development Corridor in Kotawaringin Barat and Kotawaringin Timur

Length of the Corridor	Approximately 240 km
Width of the Corridor	Approximately 50 km
Total Area of the Corridor	1.2million ha
Planned Oil Palm Plantations (Planted Area)	280,000 ha
The Present Population	120,000
The Future Population in 2018	350,000
The Future Population related to Oil Palm Plantation in 2018	250,000

Source: JICA-SCRDP Kaltengbar

Figure 5.5 Land Potential in Central Kalimantan



International Boundaries
Provincial Boundaries
District Boundaries
Town
Tertiary Urban Center
Upland Ecological Development Corridor

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

Source: Land Potential: RePPProT 1989
JICA-SCRDP Kaltengbar

5.5 THE CONCEPT OF THE UPLAND ECOLOGICAL DEVELOPMENT CORRIDOR PROGRAM

The Upland Ecological Development Corridor Program (UEDC Program) is an area development program to achieve the above mentioned goals. Since the goals cover a wide range, the program needs to incorporate actions from different sectors, such as follows:

- Large-scale development, such as plantation development
- Rural development paying attention to rural livelihood and local resource management
- Road development
- Cost sharing arrangement between the private and public sectors for infrastructure development
- Urban center development
- Landuse management and environmental management

The emphasis of the program should be given to the establishment of balanced development in the aspects of business economy, livelihood, physical and environment. Therefore, without proper guidance or planning, development will not be active, progress in a haphazard manner and will lead to the degradation of the natural environment and destruction of the local communities. Moreover, without concrete and implementable measures for each development objective, it is difficult to realize the goals of formulating UEDC.

In sum, the UEDC Program should be planned and multi-sectoral efforts for area development, which are equipped with concrete measures. The tasks of the planning study project are to formulate an overall plan and to design concrete measures for the purpose of making the UEDC Program operational.

5.6 OBJECTIVES OF THE STUDY

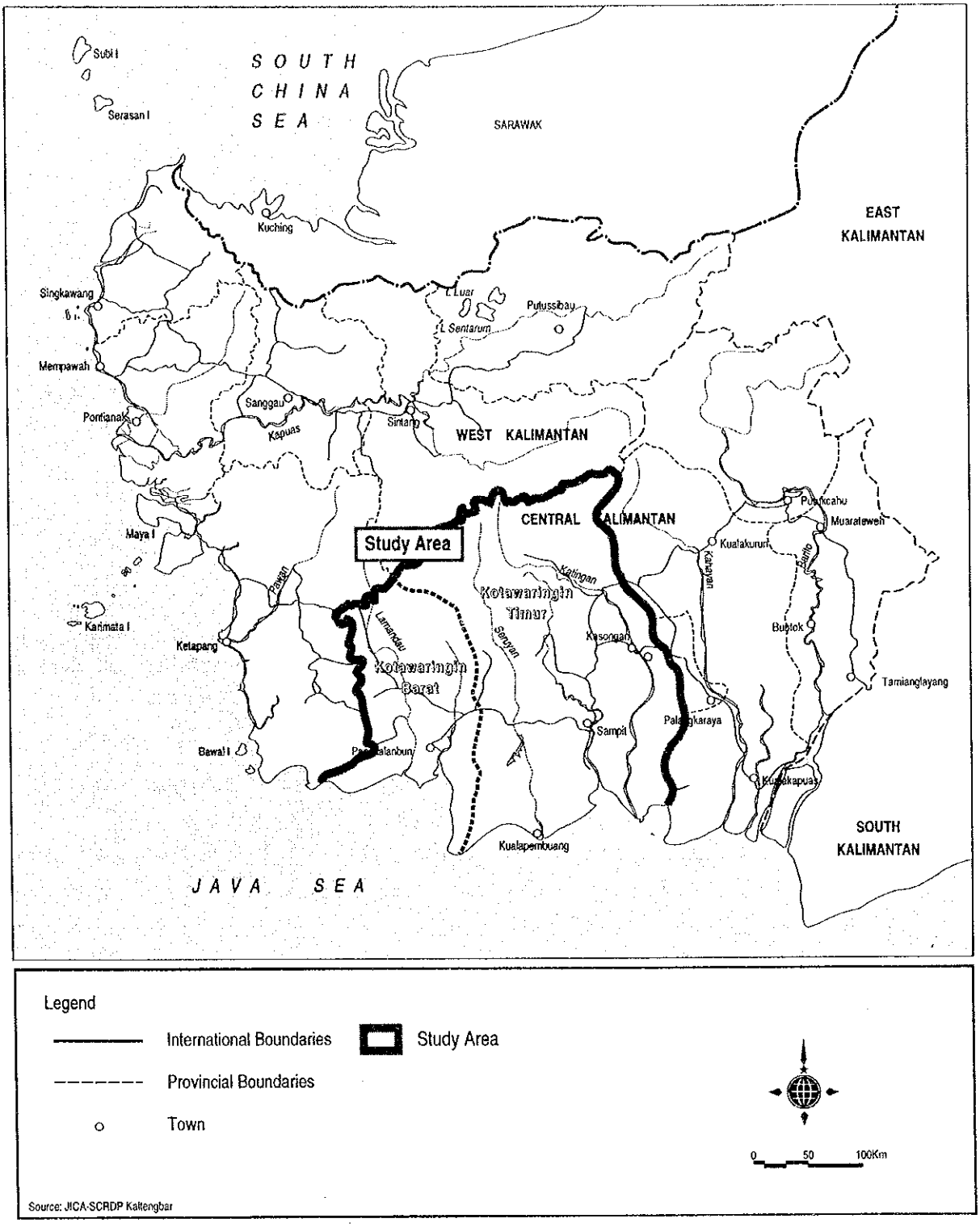
The objectives of the study are as follows:

