6.3 FRAMEWORK AND BASIC STRATEGIES FOR ECONOMIC DEVELOPMENT

6.3.1 Objectives

1) To prepare for economic development and to start some selected efforts even in the stages of rescue, recovery and stabilization in and after the economic crisis

2) To sustain steady growth of regional economy based on the nature power and social power inherent in the Kalimantan System

3) To expand economic development opportunities, including employment, to residents or enterprises of the region

4) To promote the equity among a wide range of socio-economic groups

6.3.2 Basic Understanding

The basic understanding of regional economic development potential in Kalimantan is as follows:

Kalimantan's economic development in the next two decades will inevitably rely on the primary sector and resource-based industries, due to lack of sufficient quality and quantity of infrastructure and human resources.

Although to develop infrastructure and human resources is also one of the necessary efforts for regional development, it is not possible to attain them in short or medium terms (in ten years). This means that Kalimantan's economic development efforts must continue to rely on nature's power of forest, soils and water. The operation of such natural-resource-based industries should be kept within the resource capacity to support sustainable development.

However, as the analysis of the past exploitation and development patterns reveals, the large-scale natural-resource-based industries (both exploitation and processing industries) tend to be unsustainable in their operations. Therefore, it is necessary to include "to seek other types of development, which are not exclusively based on high-volume natural resource use or large-area land resource use" as one of the regional development goals.

6.3.3 Basic Strategies

This section of basic strategies points out selected economic subsectors and approaches which need strategic attention because they are essential to promote economic development in the short and longer terms.

The following list of basic strategies tries to specify strategic areas, directions, extent and ways of economic development efforts. Although each in the following list might be similar to that found in the existing economic development plans and proposals, they are different in that they are also framed by the frameworks and basic strategies specified by the other sections of this chapter, namely the frameworks and basic strategies for spatial development, social development, infrastructure development, environmental and resource management, and institutional management.

1) To secure wood supply to the local wood processing industries and local consumers in the future, by improving provincial forest services' enforcement works for the regulation of commercial logging operation and by empowering local communities as forest managers with some incentives

2) To encourage wood processing companies to be more efficient in operating in terms of wood utilization. In particular, to implement some structural adjustment measures for production lines of the existing plywood factories, which are at present inefficiently operating, for the following two purposes:

   - to sustain the business operations of plywood factories for a longer period and in a more efficient manner
   - to decrease the excessive burden of logging and clear-cutting reducing them to more sustainable levels

3) To promote and sustain oil palm plantation development for offsetting a prospective downturn of the timber production from timber concession areas and the plywood manufacturing industry, insofar as the oil palm plantation development is sustainable not only in a business sense, but also with respect to the environment and people's livelihood.

4) To promote the development of downstream industries (including the oleochemical industry) utilizing crude palm oil (CPO) to be produced in the region. To increase the amount of value added within the region by this strategy is imperative because huge and precious lands need to be used for oil palm plantations. It is necessary to create a business environment which both domestic and foreign investors feel safe and are attracted to investing in oil palm plantation and other downstream industries.

5) To develop Kumai as a center of the downstream industries of palm oil, including an industrial port and estate. Kumai satisfies the following strategic conditions: a) it is in the plantation areas covering Ketapang and Kotawaringin Barat, b) it has a good sea port, and c) it is on an upland area even though it is a coastal area.

6) To promote small and medium enterprises in a wide range of economic subsectors. This is because this area of development has certain potential, and because the prospective oil palm industry and the existing but downturning wood processing industries will not able to create enough value added and jobs. The existing urban sector has various small and medium enterprises which have potential to be utilized. At the same time, it is necessary to promote small and medium enterprises, especially small and micro enterprises, in rural areas.

7) To take advantage of the recently emerged currency depreciation of Indonesia's rupiah relative to Malaysian ringgit by making free trade and manufacturing zones near Indonesian-Malaysian national borders. Labor intensive types of manufacturing industries could be strategically located in the border areas, by combining relatively cheap labor, the capital available from Malaysian investors, and the sales networks of Malaysian firms.

8) To prepare for the development of resource-based industries, such as pulp industry, bauxite refining industry. Although these projects are less prospective due to the shortage of public budgets in and just after the present economic crisis, they have still high development potential and would be important subsectors to support regional economy. However, studies are needed for finding appropriate locations for those industries, because they are water-polluting industries.

9) To take advantages of Natuna Island's natural gas development by developing logistic bases and a metal-engineering support base in West Kalimantan, especially in the coastal zone between Pontianak and Pemangkat. Although it is suspended due to the economic crisis, this project is vital for both Indonesian and West Kalimantan economies in the future.

6.3.4 Agriculture Sector Plan

(1) Objectives of the Agriculture Sector Plan

- To improve food-self sufficiency
- To increase and stabilize rural income
- To improve the quality of life of the rural population
- To contribute to the economic growth of the region
- To conserve the natural environment and biodiversity by sustainable and diversified agriculture

(2) Strategies for the Agriculture Sector Plan

1) Upland Areas with Oil Palm Plantation Development

- To create a business environment to realize the sustainable development of oil palm plantations

- To encourage the existing upland agriculture (food crop cultivation, tree crop cultivation and livestock production) to diversify and stabilize the household economy of smallholder plantation farmers (plasma farmers)

2) Upland Areas without Oil Palm Plantation Development

- To improve the productivity of the existing upland agriculture (food crop cultivation, tree crop cultivation and livestock production).
- To Increase cash income by improved marketing and/or processing

3) Lowland Areas

- To Improve the productivity of the existing agriculture, especially wetland rice production
- To expand income opportunities by introducing new products and/or by promoting new markets

6.3.5 Forestry Sector Plan

(1) Objectives of the Forestry Sector Plan

- To sustain the production of forest products (both timber and non-timber forest products)
- To sustain forest-related industries (both wood processing industries and non-timber forest products processing industries) for supporting the regional economy
- To secure livelihood and culture of the people living on forests within the territory of communities
- To conserve the regional environment including soils and water by proper development of the forestry sector

(2) Strategies of the Forestry Sector Plan

- To improve the enforcement of the forestry regulation to continuing logging operations for conserving forest resources in the future
- To enhance the conservation efforts at the forest resources of logged over forests for supplying forest products in the future
- To improve the existing forestry regulation and forest landuse plans for sustaining the forests for sustainable economy, society and environment in the region
- To sustain the plywood and wood industries in the region by implementing structural adjustment measures to inefficient wood processing lines and by the partial sales restriction of logs harvested in the region in order to reduce the demand for wood harvesting in the region

6.3.6 Fisheries Sector Plan

(1) Objectives of the Fisheries Sector Plan

- To increase fish production and to increase the values of fish produced
- To conserve fisheries resources for future utilization
- To diversify and increase rural incomes

(2) Strategies of the Fisheries Sector Plan

- To enhance values and quality of fishing catch by providing small-scale hygienic fish handling areas at fish unloading facilities along rivers
- To conserve fisheries resources in inland waters and coastal areas for future development of more high value added fisheries production, as well as for supply basic protein food to local markets
- To improve selected hatchery/nursery/technology demonstration operations for aquaculture
- Not to disturb the existing fish pricing structure and marketing activities by careless efforts at increasing fish production

6.3.7 Mining Sector Plan

(1) Objectives of the Mining Sector Plan

From 1999 to 2003

- To stabilize the mining sector

From 2004 to 2008

- To finalize resource base and business prospects

From 2009 to 2018

- To broaden and deepen development paths

(2) Strategies of the Mining Sector Plan

From 1999 to 2003

- To design and implement economic and social counter measures
- To investigate potential and business prospects

From 2004 to 2008

- To accelerate mining potential identification

From 2009 to 2018

- To put a suitable "enabling environment" in place

6.3.8 Manufacturing Sector Plan

(1) Objectives of the Manufacturing Sector Plan

From 1999 to 2003

- Rescue and stabilization of the existing "dying" manufacturing sectors

From 2004 to 2008

- Structural adjustment, recovery and diversification of the existing manufacturing sectors
- To pursue the full realization of the manufacturing sector's potential

From 2009 to 2018

- To broaden and deepen development paths of the manufacturing sectors
- To seek the full realization of the manufacturing sector's linkage potential (international, regional and cross subsectoral)

(2) Strategies of Manufacturing Sector

From 1999 to 2003: Economic and social counter measures

- To systematize existing statistics, data and reports already available with a view to prepare a crisis/structural adjustment programs for the wood processing industry
- To prepare a long-term industrial scale perspective plan along 2-digit ISIC code lines, for the manufacturing sector as a whole
- To identify industrial manpower skill requirements and to match such requirements with necessary changes in the human resource development structure
- To establish procedural and other safeguards in the licensing process, which fosters open and fair markets and competition
- To start implementation of the structural adjustment program for the wood processing industry

From 2004 to 2008: Accelerated growth through concentrated efforts at selected development zones

- To complete implementation of the wood processing structural adjustment program (including all economic and social flanking measures)
- To adjust an incentive system to foster the manufacturing sector's horizontal and vertical diversification (within lines-of-manufacturing, and among inter-line linkages)
- To "fine tune" the overall "enabling system", where and when necessary
- To restrict the role of the local government to that of a "regulator and referee"

From 2009 to 2018: Suitable "enabling environment" in place

- For the public sector to continue its basic support functions of private sector activities (enabling environment, technical support functions, support to promotional activities)
- For the private sector to assume principal responsibility for the full realization of the subsectors potential (development has become the principal function of the private sector), and to provide properly maintained infrastructure, where and when needed.

6.4 FRAMEWORK AND BASIC STRATEGIES FOR SOCIAL DEVELOPMENT

6.4.1 Introduction: Components of the Social Development Plan

The social development plan is constituted of the following two components:

- Plans for community development, including village development and poverty alleviation programs
- Plans for the social service subsectors, such as school education and health

The above two components are more closely related to each other in social development at the rural community level. In particular, the situations of inland Kalimantan's school education and health services are a crucial basis for seeking social development at such rural communities.

6.4.2 Objectives of Social Development

The objectives to be set for the social development of Kalimantan should be based on the understanding of regional societies of Kalimantan. Chapter 4 points out Kalimantan's nine key socio-economic characteristics, which constitute the salient features of the Kalimantan System together with natural characteristics of Kalimantan.

Among those socio-economic characteristics, the most important is that each ethnic group has different livelihood means from others, and different types of livelihood systems prevail in the areas of different land and forest conditions. Moreover, the groups of certain livelihood means have different social and cultural organizations than others. Each group has developed its own ways or skills to utilize local ecological resources. Reflecting these socio-economic characteristics of Kalimantan, the following three objectives are identified for social development:

1) To provide all types of groups with the opportunities to participate in sustainable development efforts keeping and utilizing the features of their societies and economic systems,
2) Not to destroy or weaken the existing social systems of different types of communities in the region, and to empower local communities to take advantage of their own characteristics of social systems and livelihood systems relying on nature, and
3) For the government to provide the local communities with the basic services of school education and health as the foundation for survival and social development, and for the local communities to play roles in securing government provision of the basic services in their own communities.

6.4.3 Basic Strategies

(1) Community-Level Development Planning

With the decentralization of more functions to local governments, local communities are encouraged to tell their needs to the local governments and to play larger roles in planning and taking actions.

One of the methods of these is participatory community-based planning for community development and project formulation. The government is required to financially and intellectually assist local communities in this respect.

Such community development should be really based on people's initiatives and active interaction. This situation can be realized among the members of a community, for example, sharing its own territory and resources. The community in West Kalimantan is a spontaneously developed kampung, which is administratively almost the same as a dusun. On the other hand, the community is a desa in Central Kalimantan. It is important to strengthen the function of dusun in West Kalimantan and desa in Central Kalimantan in community development planning.

(2) Sustaining Coexistence of Oil Palm Plantations with Existing Local Communities

The largest expected change to happen to inland Kalimantan in the next two decades is large-scale oil palm plantation development. Without proper intervention of the government, this change is very likely to adversely affect the local communities in terms of social organization and the natural bases of their livelihood. It is essential to secure the sustainability of both oil palm plantation companies and local communities (business sustainability, environmental sustainability and livelihood sustainability).

For seeking these kinds of sustainability in oil palm plantation development, it is necessary to base oil palm plantation development on the understanding that upland communities are "ecological communities", whose livelihoods depend on the ecological resources within the territory. Upland farming, including paddy and rubber cultivation, is based on such ecological resources, which are secondary forest lands.

If the existing livelihood system, which is diversified and based on the ecological resources available to the communities, is totally replaced by oil palm plantations, which are monoculture, the sustainability of communities' livelihood would be largely threatened. Moreover, the

opportunities of future generations of the communities would be largely reduced due to the decrease of the lands and forests available to them.

(3) Reconstructing the Government Delivery System of Basic Services of School Education and Health so as to make it suitable for the Kalimantan System

There are two strategies to achieve the suitability of the service delivery system for the Kalimantan System. One is to reconstruct the service delivery system more suitable to the local conditions of the rural communities (50-100 households) which are scattered across large areas with poor accessibility from subdistrict towns. The second is to encourage the communities to make more self-help efforts at securing the basic service delivery system by some external intervention. In both cases, it is necessary to start with more basic targets, such as primary school education and child-mother health.