1. To analyze and assess the development potentials of the region,
2. To review the concept of the Upland Ecological Development Corridor,
3. To prepare an overall area development plan,
4. To design concrete measures to implement area development,
5. To prepare an implementation plan of the area development plan, and
6. To empower the capability of planning agencies at the provincial and district levels, as well as the central government level.

5.7 STUDY AREA

The study area is the districts of Kotawaringin Barat and Kotawaringin Timur in Central Kalimantan Province (hereinafter called "the region"). See Figure 5.7.1.

Figure 5.6 Location of Study Area



5.8 SCOPE OF THE STUDY

In this planning study, two major works will be conducted in parallel. One is the overall planning works, which is described in Section 5.8.1 and the other is the planning and design of concrete measures and formulation of implementation programs, which is described in Section 5.8.2.

5.8.1 Overall Planning Works For Area Development

(1) 1st Step: Analysis of the present conditions, the development potentials and needs

The existing situations shall be investigated and analyzed in this step. The tasks of the study are follows:

[Task 1] Review of the existing guidelines, plans and policies

[Task 2] Analysis of the physical conditions of the region

- Collection and assessment of existing basic data on the physical conditions of the region, such as topography, geology, soil, land suitability, landuse (including concession), climatology, hydrology, river morphology, flora and fauna, vegetation
- Supplemental survey of the physical conditions of some parts of the region
- Analysis of satellite image for the study area

[Task 3] Analysis of the socioeconomic and socio-cultural conditions of the region

[Task 4] Collection and assessment of socioeconomic statistics, such as population by district, structure of population by age, by scale of family, by ethnic group, by occupation, by income, by education level, labor market, industrial structure, production of commodities, market prices of major products, food sufficiency, transportation, education facilities, health conditions and accessibility to safe water

[Task 5] Case studies of some particular villages for social development and environmental management

[Task 6] Projection of future socioeconomic figures at target years

[Task 7] Analysis of the environmental conditions of the region

- Collection and analysis of existing data on the natural and living environment
- Institutional support for experimental monitoring of business development and environmental degradation

[Task 8] Analysis of the development budget for the region, their institution, laws and regulations by sector and project

[Task 9] Analysis of the infrastructure level

- Collection and analysis of existing data on road networks, traffic volume, urban infrastructure levels and rural infrastructure levels.
- Supplemental survey on the existing traffic volume.

(2) 2nd Step: Identification of objectives and issues of area development

The development objectives and development constraints and potential shall be identified in this section through analyzing and evaluating the existing situation. The tasks to be covered are as follows:

[Task 10] Setting of the Upland Ecological Development Corridor

[Task 11] Identification of environmental issues

- Identification of present environmental problems
- Identification of foreseeable environmental problems caused by agricultural plantation development activities
- Identification of environmental problems of forestry resources depletion

[Task 12] Identification of issues on landuse

- Reviewing existing landuse and future land development
- Identification of present and future problems on landuse
- Identification of law and regulation of the landuse planning at the provincial level

[Task 13] Identification of issues on rural development

- Analysis on socio-economic problems
- Identification of problems on livelihood and local resource management

[Task 14] Identification of institutional issues

- Review of the problems at the provincial level
- Review of the institutional problems at the district level
- Review of the institutional problems of land affairs
- Review of the institutional problems of private sector investment promotion

[Task 15] Identification of private sector investment problems

- Reviewing investment laws and regulations
- Reviewing the amounts of private investment by sector in the study area
- Identify future prospects and private investment problems

[Task 16] Identification of level of infrastructure service problems

- Identification of urban development constraints
- Identification of village development constraints
- Identification of road development problems

(3) 3rd Step: Formulation of an area development plan

Based on the analysis and identification of the existing situations, an area development plan, which depicts the general features and characteristics of the upland corridor development area, shall be formulated. The focus should be given to the establishment of a balanced development plan that shall be established on the basis of future development potential and prospects of the region and includes environmental mitigation policy, urban center development plan, village development plan, and road network development plan. The items to be covered are shown below:

[Task 17] Formulation of a development policy and strategy

- Preparing a policy framework of environmentally balanced development, paying attention to the natural environment, socioeconomic activities and infrastructure level in the region
  - Identification of an environmentally balanced development capacity of the area
  - Preparing a plan for development areas and restricted areas within/adjacent to the corridor
- Preparing a policy framework of economic structure diversification, while paying attention to existing infrastructures and labor market conditions
- Preparing alternative development scenarios
- Identification of the constraints of environmentally balanced development plan

[Task 18] Formulation of plans on environmentaly mitigation policies and programs

- Preparation of a landuse plan which indicates the development area and the protected area
- Preparation of forest resource management schemes

[Task 19] Formulation of tertiary urban center development plan and programs

- Formulatinga landuse plan within urban centers
- Preparing an infrastructure development plan within urban centers
- Preparing the urban center development direction after road construction

[Task 20] Formulation of a rural development plan

- Preparing a community development plan especially for oil palm and forestry products
- Preparing village -level participatory landuse plan

[Task 21] Preparation of the road network plan

- Formulation of the road network plan within the study area

5.8.2 Planning and Design of Concrete Measures and Formulation of Implementation Programs.

(1) 1st Step: Understanding the Present Conditions and Problems

Basically this step is the same as the 1st Step of the Overall Planning Works. In the beginning phase, the two steps will be in parallel.

(2) 2nd Step: Planning and Design of Concrete Measures

Recommendations shall be made with regards to the necessary legal and institutional changes and financial schemes in relation to implementing the proposals. It seems to be important planning output for continuous coordination and interaction among the governments, local people, private companies and the study team. The items to be covered are shown follows:

[Task 22] Preparation of environmental mitigation measures

- Preparing policy frameworks and enforcement measures of the protected areas within/adjacent to the corridor.
- Preparing policy frameworks of enforcement measures for the protected forest areas within/adjacent to the corridor

[Task 23] Preparation of urban center development measures

- Preparing the future development plan by taking into consideration of the axial road connection for the tertiary urban centers which is identified in the JICA-SCRDP-Kaltengbar
- Formulating a landuse plan and infrastructure development plan for the tertiary urban centers
- Preparation of cost estimates
- Preparation of financial scheme
- Preparation of implementation schedule

[Task 24] Preparation of village level development measures

- Preparing a village level landuse plan with villager participation along the axial road
- Formulation of the oil palm plantation and small holder models (two or three typical cases) within the corridor
- Formulation of a forest based village development model along the edge of the corridor
- Preparing cost estimate
- Preparing implementation schedule

[Task 25] Preparation of road network development measures

- Preparing road development plan including coordination mechanism for the private sector and financial sharing schemes
- Formulation of implementation programs of road development
- Route selection of the axis road
- Preparation of the future traffic volume/demand forecast
- Preparation of typical cross sections
- Field surveys
    - Taking Aerial photos at the scale of 1/50,000 for the project roads and map making with contours
    - Spot height survey
    - Soil survey along the corridor
- Preparation of cost estimates
- Preparation of economic and financial evaluation

(3) 3rd Step: Formulation of Implementation Programs

[Task 26] Preparation of an implementation program for environmental mitigation based on designed concrete measures

[Task 27] Preparation of an implementation program for urban center development based on designed concrete measures

[Task 28] Preparation of an implementation program for village level development based on designed concrete measures

[Task 29] Preparation of an implementation program for road network development based on designed concrete measures

5.9 NECESSARY INPUT

Necessary expert assignments and person-month input are as follows:

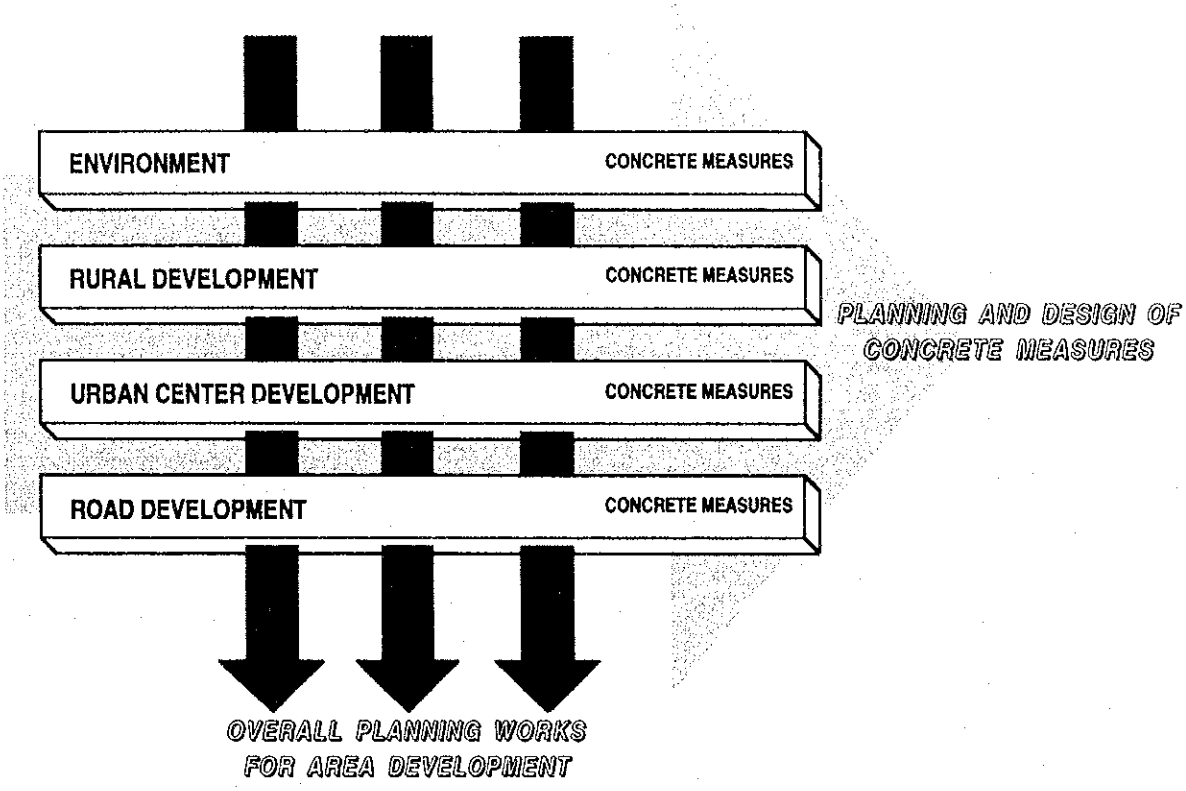
a) Project manager (Regional planner)	16 person-months
b) Road planner	15
c) Rural development planner	15
d) Urban planner	10
e) Landuse planner	10
f) Urban facility specialist	6
g) Institutional specialist	6
h) Investment promotion specialist	4
i) Social development specialist	6
j) Agricultural and agricultural industry specialist	6
k) Traffic Engineer	6
l) Structure Engineer	6
m) Hydrologist	4
n) Geologist	4
o) Cost estimate and construction specialist	4
p) Economist	6
q) Remote sensing and GIS specialist	6
Total person-months	**130 person-months**

5.10 WORK SCHEDULE

It is tentatively proposed that the completion of the entire area plan will take 20 months. The implementation schedule is shown as follows:

Phases	Overall Planning Works for Area Development	Planning and Design of Concrete Measures and Formulation of Implementation Programs,	Time Needed
Phase 1	1st Step: Analysis of the present conditions, the development potentials and needs	1st Step: Understanding the Present Conditions and Problems	6 Months
Phase 2	2nd Step: Identification of objectives and issues of area development	2nd Step (1) Planning and Design of Concrete Measures	6 Months
Phase 3	3rd Step: Formulation of area development plan	2nd Step (2) Planning and Design of Concrete Measures	4 Months
Phase 4		3rd Step: Formulation of Implementation Programs	4 Months

Figure 5.7 Structure of the Planning Study



CHAPTER 6

MASTER PLANNING STUDY FOR PANGKALANBUN-KUMAI URBAN, INDUSTRIAL AND PORT DEVELOPMENT

CHAPTER 6 MASTER PLANNING STUDY FOR PANGKALANBUN-KUMAI URBAN, INDUSTRIAL AND PORT DEVELOPMENT

6.1 INTRODUCTION

This chapter gives detailed description of a recommended priority project, which is one of the projects constituting "Pangkalanbun-Kumai Urban, Industrial and Port Development Program", whose outline is given in Chapter 8 of Volume 2: The Main Text of the Final Report.

6.2 BACKGROUND AND RATIONALE

In Central Kalimantan there are wide upland areas which have relatively high development potential for intensive agricultural development. In fact, many oil palm plantation development permits have been issued by the government to private companies in the areas. However, since the areas have been left behind in the recent road network expansion, little actual investment in oil palm plantations has been realized yet.

The JICA SCRDP-Kaltengbar recommended to form a upland development zone, called "Upland Ecological Development Corridor", an area development program with concrete measures for a wide range of fields covering plantation development, rural development, environmental conservation, road development, urban center development, and landuse management.

When the Upland Ecological Development Corridor is realized in the upland areas of the western part of Central Kalimantan (the districts of Kotawaringin Barat and Kotawaringin Timur), the future hinterland population of Pangkalanbun-Kumai will be 1.4 million, and the crude palm oil (CPO) production will be 1.5 million tons per year.

This oil palm plantation development potential means that the prospective oil palm plantation development in the upland areas could create development potential of downstream industries including oleochemical industries. Moreover, this means that Kumai port can expect 1.5 million tons of cargo outgoing and 1.5 million tons of cargo incoming (0.8 million tons for fertilizer, pesticide and plantation-related goods, 0.7 million tons of general cargo for the hinterland population). Therefore, the total cargo handling would be 3 million tons per year. In addition,

if oleochemical industries are established, additional supporting goods will be handled by Kumai port.