6.5 FRAMEWORK AND BASIC STRATEGIES FOR INFRASTRUCTURE DEVELOPMENT

6.5.1 Principles of Infrastructure Provision

(1) Types of Infrastructure and the Role of Public Sector

Kalimantan's infrastructure should be considered differentiating the following three types of infrastructure:

(a) Infrastructure for people's lives
(b) Infrastructure for private sector's business and producing operations in developed areas
(c) Infrastructure for private sector's business and producing operations in remote or underdeveloped areas

Type (a) infrastructure is provided by the public sector. Type (b) infrastructure is not prepared specially for certain enterprises, but they rely on the infrastructure prepared for people's lives. As for Type (c) of infrastructure, it is difficult for the public sector to provide enough infrastructure to satisfy the demands by the private enterprises located in relatively isolated or low population density areas. Therefore, they have to prepare their own infrastructure (electricity, water supply, telecommunications and so on) by themselves.

(2) Road: Special Infrastructure

However, among the varieties of infrastructure, the road has occupied a special place in any kind of setting, either in underdeveloped regions or in developed regions. Road development is essential for most modern economic activities. With road development, economic activities will intensify and expand. Then other infrastructure will be provided.

For example, it can be said that the impact of developing a 10 km road is larger in Kalimantan than in Java, because roads are less available in Kalimantan. The addition of a 10 km road to the existing road network could integrate a subdistrict center to the road network. As a result, the village people might feel it feasible to construct roads from their village to the subdistrict center by themselves, because they can use cars or motorcycles to directly reach downstream towns from their village. A 10 km road might also induce oil palm plantation development, which creates a certain amount of vehicle traffic. Although the derived volume of vehicle traffic is not large enough to justify the road construction if they adopt the same criteria as Java's, it could be justifiable from a view point of supporting oil palm plantation development, which might be crucial for regional economic growth.

This example of road development in the rural areas of Kalimantan suggests that the following two alternative benefits should be included for investment justification:

- The benefits to satisfy the needs for social development
- The benefits to induce economic development, such as oil palm plantation development

(3) Infrastructure Other Than Roads

As for infrastructure other than roads, we consider it difficult to justify government provision of economic infrastructure to support certain private enterprises' industrial development or mining development in inland areas of low population density. It is because the publicly provided infrastructure is not really accessible by the surrounding economic actors or residents. Therefore, in the next 10 years at least, the government efforts in Kalimantan's infrastructure development (other than roads) should concentrate on the infrastructure for benefiting residents' lives and promoting economic activities. The private sector's investment in manufacturing or mining enterprises should provide their own necessary infrastructure (for example, electricity, water supply and telecommunications) except roads.

(4) Alternative Principles for Infrastructure Development for Kalimantan

The eastern part of Indonesia has always been short of adequate infrastructure to promote economic development and to attract private sector investment. Without a substantial amount of demand for infrastructure, for example, without enough demand for road traffic, it is difficult to justify the investment in road development from the criteria of economic feasibility. As a result, more investments in roads tend to be made in developed regions like in Java and Sumatra than in underdeveloped regions like Kalimantan, or within Kalimantan, more investments more often come to urban areas than to rural areas. This is a vicious circle increasing regional disparity in economic activities and in infrastructure provision.

If there is really a political will to promote development in less developed regions for the purpose of reducing regional disparity between eastern Indonesia and western Indonesia, alternative reasoning or perspectives for justifying infrastructure development in less developed regions are required.

6.5.2 Objectives of Infrastructure Development

- To secure and increase convenience in the daily lives of the people
- To support regional development in all aspects of economic, social and spatial development
- To promote conservation and to avoid destruction/deterioration of the natural environment

6.5.3 Basic Strategies

- The government or the public sector should provide the necessary infrastructure.
- Private enterprises should provide infrastructure for their own business operations, with the assistance and guidance of the public sector. For example, the infrastructure required for oil palm plantation development or industrial land development should be provided by the private enterprises themselves.
- Infrastructure provision should be in accordance with the other development plans, such as those for spatial development and economic development.
- Rehabilitation of the existing infrastructure should be given the first priority rather than new investments.
- Higher priority should be given to the designated development zones identified by the framework for spatial development.

6.5.4 Priority Areas of Infrastructure Development

(1) Road development to support the formulation of the Upland Development Corridor

(2) Development of urban infrastructure (road, water supply, sanitation, garbage disposal, electricity, telephone and mail services) at tertiary urban centers of the Upland Development Corridor

(3) Provision of simple clean water supply facilities, such as piping water from clean water sources, and water tanks for storing rain water in rural areas which would suffer negative impacts of oil palm plantation and other types of development on their existing water sources

(4) To provide assistance to road development for oil palm plantation development

(5) To complete unfinished sections of the Trans-Kalimantan Highway

(6) Road development for the sections leading to tertiary urban centers

(7) Road development of several sections (about 2 km each) going out from a subdistrict center toward villages within the subdistrict

(8) Improvement of commercial port functions of Pontianak, including new port development alternative to the existing port of Pontianak

(9) Development of the Kumai industrial port with an industrial estate

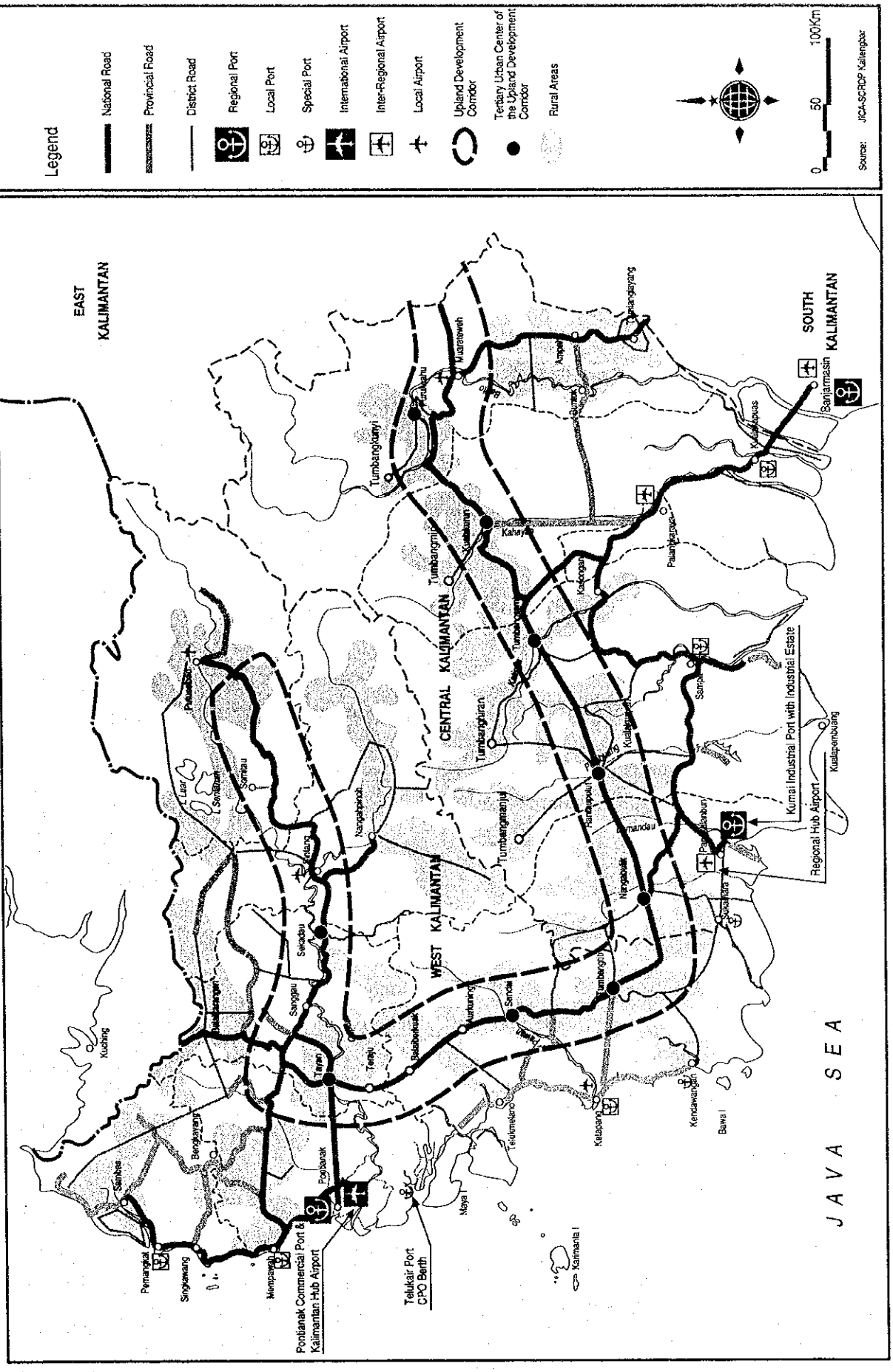
(10) Development of Pontianak Airport as an international and regional gateway (or a hub of air transport network) for the western part of Kalimantan

(11) Development of Pangkalanbun Airport as a major gateway of its promising hinterland

(12) For the central government to assist the construction of a crude palm oil loading facility at Telukair, Kendawangan, Sampit and Sukamara.

(13) To maintain local airports (pioneer airports) in Putussibau, Sintang, Ketapang and Muarateweh.

Figure 6.5.1 Priority Areas of Infrastructure Development



6.6 FRAMEWORK AND BASIC STRATEGIES FOR ENVIRONMENTAL AND RESOURCE MANAGEMENT

6.6.1 Major Components of Environmental and Resource Management

The environmental and resource management plan is comprised of the following two major components:

- Natural Environmental Management
- Pollution Control

Natural environmental management deals with forest, land and water. Pollution control deals with the pollutants derived mostly from industries and urban centers.

Both of these components in Kalimantan are closely related to spatial structure plans covering landuse plans and urban system plans. At the same time, the natural environment and pollution are also related to each other through water.

6.6.2 Natural Environment: Forest, Soils and Water

Kalimantan has been identified as one of the world's "mega-biodiversity" islands. The rich natural environment is sustained by its original ecosystem consisting of forests, soils and water.

Of these elements, forests play the most important roles in the regional ecosystem. Once forests are damaged or cleared, their biodiversity is lost and irreversible environmental changes occur. The ability to sustain agricultural development is often low because soils of the area are generally poor although tropical rain forests give an impression of luxuriant plenty.

Forests play various roles as follows:

1) For soils, forests provide soil stability and protection and enhance soil fertility.
2) For water resources, forests regulate the quantity and quality of water flow.
3) For pollution control, forests act as purifiers and removing pollutants, including carbon
4) For local communities, forests provide a livelihood foundation, including agricultural lands, food, timber, other building materials, medicine, and
5) For biodiversity, forests are reservoirs of genetic resources.

Wetland forests play an important role in hydrological functions, regulating water flow, purifying water and acting as a sponge to absorb and release water gradually to adjacent lands. Fresh water forests function as water reservoirs and sedimentation basins in the catchment area of large rivers.

Soils unsuitable for agriculture account for more than 50 % of the total study area. However, soils play important roles in the region's ecosystem. Peat soils, for example, have the hydrological function of storing water, reducing the magnitude of flooding and regulating water flow. Peat swamps and other wetlands improve water quality by filtering out surplus nutrients and toxins.

These functions are closely related to each other and the relationship is fragile so each function of different ecosystems should be conserved to achieve the sustainable use of resources provided by the ecosystems. Figure 6.6.1 shows the relations among different ecosystems related to forests and the possible consequences of appropriate landuse and inappropriate landuse practices.

6.6.3 Pollution: Industrial Development and Urban Development

(1) Urban Development in the Age of Road Development

Rural human settlements are distributed along rivers and streams. Based on rivers, urban centers have also developed. Urban centers are located at river junctions because they are nodes of river transport. At such human settlements, the sources of drinking water are mostly from rivers and streams, which local people use for transport. Most human settlements used to rely on the water of river and streams to live, and now still many rural communities rely on river water for drinking water. Even some urban centers, such as upper stream subdistrict centers, rely on rivers. On the other hand, in many cases, people living along rivers also dispose of their human wastes and garbage to the rivers.

When the population was still small and scattered, and especially when the urban concentration of people was still small, the river water had enough capability to purify river water by decomposing organic matters of various wastes from human settlements. However, in the age of road development, development activities will go further into the middle and upper stream areas, and urban centers will also grow with road connections to downstream areas. Consequently, the volume of waste water and garbage will increase and go beyond the power of the natural decomposition processes of rivers.

The problem here is that it is not possible to stop the people relying on river water for living because it is not possible for the people to find alternative water sources immediately. Therefore, it is necessary to reduce the burden of water pollution from human settlements, especially from relatively rapid growing urban centers.

(2) Industrial Development

In the same way, the planning of industrial development in Kalimantan should pay careful attention to the pollution problems of river water. The past and present water pollution sources are logging activities, plywood factories and rubber processing plants and crude oil palm factories. Prospective sources of water pollution would be more crude palm oil factories, pulp factories, bauxite extraction and refining factories and oleochemical factories.

Since many of the people will continue to rely on river water for drinking and other daily uses, pollution control concerning such prospective industries should be strengthened by the monitoring of the pollution situations and by location control and waste water treatment at the planning stage of such polluting industries.