In order to realize the development potential of downstream industries using crude palm oil, the area of Pangkalanbun and Kumai can provide a strategic location of an industrial port and an industrial estate adjacent to the Kumai port because Pangkalanbun-Kumai area satisfies the following conditions:

- Kumai has deep sea port conditions.
- Kumai has low sedimentation
- Kumai is the nearest port from the surrounding upland oil palm plantations.
- Pangkalanbun, a district capital, which could be an urban service and business center for Kumai, is closely located to Kumai.
- Pangkalanbun has direct flight connections with Pontianak, as well as with Semarang, Java.
- Pangkalanbun and Kumai are not in swamp areas, unlike the other ports, such as Sampit and Kualakapuas.
- Trans-Kalimantan Highway passes through Pangkalanbun close to Kumai.

If Central Kalimantan is successful in attracting an oleochemical plant, it will create further development potential of oil palm plantations in the province, because crude palm oil to be produced by plantations has to find markets in processing industries somewhere in or outside the province.

In addition, Pangkalanbun and Kumai have good potential to develop as a regional urban center. In 1990, the urban population of Pangkalanbun was 24,500. In general, the size of a regional center is approximately 10 % of the hinterland population. If this general assumption applies, the urban population of Pangkalanbun and Kumai would be beyond 100,000 in the next two decades.

It is strategically important to conduct a master planning study for urban, industrial and port development for Pangkalanbun and Kumai, and at the same time, to secure the land necessary to construct an industrial estate of 100 ha, which should be adjacent to the existing port or prospective port of Kumai. However, the private sector is supposed to build an industrial estate or to prepare an industrial area, while the government should provide basic facilities and services to enable industrial operations.