6.6.4 Objectives

Any essential strategies for developing Kalimantan should be based on the nature's power of the Kalimantan System. The essential natural part of the Kalimantan System is composed of forests, soils and water. Forests have large and central ecological functions in relation to other ecosystems, such as soils and water. In this sense, the following two objectives of environmental and resource management are identified:

- To preserve the functions of a variety of elements (soils, water and so on) comprising the ecosystems by minimizing disturbances of development activities, and to utilize the functions for sustainable development
- To recover the functions of forests in the region as much as possible

6.6.5 Basic Strategies

(1) Concepts: Defense and Attack Strategies for Environmental and Resource Management

The basic strategies for environmental and resource management are composed of the strategies for defending the environment and those for attacking probable negative factors working against the environment.

The strategy for defending the environment is designed for the conservation of certain areas or ecosystems in order to seek sustainable development based on "nature's power" of the Kalimantan System. These strategies will also pay attention to the social power of the Kalimantan System or to the local people as actors for nature conservation.

The strategy for attacking probable negative factors against the environment, or in other words, the strategies for mitigation, are also based on the understanding of the Kalimantan System. Such strategies, including development methods, extent and location, which are suitable for conserving "nature's power" of the Kalimantan System need to be selected.

(2) Strategies for the Defense of Environment and Resources

We identified the following three strategic areas for action for the defense of environment and resources:

- Formulation of an Appropriate Landuse Plan Suitable and Effective for Environmental and Resource Management
- Clear Designation of Managers Responsible for the Forest Management of Each Forest
- Preparing for Forest Fires: Disaster Management

1) Formulation of an Appropriate Landuse Plan suitable and effective for Environmental and Resource Management

The existing forest landuse plans are not adequate in some respects. The following points need to be revised:

Protection Forests for Watershed Protection

In the West and Central Kalimantan setting, forests on steep slopes, and peat swamp forests in the upper stream areas should be protected for the purpose of watershed protection. Some areas of the forests on steep slopes and upstream peat swamp forests are under logging concessions. Logging, even if selective logging, should not be allowed on such forests. In this sense, such forests should have been designated as protected forests for watershed protection. However, since the concessions which have been given for logging are protected by the law, as the second best measures the status of such forests should be changed to protected forests just after the first timber harvest.

Protected Forests for Land Resource Conservation

In the other case, the wide areas in the upper Barito River and the upper Kapuas River are covered by forests on sandy soils. Once such forests are disturbed by logging, even if selective logging, they could not be recovered and the podzol land could not be utilized for any agriculture. This applies to Mangrove areas, too. In this sense, these forests should have been designated as protected forests for land resources conservation.

The existing system of landuse planning does not have adequate landuse categories for the following purposes:

Areas Specially Designated for Conservation of Timber Resources in Upland Forests

Indonesia's selective logging and replanting system (TPTI) used to be designed for a 35-year cycle of timber harvesting. Therefore, in theory, 35 years after a timber harvesting, logged over forests by TPTI are supposed to continue to be productive and could be subject to timber harvesting. However, it is not so in actuality. Quite a few timber concession areas after logging have been surrendered by timber companies to the government, or to state timber companies. The Ministry of Forestry is not yet clear in its policy on what to do with logged over forests of ex-timber concession areas (ex-HPH areas).

We recommend that the government should select certain logged over forests, which are in good condition and which can be physically protected from disturbing actors, for the conservation of timber resources for the future, especially for wood supply to regional markets.

Areas Specially Designated for the Conservation of Peat Swamp Forests

The above strategy should be also applied to peat swamp forests which could renew useful timber and other resources. Since the land created by clearing peat swamp forests is useless for sustainable productive agriculture, it is better to conserve logged-over peat swamp forests for future production of timber and other resources.

At the same time, swamp forest conservation is needed from a viewpoint of a fire hazard, because excessive timber extraction and the opening of swamp forests for agricultural use would create the risk of peat soils catching on fire, resulting in disastrous fires of peat swamp forests like those in Kalimantan and Sumatra in 1997.

2) Clear Designation of Managers Responsible for the Management of Each Forest

In the huge forest areas of Kalimantan, it is impractical and unrealistic for the government or the provincial forest service of the local government to effectively control all of the forests, including the enforcement of forestry management. A more decentralized management system is needed for forest management to ensure sustainable regional development. Larger powers to dispose of or conserve forest resources should be given to the provincial government. At the same time, more substantial power to control forests within their own territory should be given to local communities.

3) Preparing for Forest Fires by Disaster Management Efforts

Forest fires like those which happened to Kalimantan and Sumatra in 1997 cannot be considered to be the incidents which are supposed to take place once in twenty years or so. It is considered inevitable that forest fires of such intensity will tend to be repeated two or three times in a decade. Any long droughts could start forest fires in Kalimantan, because the forests, both the dry and wet of Kalimantan, have deteriorated so much and will easily catch fire when some conditions are met.

In this context, forest fire prevention should be one of the major efforts related to forests. These kinds of forest fires, which might involve the regional economy, society and environment very widely and repeatedly, should be treated as disasters like the attack of earthquakes and typhoons.

(3) Strategies for Attacking Unsustainable Development Practices

We identified the following three strategies for attacking unsustainable development practices:

- Macro and Micro Landuse Planning for Oil Palm Plantation Development
- Reduction of Polluting Burdens to Rivers originating from Middle and Upper Stream Urban Centers
- Wise Location Restrictions on Polluting Industries in the Middle and Upper Stream Areas

1) Macro and Micro Landuse Planning for Oil Palm Plantation Development

The following measures should be taken by implementing macro and micro landuse planning for oil palm plantation development.

- To guide oil palm plantation development on suitable lands
- To introduce buffer zones between rivers and oil palm plantations for reducing the environmental impacts of chemical fertilizers and pesticides on river water (See Figure 6.6.2.)
- To conserve the existing livelihood means, such as rubber groves and upland paddy fields, for avoiding biodiversity loss in secondary forests (including fallowed swiddens, fruit tree groves and rubber groves) of local communities

2) Reduction of Polluting Burdens to Rivers originating from Middle and Upper Stream Urban Centers

The reduction of polluting loads to river water could be realized by transforming river-based urban centers (which are dependent on the natural power of rivers for drinking water and waste water treatment) to road-based urban centers (which are to be equipped with man-made facilities for water supply and waste water treatment facilities). The priority for installing such facilities

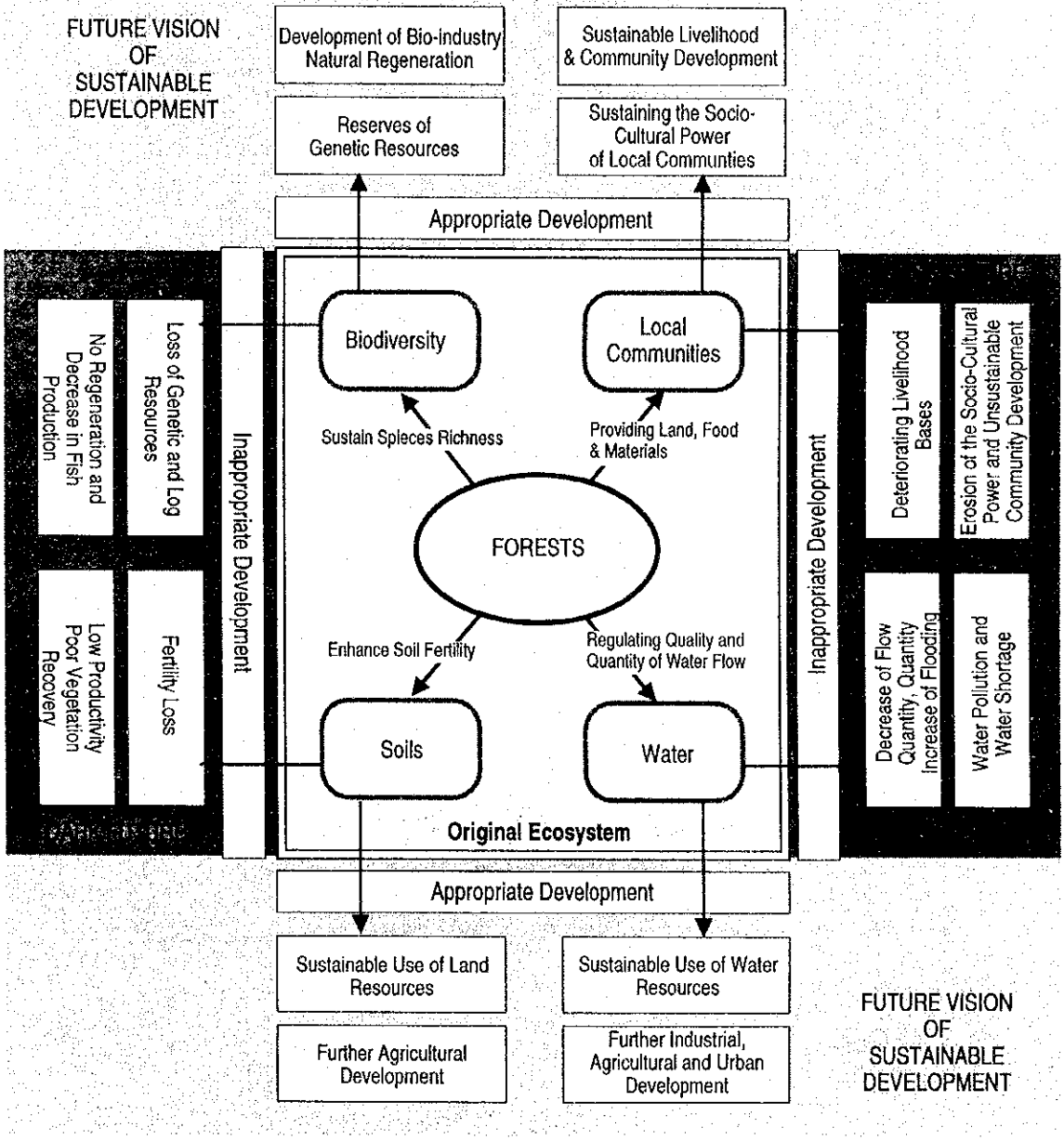
should be given to relatively rapidly growing urban centers which have recently been connected to downstream towns by road.

3) Wise Location Restrictions on Polluting Industries in Middle and Upper Stream Areas

It is believed that good environmental regulations and advanced technology for waste water treatment plants could solve any problems of polluting industries. Therefore, it is argued that polluting industries could be located anywhere. However, it is not true of the setting of developing economies like Kalimantan. Treatment plants can fail, resulting in damage to the environment and human health. Fail-safe strategies such as location planning can pay off.

We recommend that polluting industries, such as pulp factories and oleochemical factories, should be located in downstream areas only. Downstream towns have to rely on river water for water supply. Such a wise selection of industrial location could increase the quality of the water supply and water environment of downstream towns.

Figure 6.6.1 Relationship of the Elements of Ecosystems around Forests

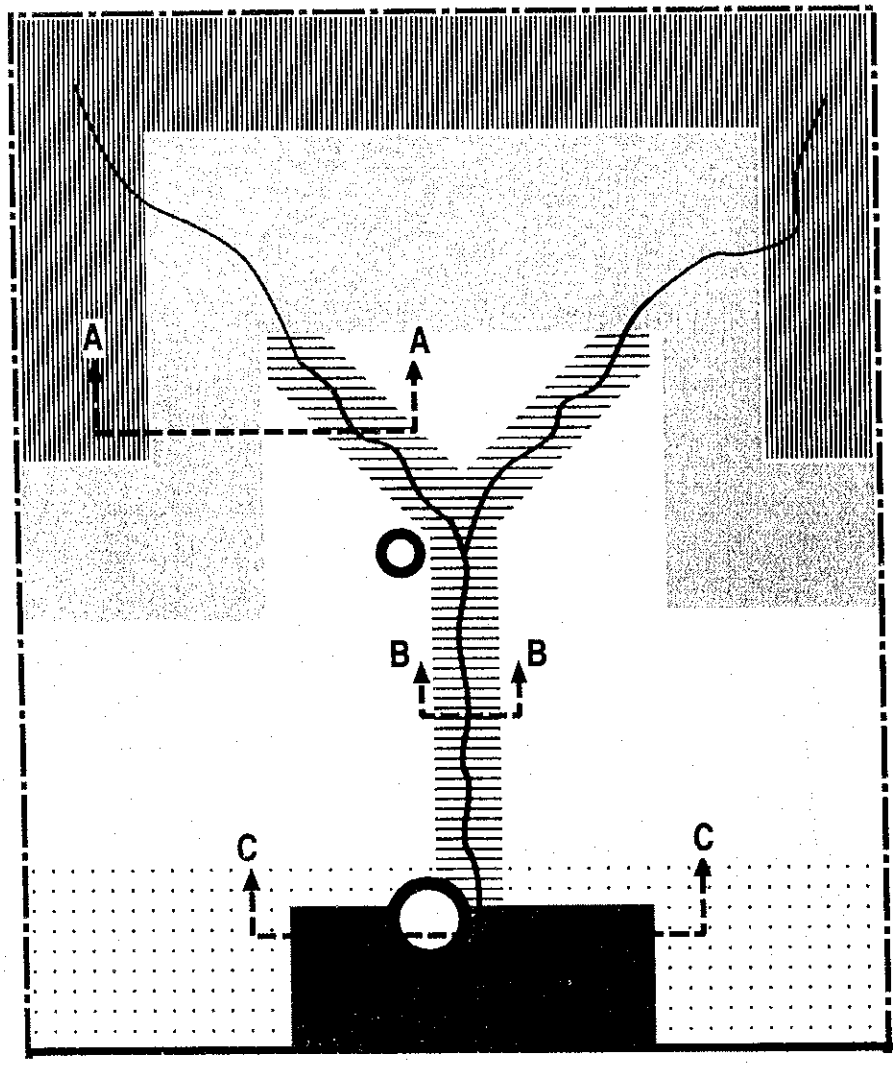


Note: Appropriate Development : -Agricultural development In Suitable areas.
-Farming system suited for each soil condition
-Selective logging

Inappropriate Development: -Agricultural development in unsuitable areas
-Intensive agriculture outside Designated areas
-Over logging

Source: JICA-SCRDP Kaltengbar

Figure 6.6.2 Recommended Landuse Concept for River Basin (Spatial Structure)

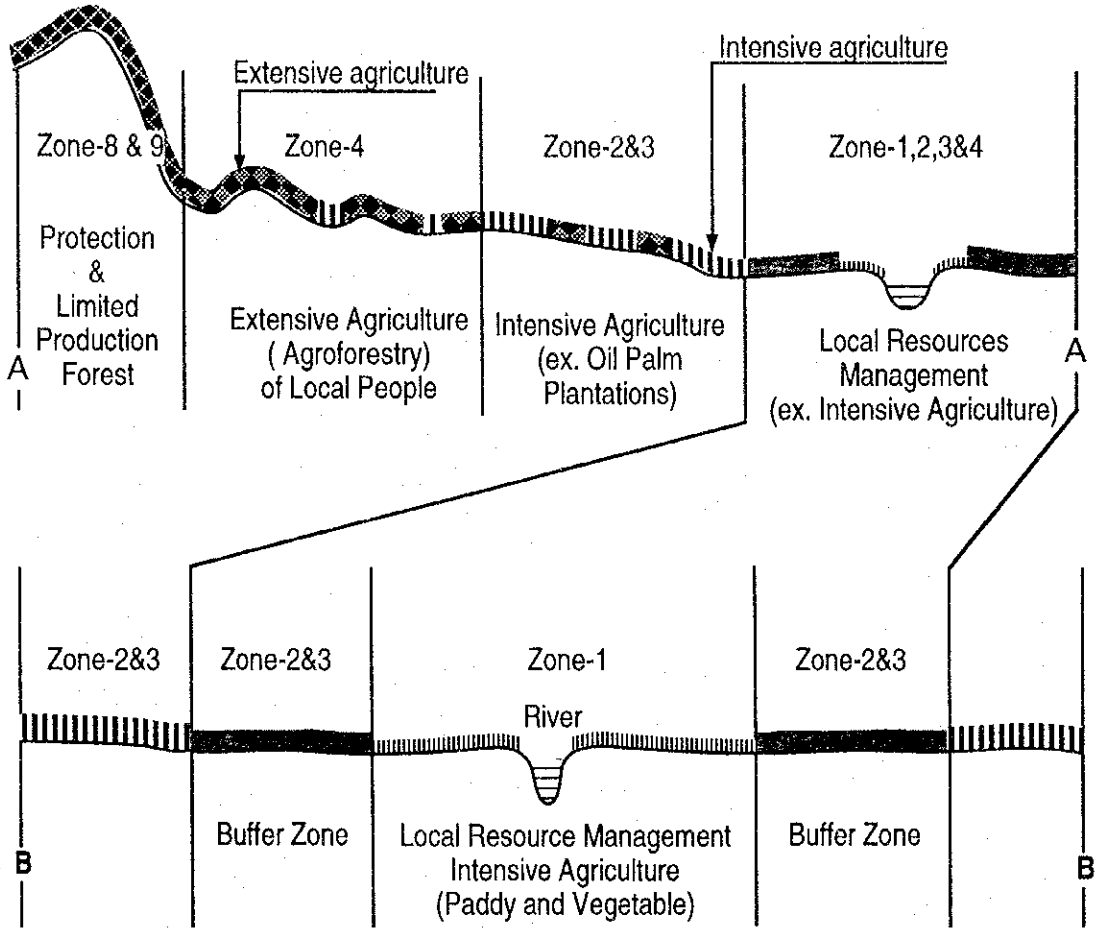


LEGEND:

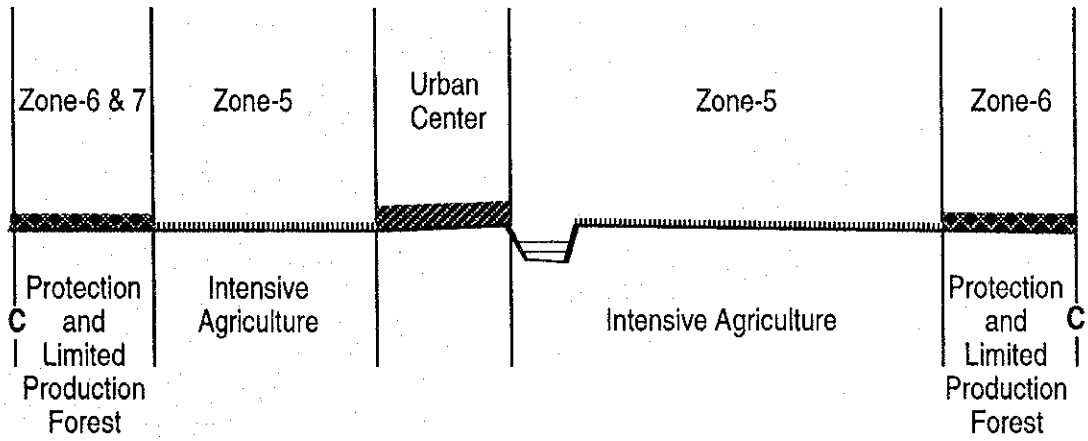
- Catchment Boundaries
- River
- Protected Forest and National Park
- Conserved Wetland
- Resource Reserveand Extensive Agroforestry for Local People
- Urban Center
- Local Resources Management Areas
- Mixed Areas of Agricultural Plantations and Extensive Agriculture
- Lowland Agriculture Area
- Cross sections

Source: JICA-SCRDP Kaltengbar

Figure 6.6.3 Recommended Landuse Concept for a River Basin (Cross Section Models)



Cross Sections A - A and B - B



Cross Section C - C

Source: JICA-SCRDP Kaltengbar

6.7 FRAMEWORK AND BASIC STRATEGIES FOR INSTITUTIONAL MANAGEMENT

6.7.1 Introduction

To select sustainable development directions and methods is one thing, and to implement such sustainable development efforts is another. The fundamental issues in making the efforts to pursue the desirable scenarios are below:

1) How to change the present system of development dominated by the sectoral approach to a system more oriented to the regional approach;
2) How to strengthen the local government in regional development planning and implementation; and
3) How to make the spatial structure plan more responsive to regional interests and more effective in land use regulation.

6.7.2 Objectives

The objectives in regard to institutional management should be as follows:

- To enable the local governments to fully manage their own affairs.
- To enable the local governments to be more responsive to local people's needs.

Figures 6.7.1 and 6.7.2 schematically depicts the conceptual change in the government structure as envisaged by the objectives.

Figure 6.7.1 New Concept of Local Administration

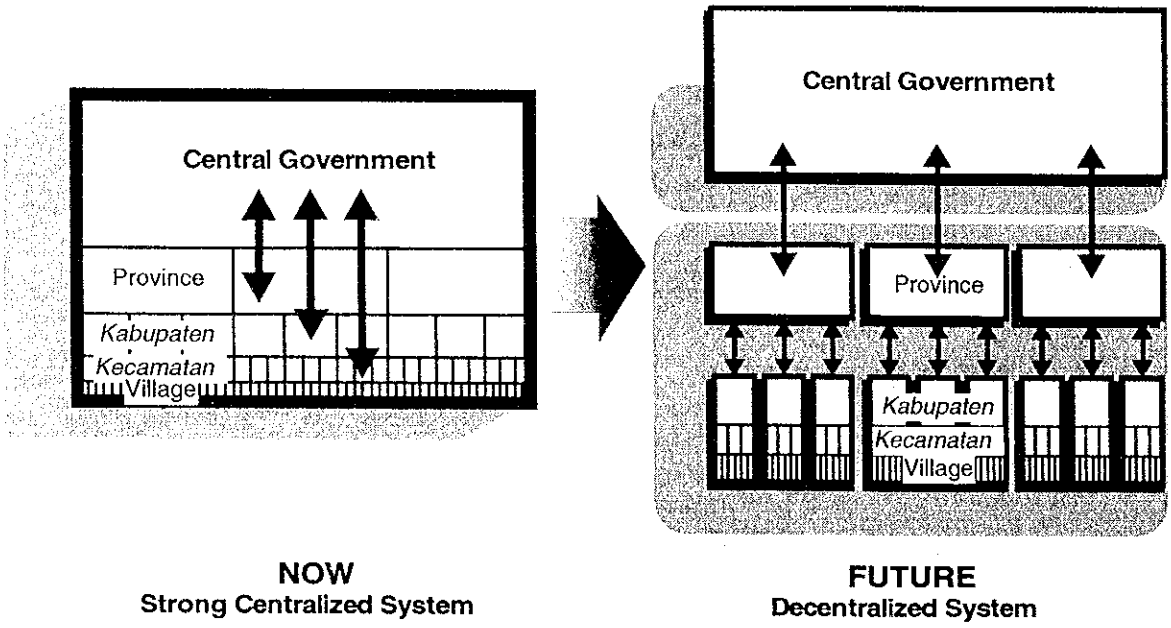
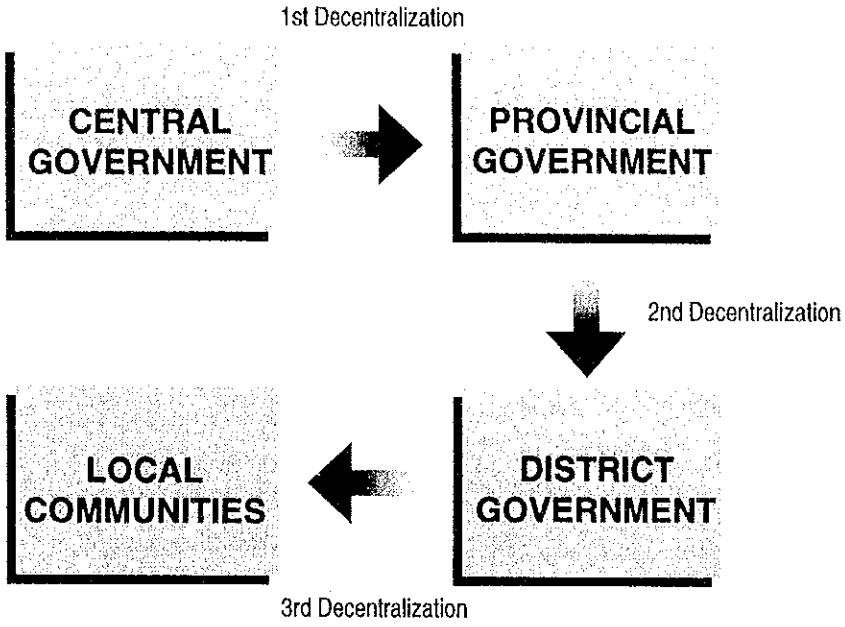


Figure 6.7.2 Three Level of Decentralization



6.7.3 Strategies

The decentralization of Indonesia's government system is divided into three levels: 1) from the central government to the provincial government, 2) from the provincial government to the district government, and 3) form the district government to local communities. The past efforts of the government decentralization were made at the decentralization directly from the central government to the district government. However, the JICA study team recommends that such decentralization efforts should be made toward the level of the provincial government.

In this sense, the first set of strategies are identified as follows:

1) Make the province substantially autonomous.
2) Reconsider the way of distributing the benefit gained from natural resources.
3) Give the province freedom to organize its administrative structure according to its own interest and priority.

The following two strategies are needed to improve the quality of regional administration once it is fully empowered:

4) Give more substance to provincial Repelitada by modifying the way it is prepared and relieve kabupaten/kotamadya of the obligation of Repelitada preparation.
5) Encourage people's innovative thinking and initiative.

6.7.4 Actions

Concrete actions in line with the strategies above are as follows:

(1) Truly Autonomous Province

1) Decentralization to the Province

Decentralization should be directed toward the province, not kabupaten/kotamadya yet. In the light of the territorial size and the current government structure, it is the province that should take responsibility for the regional affairs. More government functions must be delegated to the province before it becomes truly autonomous. (An autonomy without functions to perform is meaningless.) Decentralization to the province is thus a precondition for this strategy.

2) Popular Election of the Governor

The first step toward full autonomy is to elect a governor by the popular vote. A corollary to this is that the Governor should be made accountable solely to DPRD (the legislative body representative of the constituency), not to the President as he currently is.

3) Abolition of Kanwil

The second step is to abolish kanwil. Its functions should be taken over by its dinas counterpart. Accordingly, all APBN budgets, assets and personnel under the kanwil's control should also be transferred.

In case that there still remain some localized duties to be carried out by the central government (e.g., maintenance of national roads), central Departments may each establish a new system of regional offices for that particular purpose. These offices, however, are completely independent of provincial administration and do not interfere.

4) Expansion of the Provincial Revenue Base

Autonomy is hollow without money to spend. The current levels of regional government spending are far from satisfactory in view of this strategy. There are basically three alternative ways for the province to augment its revenues:

- To collect more of its own revenues (including shares of royalties);
- To receive more central government block grants (or subsidies not earmarked for specific purposes); and
- To integrate the portion of APBN budget currently spent by kanwil into the APBD budget to be administered by dinas.