Figure 6.1 Location of Pangkalanbun and Kumai

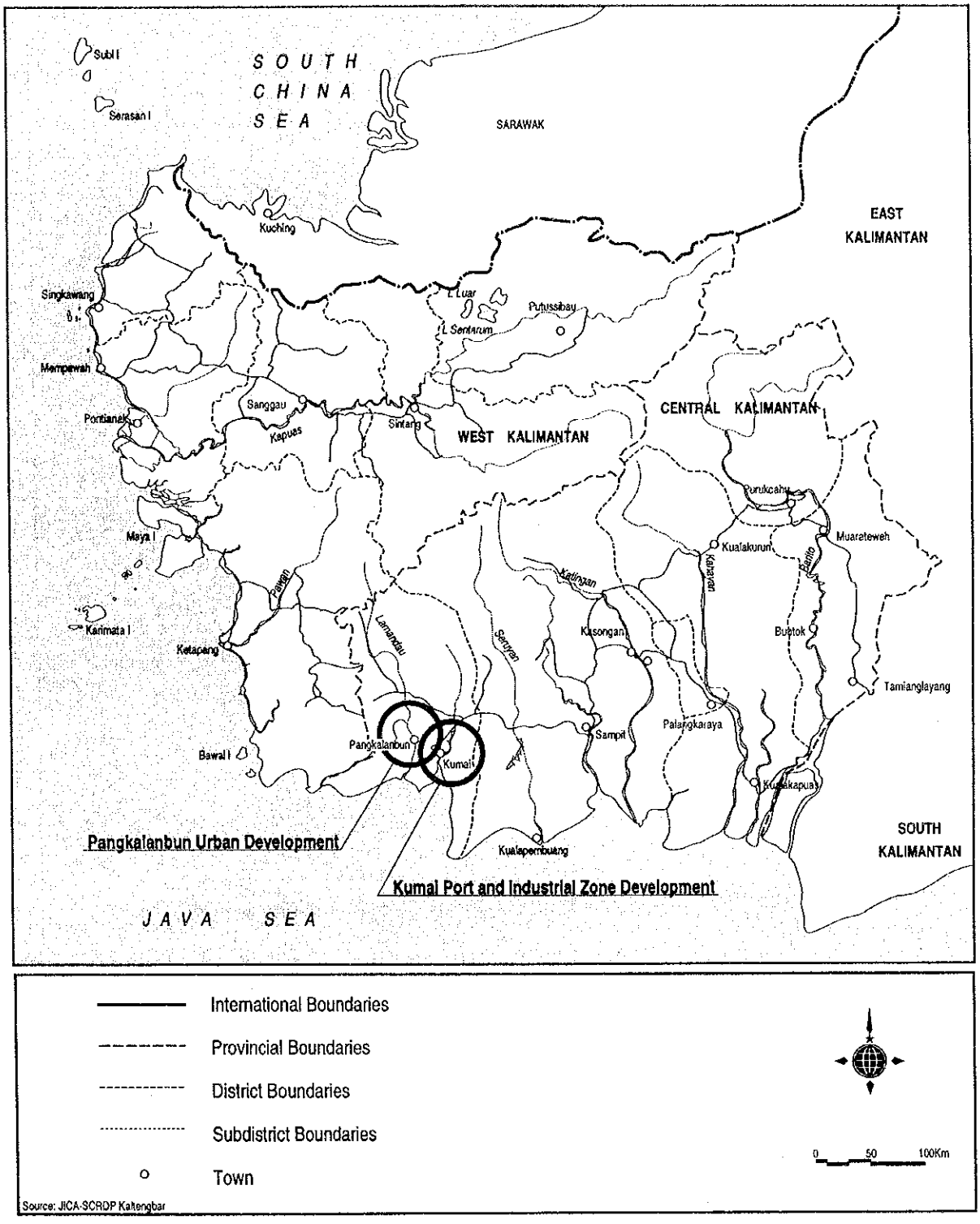


Figure 6.2 Pangkalanbun-Kumai Area

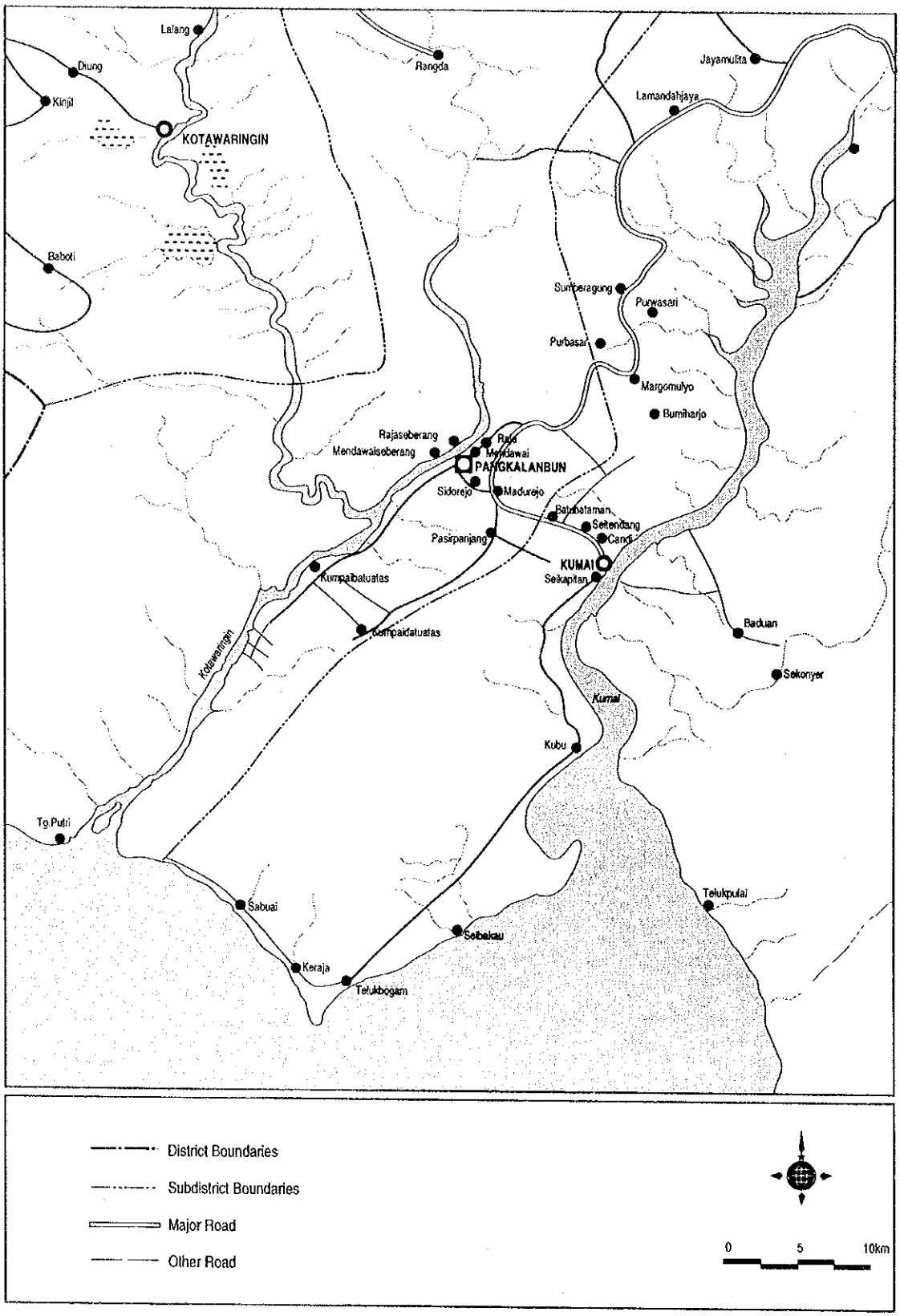
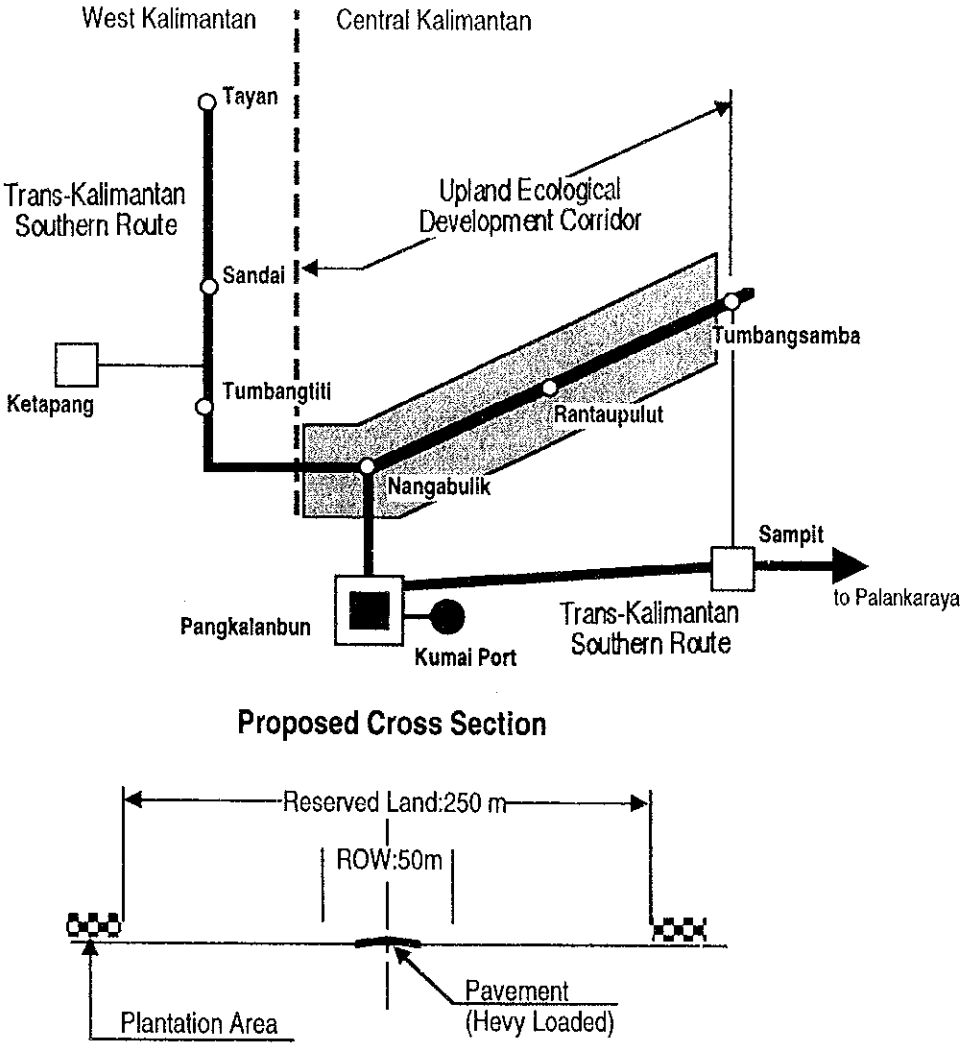