All three alternatives are feasible but require significant reforms with the fiscal system.

(2) Wealth from Natural Resources

Abundant natural resources have been the main force behind Indonesia's rapid development. The major resources like oil, gas and forests are considered as national assets and all earnings due to them go, in principle, to the state coffers. Part of the funds are then redistributed to the regions in a fairly equitable manner (that is, more or less proportionate to population size), irrespective of where the wealth originally came from. While resource-poor regions can greatly benefit from this system, the resource-producing regions are critical of it, sometimes vocally complaining about its "unfairness."

There exists no consensus among Indonesians on who possesses the resources and on how the wealth should be split among whom. A reasonable solution needs to be found on this issue, which is crucially related to the issue of how to expand the provincial revenue base[1].

(3) Deregulation of Organizational Structure

The Indonesian local governments have an identical organizational structure at each of their respective levels. This uniformity may ensure undisrupted, straightforward intergovernmental communications and help guarantee the minimum standard of public services throughout the country particularly during the formative period of local administration. The uniformity has adverse implications, however. The local government is effectively deprived of ability to adapt to its own conditions and manifest its own priorities. This will suppress local initiatives. To achieve the objective stated above, this inflexibility needs to be eliminated. Of particular importance are the following three aspects:

1) Dinas

The local government should be capable of organizing its ranks of dinas as necessary and appropriate. As long as the sectoral lines of command are kept intact, it should be free to establish a new dinas, split a dinas into two, or consolidate two or more dinas into one.

2) Bappeda

[1] Minister of Mines and Energy in July 1998 indicated that the current law on royalties from mining, gas and oil operations should be changed to allow the provincial administrations to get a portion of the earnings. He further noted that such a law should also cover royalties from other natural resources like forests and plantations (The Jakarta Post, July 17, 1998). This proposal received widespread support from legislators on condition that such a law should also leave the central government sufficient royalties to finance the development of provinces with fewer natural resources (The Jakarta Post, July 20, 1998).

The organizational structure of Bappeda, both Tk.I and Tk. II, is stipulated by law. Small variations are allowed taking population size into account, but no consideration is given to local economic and social conditions or available personnel. It is true, given that Bappeda has to cover all sectoral fields in development, its structure cannot so drastically differ from the present one. Nonetheless, Bappeda should be set free from these strait jacket regulations.

3) Setwilda[2]

Setwilda is the secretariat offices under the Governor (for province) or bupati/walikota (for kapupaten/kotamadya), which deal with the general affairs pertaining to the regional administration. At present, the organizational composition of Setwilda is strictly regulated and hence uniform among the provinces or among the kapupaten/kotamadya. Like Bappeda, this uniformity no longer seems to serve any practical purposes other than to show off the central government's strong command of the regional administration. The local government should be free to organize its secretariat according to its own needs, interests and priorities.

(4) Rethinking Repelitada

There is no question that Repelitada has been highly instrumental in organizing and carrying out regional development of Indonesia. After five consecutive planning periods which proved very successful, the current sixth Plan has come to an abrupt halt since early 1998 owing to the severe economic crisis which has befallen the country. This situation, however, could and should be regarded as a rare, good opportunity to thoroughly think over the practice, its merits and shortcomings, and clearly see how to adjust it to face the coming post-crisis era.

One deficiency with the current practice of Repelitada preparation, as this study team sees it, is the basically equal treatment of Repelitada Tk.I and Repelitada Tk. II. Given that human, financial and time resources available to their preparation are severely limited in any region, it would make strategic sense to concentrate resources on provincial planning rather than spread them thinly and equally over tingkat I and II planning processes. Thus, the following two actions are recommended.

1) More Substance to the Provincial Repelitada

Plan-making is consensus-building. In view of this, the present way of preparing the provincial Repelitada is not so well designed as to foster mutual communications among the parties

[2] Sekretariat Wilayah/Daerah (Secretariat to Regional Administration).

concerned with provincial development[3]. Open forum-style meetings may be appropriate to present and exchange views and plans of those parties among whom four major categories are:

a. the government sectors represented by their respective dinas;
b. the kabupaten and kotamadya each represented by its bupati or walikota;
c. the corporate sector represented by KADIN and various business associations; and
d. civic or non-governmental organizations working for development.

A series of meetings, which one may call the "Provincial Development Forum," should be held over at least two years of time before drafting the final version of Repelitada. The chairman of Bappeda Tk.I may chair the meetings, while Bappeda Tk.I will serve as the secretariat.

2) Optional Repelitada Tk. II

Repelitada Tk. II, on the other hand, should be made optional. In spite of the sincerity of the officials who prepared them, Repelitada of most kabupaten and kotamadya do not seem to deserve the efforts devoted to make them. It may be wise to relieve them of this unproductive exercise and direct the resources to other purposes. The aspirations and plans of the tingkat II governments should instead be fully integrated into the Repelitada Tk. I through the Provincial Development Forum described above.

(5) Encouraging Innovation and Initiative

People, both laymen and government officials, should be encouraged in innovative thinking and in acting on initiative. One concrete way to achieve this is to award funds for development activities through contests.

A typical example is like this: a special fund of Rp. 10 billion is created for a province-wide project to increase food crop production by 20% in two years. Kabupaten and kotamadya governments are all requested to apply for the funds with as many proposals as they can. After rigorous appraisal, the best three proposals are selected for financing.

This contest-based selection of project proposals is a very effective way to solicit innovative ideas as well as encourage initiative. In fact, this method is adopted in the IDT program and the Kecamatan Development Program to select grassroots activities to assist. It was also one key concept of the USAID-supported PDP in the 1980s, which is widely known as a very successful project for regional development.

[3] Repelitada is based on Pola Dasar (Basic Policy), which is debated and approved by the DPRD. In this sense, one can say that Repelitada very broadly reflects the provincial populations intentions and preferences. The Pola Dasar, however, is a document consisting of very general statements and is hardly regarded as practical guidelines.

Once the provincial government is given power and responsibility to manage its own province, it will then be held accountable for the substance or quality of development it is promoting in its territory. One way to ensure poor-quality development is for the provincial government to try to do everything for itself, a mirror image of the central government at present. By contrast, the surest way to accomplish high-quality development is to let people think and act of their own will. People here refers not only to the general public but to the government officials at all local administrative levels. Reward initiative with means to try it out. "From implementor to facilitator" is then very apt words for the province as well.

CHAPTER 7

ACTIONS NECESSARY FOR MAJOR SUBSECTORS

CHAPTER 7 ACTIONS NECESSARY FOR MAJOR SUBSECTORS

7.1 INTRODUCTION

Among the many subsectors, the following subsectors are identified as major subsectors which need special attention in regional planning efforts :

- Oil Palm Subsector
- People's Rubber Subsector
- Wetland Rice Subsector
- Horticulture Subsector
- Road Subsector
- Timber Production Subsector
- Plywood Manufacturing Subsector
- Small and Medium Enterprises Subsector

First, this section gives general profiles of the subsectors to show their strategic importance in regional development. Then, necessary actions for each subsector are presented. For some subsectors, the possible benefits to be gained by those actions are also suggested.

The next chapter, Chapter 9, will show the profiles of priority programs and projects, which are selected and designed for implementing some of the actions identified in this chapter.

7.2 OIL PALM SUBSECTOR

(1) Business Environment

Oil palm subsector has been emerging as a key subsector in the economic development of West Kalimantan and has been followed by Central Kalimantan. The oil palm subsector is composed of oil palm plantations (companies' nucleus estates and smallholders' plots), crude palm oil production plants and furthermore, downstream industries of utilizing crude palm oil.

At present, in both West and Central Kalimantan, oil palm plantations and crude palm oil production account for a major part of the oil palm subsector. Little has been done for the downstream industries.

Table 7.2.1 Profile of the Existing Oil Palm Subsector in 1996

	Area Planted (1,000 ha)	%	CPO Production (1,000 ton)	%
West Kalimantan	211	10%	205	4%
Central Kalimantan	30	1%	12	0.2%
Sumatra	1,783	80%	4,507	91%
Indonesia Total	2,227	100%	4,960	100%
Malaysia	2,161*	-	8,060	-

Source: Directorate General of Estate, Ministry of Agriculture, Statistik Perkebunan Indonesia 1995-1997, 1997
ISTA Mielk GMBH, Oil World April 1996
Mari #. Pangestu and Yuri Sato eds. (1997), Waves of Change in Indonesia's Manufacturing Sector, 1997
Note: *: Mature Area in 1995

Based on the data on land development concessions for oil palm plantations, a likely increase of oil palm plantation and CPO production is estimated as shown in Table 7.2.1. Based on this estimate, the value added by oil palm plantation and CPO production is also estimated as shown in Table 7.2.3.

One of the major issues in the economic development of West and Central Kalimantan is how to offset the expected huge decrease of value added by plywood and other wood processing industries. At present, the forestry and wood processing industry accounts for 21% of GRDP in West Kalimantan, and 35% of the GRDP in Central Kalimantan.

The estimated share of value added by oil palm plantation and CPO production is only 8% and 10% of the future GRDP in West and Central Kalimantan respectively. These percentages are much smaller than those of the forestry and wood processing industries at present. This is partly because the prospective development of supporting subsectors, such as the trading and transport of fertilizers and pesticides and the transport of CPO, are not yet counted by the shares. However, more importantly, this estimate strongly implies that it is necessary to take

advantage of the region's prospective CPO production capacity for developing downstream industries in order to create higher value added within the region, since a huge area of precious land resources is to be allocated for oil palm plantations.

If oil-palm-related downstream industries (cooking oil, soap and oleochemical) are successfully promoted, the whole oil-palm related subsectors, including palm oil plantation, CPO production, the downstream industries, and trading and transport, might be able to produce as much as 30% of GRDP of the region.

Table 7.2.2 Estimated Increase of Oil Palm Plantation and CPO Production

	1996		2018	
	Area Planted (1,000 ha)	CPO Production (1,000 ton)	Area Planted (1,000 ha)	CPO Production (1,000 ton)
West Kalimantan	211	205	872	2,669
Central Kalimantan	30	12	675	2,065

Source: The estimate in 2018: JICA-SCRDP Kaltengbar

Table 7.2.3 Estimated Amount of Value Added generated by both Oil Palm Plantation and CPO Production

	1996		2018	
	Value Added (Million US$)	Share of Contribution to Total GRDP (%)	Value Added (Million US$)	Share of Contribution to Total GRDP (%)
West Kalimantan	42	1.4%	556	8%
Central Kalimantan	2.5	0.1%	434	10%

Source: The estimate in 2018: JICA-SCRDP Kaltengbar

However, the oil palm subsector is facing an emerging unfavorable business environment, such as the increase of export taxes on CPO, unsmooth flow of credit money for smallholder development, complicated and time consuming permission procedure, and unsupportive road development policies.

In order to realize the development potential of the oil palm subsector, it is very important to implement stable policies providing the oil palm subsector with a good business environment. The action plan for the oil palm subsector is to design and implement the policies to provide a proper level of good business environment in which the oil palm subsector, including plantations, CPO production and downstream industries, could operate sustainably. The policies should cover the following aspects:

1) The government should promote road development to support oil palm plantation development in those areas which do not have enough roads in good condition, especially in the Ketapang district, West Kalimantan and in Kotawaringin Barat and Timur, Central

Kalimantan. Government intervention for such road development are different in different areas. In Ketapang's case, it is crucial for oil palm plantation development to complete the Trans-Kalimantan Highway. On the other hand, in the case of Kotawaringin Barat and Timur, it is necessary to invent a special method to promote road development in the upland development corridor.

2) The present imposition of relatively high export taxes on CPO is considered to be a special case which is designed to provide the citizens with cheaper cooking oil than international prices during this the economic crisis. At the recovery and stabilization stage of the national economy, the high export taxes on CPO should be normalized to reasonable levels.

3) To encourage the investment in downstream industries, a progressive taxation system, favoring the export of high value added products such as oleochemical products, should be introduced.

4) For these purposes, first of all, the government should increase the transparency of policy decisions on the oil palm subsector, by clarifying a schedule and major directions of deciding a variety of policies related to the oil palm subsector.

This action plan for providing a good business environment for the oil palm subsector is very important for West and Central Kalimantan, compared to the case of Sumatra, another major oil palm production region. West and Central Kalimantan still have many oil palm plantations to be developed. If the government continues unfavorable policies against the oil palm subsector, it would largely delay the realization of the development potential of oil palm plantations and of oleochemical industries.

On the other hand, the business environment and business operations of oil palm companies have great influence over the companies' treatment of smallholders and laborers for oil palm plantation development. From a perspective of social development, this action plan is also very meaningful.

(2) Oil Palm Plantation Development

Although the establishment of the plantation industry can have positive impacts on the economic development of the study area, such as increases in regional income and employment, specialization in palm oil production and the concentration of large oil palm estates in the area are likely to have some undesirable impacts, not only on the economy but also on the society and the environment.

Oil Palm Plantation Development Schemes

1) For the government to guide oil palm plantation development on suitable land, especially at the preliminary stages of offering lands and issuing permits for oil palm plantation development.

2) In the areas of relatively high population density (such as the Kapuas river basin of West Kalimantan), for the government to regulate private companies' oil palm plantation development in order to maintain the existing livelihood means of the local people so that for the sake of oil palm plantation development.

3) In the areas of relatively low population density (such as Central Kalimantan and the Ketapang District of West Kalimantan) for the government to encourage or guide oil palm plantation development by private companies to involves as many local people as possible as smallholders, by allocating smallholder plantations within a commutable distance of existing settlements.

4) To pursue both the purpose mentioned above, for the government to encourage private plantation companies to adopt a community-based participatory method for landuse planning for oil palm plantation development, by giving incentives to private plantation companies.

5) To pursue the smooth development of oil palm plantations and to pursue sustainable operation of oil palm plantations, for private companies to adopt a community-based participatory method for landuse planning for oil palm plantation development, rather than the top-down approaches which are utilized presently.

Assistance for the Development of Smallholder Plantations

1) For the government to establish credit schemes for assisting smallholder plantation development. The smallholder credit schemes should be directly applied to cooperatives (KUD) and other types of farmers' groups, instead of the existing schemes like that the PIR-KKPA scheme, in which the credits assisting smallholders are channeled through plantation companies.

2) For the government to start an assistance scheme (both financial and technical assistance) for promoting the development of smallholder oil palm plantations in areas surrounding existing CPO factories. This type of smallholder plantation does not have nucleus estates run by plantation companies, but they depend on existing nucleus estates and CPO factories.

7.3 PEOPLE'S RUBBER SUBSECTOR

The people's rubber areas are composed of two different types. One is that of clone rubber trees and the other is that of non-clone rubber trees. The former type is mostly planted in some government projects for smallholders. Some farmers have started to use a technique of budding to make clone seedlings or to buy clone seedlings from those who can produce them. The latter type is mostly found in the form of managed secondary forests with non-clone rubber trees. These rubber trees were planted on swiddens or ladang together with paddy.

Indonesia's rubber subsector is dominated by the people's rubber or smallholder rubber. In 1995, about 84% of Indonesia's total areas of rubber groves and plantations belong to smallholders. The dominance of people's rubber was higher both in West Kalimantan and Central Kalimantan than the national average. In 1995, in West Kalimantan, the people's rubber subsector accounted for 97% of the planted area of mature rubber trees, while accounting for 95% of the rubber production. In 1995, the percentage of the people's rubber exceeded 99% in both planted area and production in Central Kalimantan.

In West Kalimantan, the people's rubber occupies 432,000 ha (including mature, immature and unproductive), which is about 3% of the total provincial area. In Central Kalimantan, there are 21,4000 ha of the people's rubber, which accounts for 1.3%.

Table 7.3.1 Profile of People's Rubber Subsector in 1995

The People's Rubber	West Kalimantan	Central Kalimantan
Planted Areas of Rubber Trees (Mature, Immature, and Damaged) (ha)	432,000 ha	214,000 ha
% of Damaged Rubber Groves in Area	11%	15%
% of Planted Areas of in the Total Area of Rubber Plantations (Mature, Immature, and Damaged) (%)	97%	96%
% of Planted Areas in the Total Provincial Area (Mature, Immature, and Damaged) (%)	3%	1.3%
Production of People's Rubber (ton/year)	139,000 ton	84,000 ton
% of Production in the Total Rubber Production in the Province	95%	99%
Planted Areas of Non-Clone Rubber Trees in the People's Rubber Subsector	408,000 ha	191,000 ha
% of Low Productivity Rubber Groves in the Total Rubber Plantation Areas	92%	86%

Source: Directorate General of Plantation (1996), Statistik Perkebunan Indonesia 1995-1997

In West Kalimantan, the value added created by the total rubber subsector was the 10th largest in 1995. The rubber subsection's share was 2.4% of the total value added in 1995. The export earning by crumb rubber accounts for 25% of the total export from West Kalimantan, and 10% of that from Central Kalimantan. Recently these percentages of crumb rubber in the export earning has gradually increased in the last several years in both provinces.

The people's rubber is characterized by low land productivity, which is around 500 kg per ha. It is because many of them plant so called local species, non-clone rubber trees. On the other hand, the clone rubber trees could produce much more volume, whose production is more than 1,000 kg per ha. The low productivity rubber groves account for 92% and 86% in terms of planted area in West Kalimantan and Central Kalimantan, respectively.

It is clear that there is a huge potential to increase the output of rubber, considering the existing people's rubber groves of still low productivity. Rubber is still one of important cash sources of most households engaged in the people's rubber subsector.

In order to increase the productivity of rubber trees, it is necessary for farmers to plant clone rubber trees. Farmers can grow clone rubber trees when they join government smallholder rubber plantation projects, such as those assisted by World Bank and ADB. However, such project implementation was limited in the number of villages and households involved. Some rubber farmers who joined such projects do not know enough about the proper tapping techniques and utilization of fertilizers for them, so that they tended to damage clone rubber trees. Moreover, the projects have suffered from the problem of mal-repayment of credits partly because farmers can freely find many rubber traders around them and partly because government projects did not deliver the proper amount of fertilizers to the farmers. The funding agencies have evaluated the performance of such projects as inadequate.

Other types of arrangements which encourage farmers to plant clone rubbers is needed. The characteristics of such arrangements are as follows:

- More flexible project arrangement for seedlings, chemicals, credits and planting places
- More flexible availability of clone rubber seedlings or budding material
- Wider and more flexible availability of training of budding skills to farmers
- More flexible availability of credits to buy clone rubber seedlings and chemical package
- More low-cost packages of chemical fertilizers and pesticides to grow clone rubber trees
- More low-cost technical packages, which allow farmers to reduce the input of chemical fertilizers and labor for weeding

The technical aspects of these ideas have been experimented by ICRAF and an assisted project by World Bank started the establishment of village-based bud wood gardens, from which farmers can get budding materials to make clone rubber seedlings. However, the project of village-based bud wood gardens were done in a top-down manner, in a less participatory way . To increase the sustainability of the bud wood gardens, it is inevitable to encourage the management of bud wood gardens by communities or certain groups within the communities. Moreover, it is essential to implement projects in a more decentralized manner rather than the style of project control like World Bank and ADB assisted projects.

7.4 WETLAND RICE SUBSECTOR IN UPLAND FARMING AREAS

Both West Kalimantan and Central Kalimantan have increased paddy production in the last 25 years. However, the both provinces have not produced enough rice to meet the demand of the provincial population. In 1995, the rice self-sufficiency rates were 88% and 89% in West Kalimantan and Central Kalimantan respectively.

If rice production follows the past trends, the gap between supply and demand for rice will widen due to the population growth in the study area, which will inevitably lead to greater dependence on other regions of the country (Table 7.4.1). Furthermore, the current economic crisis, together with the prolonged drought in the 1997/98 planting season and unusually high precipitation in the 1998 planting season, may have a devastating impact on rice production in the region. Although the price of rice received by farmers has increased due to the nationwide food shortage, the prices of agricultural inputs and basic necessities have more than doubled, or even tripled for most daily necessities, over the last 12 months. The relatively lower price for rice, which is largely attributable to the government subsidy for imported rice, appears to become a disincentive to planting paddy. Farmers are turning to more profitable economic activities, such as tree crop cultivation and gold mining, in areas where such income opportunities are available. In order to ensure the continuation of rice production, the current food policy should be re-designed so as to give more incentives (e.g., subsidized credits and inputs and the elimination of the price distortion caused by subsidizing imported rice) to paddy farmers, at least until the rice supply-demand situation is substantially improved.

Table 7.4.1 Estimates of Supply and Demand for Rice in the Study Area in 2018 (Harvested Area based on the Trends of 1969-1995)

	West Kalimantan*		Central Kalimantan 2**	
	Wetland	Dryland	Wetland	Dryland
Area Harvested	240,000	107,500	286,000	72,000
Yield (ton/ha)	3.5	2.0	2.5	2.0
Production of Paddy (ton)	840,000	215,000	715,000	144,000
Supply of Rice (ton)	546,000	139,750	464,750	93,600
Total Supply of Rice (ton)	685,750		558,350	
Per Capita Rice Consumption (kg)	160		160	
Population (1,000)	5,900		3,100	
Demand for Rice	880,000		496,000	
Surplus/Deficit (ton)	-194,250		62,350	
Rate of Self-sufficiency (%)	77.93		112.57	

Notes: *) The population growth of the province is assumed to follow the growth trend for 1980-1995.
**) The population growth of the province is estimated based on the Spatial Plan (RTRW) and the potential area to be expanded by PLG is included in the wetland paddy area harvested for 2018.

For the estimation, it is assumed:

1) Per capita rice consumption is 160 kg per annum in 2018.
2) The average rice milling rate is 65%.
3) The potential paddy harvested area of PLG (the one-million hectare project) is 150,000 ha.

In this section, the case of West Kalimantan has been analyzed and a recommendation is presented for the increase of rice production. A similar strategy can be applied to the situation in Central Kalimantan.

From the perspective of food crop production, dryland paddy production has an adequate potential, but efforts to increase yields will be limited. Therefore, it is important not to reduce existing dryland paddy areas so that these areas are conserved even though some may be already be in palm oil plantation areas, and to concentrate on wetland paddy production for increasing rice production.

After an analysis of the wetland paddy production by district in West Kalimantan (see Table 7.4.2), the following problems have been identified:

- The yield of wetland paddy production is low (less than 2.4 ton per ha per harvest) in the middle-stream areas, such as the Sanggau district, the Sintang district and the Kapuas Hulu district.
- The percentage of irrigated wetland rice fields is less than 10% in the districts of Sanggau, Sintang and Kapuas Hulu.
- The ratio of utilization of wetland fields for paddy production (the percentage of area harvested to the area of wetland paddy field) is low, especially in the district of Sanggau and Kapuas Hulu.
- The chemical input is very low in the districts of Sanggau and Sintang, compared with levels used in the lowland areas.
- The availability of agricultural extension workers is low, especially in the districts of Sanggau and Sintang.

For attacking these problems, the following strategies are recommended:

- Provide small and medium scale irrigation facilities at the village level for expanding irrigated wetland paddy fields in the district of Sanggau, Sintang and Kapuas Hulu. Especially, continue the on-going "Village Irrigation Scheme", but at the same time, utilize smaller-scale irrigation potential as small as 5-25 ha per one irrigation site.
- Provide the farmers (with irrigated fields in upland areas) with extension works more suitable o the local farmers conditions, so that the farmers become used to the usage of chemical fertilizers and pesticides.
- Make more credit available to wetland paddy farmers in upland areas so that they can use more chemical inputs.

Table 7.4.2 Wetland Paddy Production by District in West Kalimantan

District / City	Sambas	Pontianak	Ketapang	Sanggau	Sintang	Kapuas Hulu	Pontianak City	Total
Wetland Paddy Field								
Area Harvested (ha)	68,308	94,571	29,975	20,507	22,985	5,627	57	242,030
Production (ton)	195,586	277,684	87,169	46,876	54,070	12,983	169	674,537
Yield (ton/ha)	2.86	2.94	2.91	2.29	2.35	2.31	2.96	2.79
Wetland Paddy Field with Irrigation								
Technical Irrigation	70	0	0	0	0	0	0	70
Semi-Technical Irrgation	2,601	4,839	1,750	400	100	555	0	10,245
Non-Technical Irrigation	6,493	26,914	6,573	6,052	4,816	1,923	0	52,771
Rainfed	38,450	40,385	20,462	23,285	14,541	4,797	0	141,920
Pasang Surut	19,798	33,017	9,442	4,078	0	0	71	66,406
Others	6,562	46,120	34,052	37,660	31,960	48,779	111	205,244
Total Wetland Paddy Field	73,974	151,275	72,279	71,475	51,417	56,054	182	476,656
% of Irrigation	12%	21%	12%	9%	10%	4%	0%	13%
% of Area Harvested	92%	63%	41%	29%	45%	10%	31%	51%
Chemical Input per Field Area								
Urea (kg/ha)	57.07	14.07	7.11	6.29	2.26	8.35	1210.53	23.71
TSP (kg/ha)	12.93	2.91	6.64	5.51	1.09	5.33	140.35	6.33
No. of Extension Workers per Food Crop Farming Household								
No. of Farming Households	15,308	118,936	58,665	77,069	77,789	28,573	5,689	382,029
No. of Extension Wrokers	117	136	59	53	63	45	12	485
Households/Extension Workers	131	875	994	1,454	1,235	635	474	788

Source: Kalimantan Barat Dalam Angka, 1996
Biro Pusat Statistik, Agricultural Survey: Land Area by Utilization for Outside of Java 1995, 1996

7.5 HORTICULTURE SUBSECTOR

While oil palm plantation development is expected to raise significantly the income of the participating farmers, the economic situation of those farmers who live in areas with no such opportunity may be deteriorated in relation to that of oil palm farmers. It is necessary to create a favorable environment for increasing their incomes through the diversification of their agricultural activities, productivity improvement, enhancement of the value-added of their products by quality control and processing, development of new products, marketing promotion, etc. From a longer perspective, this is also an important issue for the expansion and stabilization of household incomes of oil palm farmers with a capacity to cultivate other crops in terms of land, capital, and labor. Diversification and the improvement of productivity and value-added in the study area are an urgent issue for national economic development since agriculture and agroindustry are increasingly expected to play a leading role for recovery in the economic crisis triggered by a sharp depreciation of rupiah in mid-1997.