Figure 6.3 Upland Ecological Development Corridor and Kumai Port



6.3 GOALS

The goals of the development described above would be as follows:

- To facilitate strategic development of the Pangkalanbun-Kumai area,
- To provide better infrastructure services to palm oil and related industries,
- To promote the smooth and orderly formation of the Upland Ecological Development Corridor,
- To provide better inter-regional transportation services to the western part of Central Kalimantan

6.4 OBJECTIVES OF THE PLANNING STUDY PROJECT

The objectives of the master planing study are as follows:

- To assess the prospects of urban, industrial and port development in Pangkalanbun and Kumai area, in relation to its hinterland's upland development potential,
- To formulate a masterplan of urban, industrial and port development in Pangkalanbun and Kumai area,
- To assist in the enhancement of the capacity of government agencies in development planning and implementation

6.5 SCOPE OF WORK

6.5.1 Phase One: Identification of Development Issues

(1) Investigation of Existing Conditions

The present physical and non-physical site conditions shall be investigated thoroughly and an inventory shall be established. The results shall be properly incorporated in the subsequent planning process. The main items to be investigated and listed in the inventory are, as follows:

1. Present land use
2. Geographical and topographical conditions that require special attention
3. Existence of national park and traditional monuments that may need conservation
4. Existing social and economic infrastructure
5. Natural conditions that may require environmental consideration
6. Records of natural calamities, and
7. Typical life styles of the inhabitants.