One of the most important subsectors with high potential for such development is horticulture. A variety of fruits and vegetables are grown in both West and Central Kalimantan (Table 7.5.1) and the production tends to increase especially in the districts of Sambas, Pontianak, Kapuas, Kotawaringin Timur, and Kotawaringin Barat in recent years, presumably due to population growth in urban areas. The intensive cultivation of certain kinds of vegetables, such as Chinese cabbages, spinach, and kangkung (water or swamp cabbages), is particularly well developed among ethnic Chinese farmers in the suburban areas of Pontianak and Singkawang, West Kalimantan.

The surveys by the Service (Dinas) of Food Crop Agriculture indicate that there is potential for the further development of horticultural production in the two provinces (Table 7.5.2). On the marketing side, demand for fruits and vegetables is growing and expected to grow in the future along with income growth and urbanization. In addition to the existing markets in neighboring countries such as Malaysia and Singapore, the development of Natuna Island is deemed to bring about new demand for fruits and vegetables produced in West Kalimantan. At present, however, there is only limited availability of financial and technical assistance to farmers for expansion and intensification, as well as the introduction of new products and the improvement of marketing and post-harvest technologies.

In the immediate run, the provision of "crop-neutral" credit, as well as extension services, to farmers can be recommended for the expansion of horticulture. For longer-term development, however, a more comprehensive approach will be necessary. Possible measures to be taken by the public sector should include:

- Expand assistance for infrastructure development
- Establish farmer groups/cooperatives for market oriented production
- Provide credit to farmers and small-scale traders and processing industries
- Promote partnerships between farmers and businesses
- Implement marketing promotion programs for domestic and export markets
- Strengthen the functions of the Assessment Institute for Agricultural Technology (West Kalimantan) and the Assessment Station for Agricultural Technology (Central Kalimantan)
- Disseminate developed technologies by demonstration, training, seminars, workshops, etc. for farmers and extension staff
- Provide extension workers and farmers with training on marketing and post-harvest technologies

Table 7.5.1 Horticulture Production in 1996

	West Kalimantan		Central Kalimantan	
	Area harvested (ha)	Production (ton)	Area harvested (ha)	Production (ton)
Vegetables				
Spring Onion	414	1,546	95	251
Spinach	2,409	5,517	2,163	3,879
Kidney Bean	382	1,100	396	715
Chili	1,790	3,946	2,039	4,019
Longyam Beans	3,053	12,839	3,292	5,711
Kangkung (Water Cabbage)	1,575	6,554	1,861	3,693
Cucumber	3,282	12,401	2,209	5,744
Chinese Cabbage	2,312	9,567	268	693
Eggplant	1,318	3,659	2,476	5,016
Tomato	245	780	734	2,457
Pumpkin	na.	na.	219	819
Fruits*				
Avocado	na.	1	41	92
Star Fruit	na.	99	140	795
Duku/Langsat (Lazon)	768	4,971	474	4,243
Durian	3,170	19,081	1,725	22,860
Jambu (Rose Apple)	356	1,723	na.	na.
Mandarin Orange	7,962	121,980	852	2,843
Mango	268	530	407	1,633
Mangosteen	na.	na.	118	149
Cempedak/Nangka (Jackfruit)	na.	3,989	2,293	3,394
Pineapple	329	4,042	1,507	6,484
Papaya	117	2,098	na.	na.
Banana	4,511	17,497	5,326	21,310
Rambutan	2,748	6,593	2,171	9,315
Salak (Zallaca Edulis)	44	727	30	94
Sapodilla	162	781	205	1,080
Sirsak	na.	289	32	145
Sukun (Breadfruit)	na.	172	20	97

Note: *) Data for West Kalimantan are those for 1995.

Sources: Kantor Statistik Propinsi Kalimantan Barat, *Kalimantan Barat Dalam Angka 1996*, 1997;
Pemerintah Propinsi Dati. I Kalimantan Barat, Dinas Pertanian Tanaman Pangan, *Laporan Tahunan Dinas Pertanian Tanaman Pangan Tahun 1995*, 1996.
Pemerintah Propinsi Dati. I Kalimantan Tengah, Dinas Pertanian Tanaman Pangan, *Tanaman Pangan dan Hortikultura Kalimantan Tengah Dalam Angka 1996*, 1997.

Table 7.5.2 Horticulture Development Potential

West Kalimantan (ha)

District/Municipality	Sambas	Pontianak	Ketapang	Sanggau	Sintang	Kap. Hulu	Kodya PNK	Total
Vegetables								
Existing Centers	118	0	1,077	..	..	303	336	1,834
Potential Centers	293	0	350	..	500	..	425	1,568
Durian								
Existing Centers	505	1,106	897	1,941	277	493	163	5,382
Potential Centers	7,050	500	1,900	125	800	412	..	10,787
Rambutan								
Existing Centers	1,035	950	148	1	637	834	457	4,062
Potential Centers	8,140	1,250	1,250	200	950	935	..	12,725
Mandarin Orange								
Existing Centers	14,266	493	38	0	0	33	0	14,830
Potential Centers	..	..	300	..	..	225	..	525
Banana								
Existing Centers	748	567	79	190	35	241	182	2,042
Potential Centers	3,615	50	..	..	..	780	125	4,570
Pineapple								
Existing Centers	0	200	0	0	0	53	7	260
Potential Centers	2,350	100	..	..	..	240	62	2,752
Salak								
Existing Centers	61	0	8	0	0	0	2	71
Potential Centers	1,700	..	850	..	700	..	25	3,275

Central Kalimantan

District/Municipality	Kapuas	Ko-Timur	Ko-Barat	Barito Sel.	Barito Ut.	Kodya P'raya	Total
Vegetables							
Land Potential	..	1,000	..	1,101	500	500	3,101
Existing	..	20	..	38	15	30	103
Dev. Potential	..	980	..	1,063	485	470	2,998
Durian							
Land Potential	3,200	5,283	11,250	2,438	500	..	22,671
Existing	636	2,264	3,700	639	50	..	7,289
Dev. Potential	2,564	3,019	7,550	1,799	450	..	15,382
Rambutan							
Land Potential	9,517	2,450	..	..	..	2,381	14,348
Existing	4,826	550	..	..	..	518	5,894
Dev. Potential	4,691	1,900	..	..	..	1,863	8,454
Banana							
Land Potential	..	1,700	..	..	..	..	1,700
Existing	..	565	..	..	..	..	565
Dev. Potential	..	1,135	..	..	..	..	1,135
Salak							
Land Potential	..	..	..	644	..	..	644
Existing	..	..	..	360	..	..	360
Dev. Potential	..	..	..	284	..	..	284
Cempedak							
Land Potential	..	..	..	2,432	..	..	2,432
Existing	..	..	..	2,066	..	..	2,066
Dev. Potential	..	..	..	426	..	..	426

Sources: Kantor Statistik Propinsi Kalimantan Barat, *Kalimantan Barat Dalam Angka 1996*, 1997;
Pemerintah Propinsi Dati. I Kalimantan Barat, Dinas Pertanian Tanaman Pangan, *Laporan Tahunan Dinas Pertanian Tanaman Pangan Tahun 1995*, 1996.
Pemerintah Propinsi Dati. I Kalimantan Tengah, Dinas Pertanian Tanaman Pangan, *Rencana Pengembangan Komoditas Unggulan dan Wilayah Andalan Propinsi Kalimantan Tengah*

7.6 ROAD SUBSECTOR: ROAD DEVELOPMENT FOR UPLAND DEVELOPMENT CORRIDORS

7.6.1 Introduction

Upland Development Corridor needs the development of a major road running through the corridor. We call this road as axis road. The axis road would serve the following purposes:

- To connect adjacent river basins in their middle stream areas so as to increase the level of economic integration of upland areas
- To be a major road to transport fresh fruit bunches of oil palm from plantations to CPO factories
- To be a major road to transport CPO from CPO factories to prospective down stream industries to be located in Kumai

The southern part of the Upland Development Corridor in Ketapang, Kotawaringin Barat and Kotawaringin Timur is designated as an "Upland Ecological Development Corridor". This is because it is relatively less developed by external forces, so that we can recommend that this part could be developed in a more environmentally and social conscious way.

7.6.2 Road Development for the Upland Development Corridor in Ketapang

In the case of the Upland Development Corridor in Ketapang, fortunately the axis road running through the upland development corridor is part of the southern route of the Trans-Kalimantan Highway. At present, the road section in upland Ketapang of the Trans-Kalimantan Highway exists and is passable, although it has not yet been paved. Therefore, the upgrading of the axis road is likely to take place to support the oil palm plantation development in the formulation of the Upland Development Corridor. In fact, some oil palm plantations have already been developed and more are under preparation along the Trans-Kalimantan Highway in upland Ketapang areas.

Since part of the existing Trans-Kalimantan is to be used for the axis road of the upland development corridor in Ketapang, it is not possible to set a special road standard, for example, for any oil palm plantations to keep 100 m away from the axis road (100 m setback).

Table 7.6.1 General Information on Ketapang's Upland Development Corridor, 1998

Length of the Corridor	Approximately 220 km
Width of the Corridor	Approximately 50 km
Total Area of the Corridor	1.1 million ha
Planned Oil Palm Plantations (Planted Area)	217,000 ha
The Present Population	150,000
Projected Population in 2018	410,000
Projected Population related to Oil Palm Plantation in 2018	300,000

Source: JICA-SCRDP Kaltengbar

7.6.3 Road Development for the Upland Development Corridor in Kotawaringin Barat and Timur

In the case of the Upland Development Corridor in Kotawaringin Barat and Kotawaringin Timur, the axis road is classified as a district road because the road connects subdistrict centers, according to the government road status classification. With this road classification, it is very unlikely to have an axis road prepared when needed to meet the service level demands. However, it is required for opening up new opportunities to develop oil palm plantations in Central Kalimantan to formulate the upland development corridor in Kotawaringin Barat and Timur. The construction of this axis road is very crucial.

The axis road in the upland development corridor in Kotawaringin Barat and Timur is planned to connect upland kecamatan centers (Rantaupulut and Tumbangsamba) to the Trans-Kalimantan Highway running from Tayan to Nangaburik and further to Pangkalanbun. This axis road needs a high standard for a heavy loaded road because it will be used by heavy trucks carrying CPO to the downstream industries to be located in Kumai. Since the roads connecting the upland areas to downstream towns run through peat swamp areas, it is difficult to maintain the roads in good conditions and very costly. Only the road section from Nangabulik to Pangkalanbun and to Kumai runs through dryland areas.

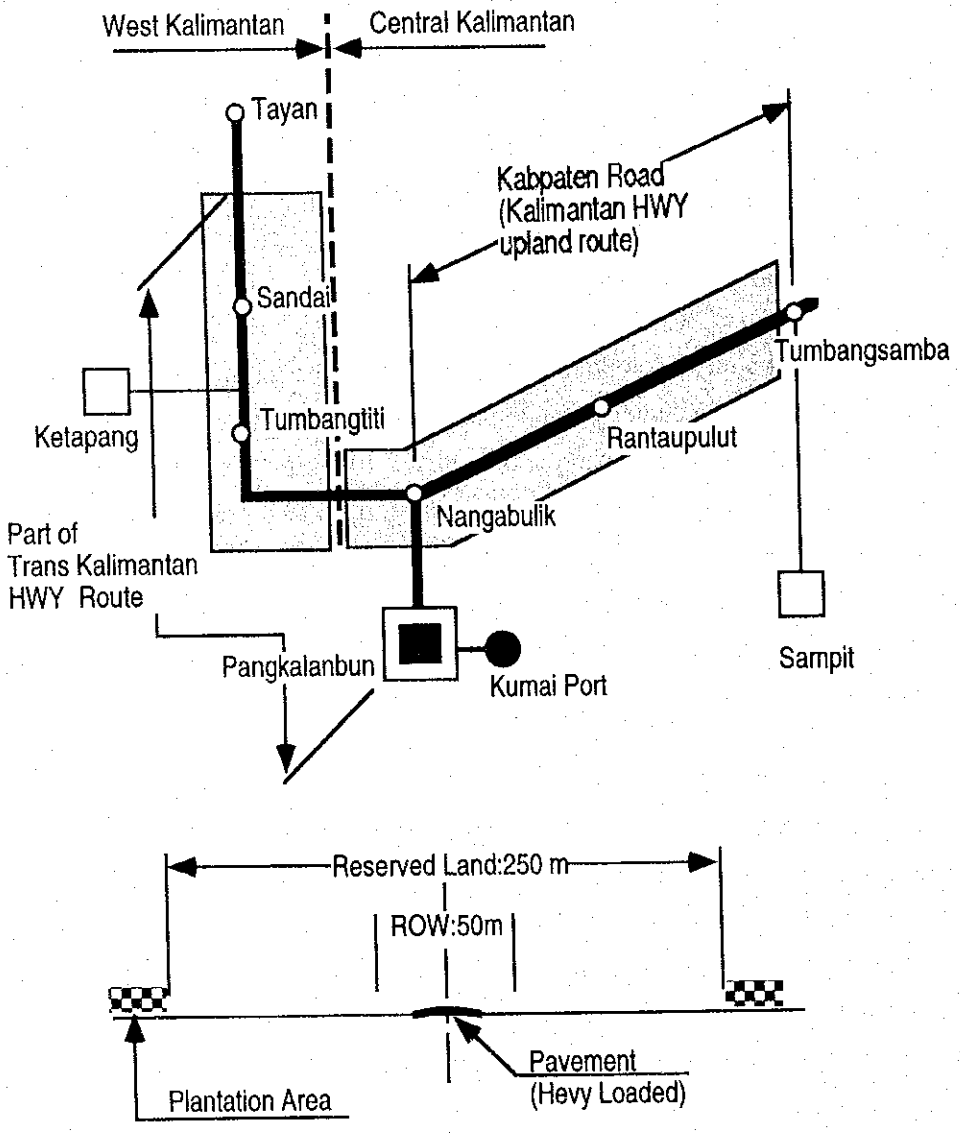
Therefore, we recommend that the development of upland areas in Kotawaringin Barat and Timur should be promoted not by constructing north-south roads connecting upland areas to downstream towns, but by constructing an east-west axis road connecting adjacent river basins and by connecting the axis road to the Trans-Kalimantan from Nangabulik to Pangkalanbun. For realizing such road development and area development, we recommend that instead of just waiting for kabupaten roads coming to connect kecamatan towns, the axis road should be constructed as a kind of development supporting road for both oil palm plantation development and rural development for the further upstream areas.