(2) Review of Urban, Industrial and Port Development Prospects of Pangkalanbun-Kumai Area

The concept of the creation of Pangkalanbun-Kumai area shall be reviewed in terms of its viability and forecast the movement of goods and commodities coming from and going to the inland areas through the Kumai Port and Industrial Zone. The following are the subjects to be reviewed:

1. Development prospects of palm oil plantation of the Upland Ecological Development Corridor
2. Future infrastructure development plan
3. Development of Kumai Port and its ancillary facilities
4. Person and cargo traffic generated from and concentrated in the port
5. Development concept of the Industrial Estate

6. Requirements for external services for the port and Industrial Estate
7. Urban infrastructure service level

(3) Identification of Urban Development Issues

Urban development issues inherent to Pangkalanbun-Kumai development shall be identified to formulate a masterplan, on the basis of which a new city can be established, which has the roles and functions needed for the balanced socio-economic developed in Central Kalimantan. Potential issues are conceived as follows:

1. Legal and administrative institutions for urban development
2. Agrarian law and land administration
3. Housing development policy
4. Possible location for port and industrial estate
5. Urban infrastructure provision
6. Operation and maintenance of municipal infrastructure
7. Financial and budgetary systems for urban development, and
8. Investment incentives to induce foreign direct investment

6.5.2 Phase Two: Establishment of a Development Concept and Framework

(1) Formulation of a Development Concept and Framework

Based on the previous study results, the development concept, which depicts the outline features and characteristics of the Pangkalanbun-Kumai area, shall be formulated, and the development framework, which regulates the dimensions and functions of the city, shall be established as the basis of the master plan. The items to be covered for that purpose are as follows:

1. Characterization of the port and industrial estate
2. Characterization of the city and its development direction
3. Essential functions to be incorporated in the port and industrial estate, and urban areas
4. Development framework, including, among others, spatial, demographic, functional, transport, industrial and agricultural plantation
5. Development objectives , and
6. Development strategy and methodology.

6.5.3 Phase Three: Preparation of the Master Development Plan

(1) Preparation of Pangkalanbun-Kumai Urban Planning

The urban planning shall be carefully planned with a view to create a city, which is not only functional, but also harmonious with the natural landscape. Adequate municipal utilities and sanitation systems shall be planned taking into consideration the probable future demand. Particularly, the availability of domestic and industrial water is one of the most crucial issues for the new city development.

1. Conservation of existing land use insofar as practical
2. Location of principle urban functions
3. Water supply
4. Electricity
5. Gas
6. Sanitation, and
7. Solid waste disposal and treatment
8. Road networks and other modes of transport

(2) Transport Planning

Transport systems shall be carefully planned, taking into consideration of the regional objectives to form a industrial port and estate in Kumai areas and a "twin-city concept" linking Pangkalanbun and Kumai. The items to be covered are:

1. Linkage with Pangkalanbun and Kumai as well as other developments along the Trans-Kalimantan Southern route
2. Linkage with the Upland Ecological Development Corridor
3. Port and industrial estate location
4. Intra- and inter-city road network
5. Port development and industrial development linkages

6.5.4 Phase Four: Preparation of the Feasibility Study

(1) Port and Industrial Estate Planning

Port and industrial development shall be formulated to serve the Upland Ecological Corridor Development in Central Kalimantan. Those facilities will enhance the region's agricultural plantation and industrial development. The items to be covered are:

1. Selection of port and industrial estate location
2. Future handling volumes of the port
3. Expected function of industrial estate
4. Expected industrial activities in the estate
5. Concept development plan for the port and industrial estate, and
6. Cost estimate

(2) Project Evaluation

On the basis of the port and industrial estate development plan, the economic and financial evaluation of the project shall be carried out to evaluate project viability. Items to be covered are:

1. Financial and economic analysis, and
2. Risk analysis

(3) Project Financing Scheme

Based on the rationale for the city development having certain functions of regional importance, a project financing scheme shall be recommended, which assigns the funding responsibilities to the central government, the provincial government, municipalities and the private sector, especially plantation companies. The possibilities for obtaining finance from international lending agencies shall also be examined in a practical manner.

(4) Implementation Programming and Scheduling

The implementation of the new city would take a long time, probably 15 to 20 years until its substantial completion. A phased implementation schedule with the appropriate programming of essential infrastructure and facilities shall be prepared taking into consideration the availability of financial sources and other constraining factors.

6.6 WORK PLAN

The following work plan is tentatively proposed, but it shall be subject to future modification and revision depending upon the possible changes in the scope of work.

6.6.1 Estimated Staff Assignment and Person-Month Input

a) Project Manager (Regional Planner)	12 person-months
b) Urban planner	12
c) Transport planner	8
d) Highway engineer	8
e) Port planner	8
f) Port engineer	6
g) Electricity specialist	6
h) Sanitary engineer	8
i) Cost Estimate and Construction specialist	6
j) Free Trade Zone Specialist	6
k) Drainage Engineer	6
l) Social development specialist	4
m) Institutional specialist	4
n) Investment promotion specialist	4
o) Economist	6
p) Cartographer	6
Total person-months	**110 person-months**

6.5.2 Work Schedule

It is tentatively proposed that completion of the entire masterplan study will take 16 months. Implementation of the study should be carried out in the four phases outline below:

Phase One	: Identification of Development Issues	4 months
Phase Two	: Establishment of Development Concept and Framework	4 months
Phase Three	: Preparation of Master Development Plan	4 months
Phase Four	: Preparation of Feasibility Study	4 months