Table 7.6.2 General Information on Upland Development Corridor in Kotawaringin Barat and 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 7.6.1 Upland Ecological Development Corridor and Kumai Port



7.7 ROAD SUBSECTOR: STRATEGIC RURAL ROAD DEVELOPMENT

West Kalimantan and Central Kalimantan have different conditions for road development, especially for district roads or kabupaten roads. In West Kalimantan, the Kapuas river basin has a relatively good road network from the downstream area to the middle stream area, stretching to the upper stream area. The district roads from the district capitals to the subdistrict centers have been constructed gradually. Most subdistrict centers have been connected by earth roads at least in the Kapuas river basin. One of the issues is how to maintain the constructed district roads in good condition.

Another issue, equally important to the first one, is how to expand the road networks, which have been prepared connecting to the subdistrict centers, reaching the villages. With some government grant funds (Inpress Desa), community members can work together to improve road sections within each sub-village (dusun) territory up to the level at which the sections are passable by motorcycle. However, such community's collective works are not practical at subdistrict towns, where residents do not have a sense of community so that they cannot work together to improve the roads to villages. Moreover, in many cases, the roads exiting from subdistrict centers to villages are not for the town residents' interests, but for the village dwellers' interests. These road sections tend to be damaged due to the relatively large amount of traffic. These road sections should be improved by the local government. If this takes place, each sub-village dwellers will feel it more feasible to work together for improving their sub-village roads to connect to the next sub-villages or to the subdistrict town.

The work volume of these exiting road sections from subdistrict centers toward villages is estimated as follows:

(Total length of roads which needs improvement works)=(Number of subdistricts already connected by road)x(2 km each of each road exit)x(5 road exits to be improved)

To sustain and increase the number of beneficiaries using roads, these road sections should be constantly maintained.

The Ketapang district of West Kalimantan, and Kotawaringin Barat and Kotawaringin Timur of Central Kalimantan have different situations for roads. Since their rivers are relatively short and their river basins are much smaller than that of the Kapuas, the subdistrict centers in the middle stream areas do not have large hinterlands, so that the centers themselves have not been well developed. As a result, there has not been much demand for roads connecting the district capital to such subdistrict centers. Moreover, since the downstream areas are covered by peat swamps, it is difficult to keep the roads running through the swamp areas in good conditions. In this

context, the idea on the road development for formulation of the Upland Development Corridor, discussed in the previous section, is effective for integrating adjacent river basins and increasing the coverage of urban centers in the middle stream areas.

The Trans-Kalimantan Highway is planned to run through most of middle-stream subdistrict towns in the Ketapang district, and most of the road sections exist, although they still have an earth surface. Therefore, the issue on road development would be again the improvement of the road exits from subdistrict towns to villages.

The road development for the formulation of the Upland Development Corridor in the Kotawaringin Barat and Kotawaringin Timur is discussed in the previous section. Once the axis road of the Upland Development Corridor is developed, the next step in road improvement is to provide road connections from the axis road to the subdistrict centers located in the upper stream areas. The major subdistrict centers are designated as tertiary urban centers, while other subdistrict centers are classified as quaternary urban centers or fourth order urban centers. The construction of the district roads from tertiary urban centers to quaternary urban centers is the priority after the development of the axis road. In the Upland Development Corridor in the Kotawaringin Barat and Timur districts, there are about 164 km of such roads (between tertiary urban centers to quaternary urban centers).

After the development of the above district roads, the next priority is to improve the exiting roads to villages as described earlier in this section. The road length requiring such improvement is about 100 km. The population of the beneficiaries of such road improvement is about 5,500 in 1995.

Table 7.7.1 Summary of Priority Rural Road Development

West Kalimantan	
The Kapuas River Basin	
Exit Roads from Subdistrict Centers to Villages (Kecamatan Road)	To be Determined
Upland Development Corridor in the Ketapang District	
Exit Roads from Subdistrict Centers to Villages (Kecamatan Road)	60 km
Central Kalimantan	
Upland Development Corridor in Kotawaringin Barat and Kotawaringin Timur	
District Roads from Tertiary Urban Centers to Quaternary Urban Centers	164 km
Exit Roads from Subdistrict Centers to Villages (Kecamatan Road)	100 km

Source: JICA-SCRDP Kaltengbar

Figrure 7.7.1 Rural Road Patterns and Kecamatan Roads

7.8 TIMBER PRODUCTION SUBSECTOR: TIMBER TRADING MEASURES

Central Kalimantan is endowed with rich forest resources and has a 22% share of Indonesia's total timber production. In 1995, the forestry and wood processing industries are major sectors producing 35% of the GRDP of the province. However, Central Kalimantan's log production has decreased since 1987 when its log production reached a peak. The log production in 1996 was 3.9 million m^3, accounting for just 57% of the peak level. The analysis of the data of unlogged timber concession areas with forests, which could supply timber in the future, reveals that the log production from timber concession continues to decrease very rapidly.

There are six plywood factories operating in Central Kalimantan. Their production has decreased gradually (from 414,000 m^3 in 1991/92 to 251,000 m^3 in 1994/95). However, Central Kalimantan's installed capacity of plywood production is 500,000 tons per year. The plywood production in 1994/95 accounted for only 50% of the installed production capacity. This means that although Central Kalimantan produces timber as much as ten times larger than the installed capacity of plywood, most of the timber harvested is sent to other regions for processing. As a result, the existing plywood production factories in Central Kalimantan are largely underutilized as low as 50%. This is one of the major reasons for the stagnantion of the regional economy of Central Kalimantan.

Timber extraction, the environment and local people's incomes are closely related to each other. Excessive and destructive logging practices tend to result in environmental deterioration and reduced incomes from non-timber forest products. This could adversely affect the livelihood of the local people. Continued excessive logging at this pace will result in the very large costs for the rehabilitation of damaged areas and for wasted forest resources. Therefore, the government should take the following measures for returning some benefits from heavy logging operations to the region.

- In the forests in which the first timber harvesting is finished, the rights to forests should be removed from the Ministry of Forestry and transferred to the local government, which will manage the logged-over forests by giving the rights of logging to the local communities after recovery of the logged-over forests.
- To supervise the forestry management of the logged-over forests, as well as on-going logging operations in timber concession areas, a forest monitoring unit should be established in the provincial government.
- Provincial regulation should be made for giving a high priority to supply the timber to be harvested from the provincial forests to local wood processing industries within the province for the purpose of protecting the local industries.

- A natural resource management committee should be established for formulating a future plan of logging, conservation of timber resources, and environmental protection of logged-over forests. It is responsible for planning and management practices.
- An applied research institute should be established for conserving the local know-how of the utilization of forest resources and for R&D of technology of utilizing forest resources.

Table 7.8.1 Log Production, Export, Import and Plywood Production

	West Kalimantan	Central Kalimantan
Log Production (1,000 m^3)	1,617	5.436
Log Export (1,000 m^3)	-	2,735
Log Import (1,000 m^3)	1,485	-
Plywood Production (1,000 m^3)	1,418	310

Source: JICA-SCRDP Kaltengbar

7.9 SMALL AND MEDIUM ENTERPRISE SUBSECTOR

7.9.1 Introduction

The formal and non-formal small scale industrial sector (SSEs) in both Provinces, which is well dispersed among regions within the Provinces as well as between rural and urban areas, carries a considerable absolute weight in terms of the number of establishments, employment, investment, and production value. There have been, in West-Kalimantan for example, some 12,047 registered small scale enterprises (SSEs) in FY 1996/97, employing some 35,520 people, and producing an output with a production value of about Rupiah 133 billion. It is estimated that SSEs (in 1996) accounted for roughly 33% of total manufacturing establishments, 29% of total manufacturing employment, and some 8% (current price base) of total manufacturing output. SSEs, in both the formal and non-formal sectors, are concentrated in small scale agriculture and forestry based economic activities, which accounted for about 37% of all SSE units; some 51% of SSE employment; about 62% of all SSE investment and 63% of output value.

The SSE sector is, given in particular the relative fragility of the modern industrial scale manufacturing base (in particular in plywood processing, which accounts for the overwhelming part of the modern industrial scale wood processing industry), of absolute importance in promoting :

1) Employment and therefore income generation in both rural and urban areas
2) Small scale productive use of the existing resource base, and therefore
3) Improvement of the livelihood of a relatively large part of the workforce, which is either un- or underemployed, or which cannot find work in the modern sector of the regional economy.

7.9.2 Overall Enabling Environment

It must be stated in general, that the prevailing policy and enabling frameworks are still fragmented with an anti SSE bias, they are rudimentary lacking consistency and comprehensiveness in terms of a sector-wide policy with an appropriate policy objective and instrument mix. There are, for example, still many rules and regulations, which inhibit SSE development, such as industry and trade regulations (for example importer-producer status, and producer-exporter status), and other commercial and or general legal framework items.

7.9.3 Support Services Structure

The same observations holds true for the financial and non-financial sector support mechanisms, which do not yet constitute a comprehensive and pro-active support structure, but rather fragmented and/or partial activities, which are regionally/locally defined, or focused on

one particular aspect of SSE unit operations (such as technology, or management) and/or a particular group of SSEs (such as farm sector SSEs), thereby de facto dividing the potential beneficiary group of enterprises along location or problem

7.9.4 Objectives of Necessary Actions

Efforts by the government of Indonesia and projects assisting in such endeavors should, in principle, be embedded in and geared toward the establishment of an overall viable and sustainable support services structure.

For example, not only have the SSEs overall limited performance capabilities, but the same holds also true for the public and private sector support services structure. Hence, the major system interface between the support structure and the SSEs is weak. Likewise, the interface between policy makers and the other major structure elements appears to be weak as can be deducted from the still existing unintended, but implicit anti-SSE bias of certain policy instruments.

The overall development objective for the SSE sector of both provinces (but also at national level) as a whole is promotion of the realization of a viable and sustainable financial sector and non-financial sector support services structure in both provinces.

The subsector action program would address the following potential needs in either terms of target groups, business activity, and/ or product/process range for SSE promotion:

7.9.5 Promising Areas of SSE

Category (A)

1) Smallholder clone rubber plantation
2) Farmers groups (kelompok tani) without KUD affiliation
3) Purchase of clone rubber seedlings and chemical fertilizers, and
4) Farmers who want to learn budding skills.

The estimated pay-back time frame is 7 years from land preparation.

Category (B)

1) Rubber wood processing (the first process: chemical treatment of rubber trees, the second process: drying)
2) The existing entrepreneurs of other wood processing in the middle stream areas, where unproductive or old rubber trees would be cut down for replanting
3) Initial capital to start buying rubber trees, purchase of drying facilities, purchase of trucks, and
4) Chemical treatment and drying chemically treated rubber wood

The estimated pay-back time frame is less than one year.

Category (C)

1) Smallholder oil palm plantation
2) Farmer's groups outside oil palm plantation development areas
3) Purchase of oil palm seedlings and chemical fertilizers, and
4) Technical extension services for growing oil palm.

The estimated pay-back time frame is about 5 years.

Category (D)

1) Packaging and exporting of vegetable and fruits from West Kalimantan to Kuching, Sarawak
2) Pontianak-based farming business men, and
3) For trial development of sales network.

The estimated pay-back time frame is 1 to 2 years.

Category (E)

1) Shrimp farming, and
2) Entrepreneurs in Sambas coastal areas.

Category (F)

1) Wood toy manufacturing using waste wood from plywood factories and others
2) The existing entrepreneurs of running wood processing workshops in Pontianak
3) Purchase of electric sawing machine, purchase of paints suitable for children's toys
4) Technical training and study tours for toy design.

The estimated pay-back period is 2 years.

Category (G)

1) Marine fishing (expanding fishing vessels)
2) Small-scale fishing boat owners in Sambas, and
3) Purchase of larger fishing boats and fishing equipment.

The estimated pay-back period is 1 year.

Category (H)

1) Eco-tourism touring
2) Group of tourist guides in Pontianak
3) Production of tourist products, printing of pamphlets, and promotion by internet web sites, and
4) Training of guides, training in the design of eco-tours.

The estimated pay-back period is 1 year.

Given the relatively modest investment needs per unit (about US $ 430 on average per unit at the current exchange rate), the direct economic benefits generated through program

implementation would be significant. It is estimated that the above investment would generate a return of US$ 805 per unit, equivalent to US $ 1.9 per one dollar invested, or about US $ 270 per job created.