



Government of Central Kalimantan



Government of Indonesia



Government of the Netherlands



Master Plan for the Rehabilitation and Revitalisation of the Ex-Mega Rice Project Area in Central Kalimantan



ECONOMIC ANALYSIS AND FINANCE FOR REHABILITATION AND REVITALISATION OF THE EMRP AREA

Technical Report No. 15

OCTOBER 2008

Euroconsult Mott MacDonald and Deltares | Delft Hydraulics
in association with
DHV, Wageningen UR, Witteveen+Bos, PT MLD and PT INDEC

Master Plan for the Rehabilitation and Rehabilitation of the Ex-Mega Rice Project Area in Central Kalimantan

Technical Report Number 15

Economic Analysis and Finance for Rehabilitation and Revitalisation of the EMRP Area

André Oosterman¹ and Bambang Tata Samiadji²

1) DHV

2) PT. MLD

Government of Indonesia

Royal Netherlands Embassy, Jakarta

Euroconsult Mott MacDonald / Deltares | Delft Hydraulics

in association with

DHV
Wageningen University & Research
Witteveen+Bos Indonesia
PT. MLD
PT. Indec

October 2008

Table of contents

List of abbreviations	iv
Summary	v
1 Economic Profile of Central Kalimantan	1
1.1 Population.....	1
1.2 Economy.....	3
1.3 Employment.....	4
2 Economic Profile of the EMRP Area	6
2.1 Definition of the Economic Planning Area.....	6
2.2 Population.....	6
2.3 Economy.....	7
2.4 Employment.....	9
2.5 Implications for Economic Development of the EPA.....	10
3 Economic Development Scenarios	12
3.1 Outline of Development Scenarios	12
3.1.1 Scenario 1 – No Change	12
3.1.2 Scenario 2 – Plantations.....	13
3.1.3 Scenario 3 – Peatland Rehabilitation and Agricultural Revitalization.....	14
3.2 Economic Development of the Agricultural Sector.....	15
3.2.1 Development options	15
3.2.2 Benefits of Increased Agricultural Productivity in the EPA.....	17
4 Financing Economic Development	19
4.1 Legal and Institutional Framework.....	19
4.2 Financing Framework	21
4.3 Application of Financing Principles to a Medium-Term Financing Plan for EPA Rehabilitation.....	23
4.3.1 Background	23
4.3.2 Theme-Based Financing Plan for Revitalizing the EMRP Area	24
4.3.3 Summary of Overall Economic and Financial Benefits	29

List of annexes

Annex 1	Analysis of Regional Economic Competitiveness	30
Annex 2	Agriculture in the EPA	32
Annex 3	Limitations to the Use of IRR-Based Investment Analysis.....	34

List of tables

Table 1	Area and Population of Central Kalimantan by District, 2005.....	1
Table 2	Population Growth Rates, 1971-2005 (percent per year).....	2
Table 3	Population of Central Kalimantan, 1980-2005 (thousands).....	2
Table 4	Poverty incidence, 2004-2007 (percentage total population).....	3
Table 5	Selected welfare indicators, 2001 and 2006 (percentage non-oil GDP).....	3
Table 6	Economic structure, 2001 and 2006 (percentage non-oil GDP).....	3
Table 7	GDP of Central Kalimantan, 2004-2006 (IDR trillion, constant 2000 prices).....	4
Table 8	Labour market structure of Central Kalimantan, 2001 and 2006.....	4
Table 9	Employment in Central Kalimantan, 2004-2006 (thousands).....	5
Table 10	Labour productivity by sector in Central Kalimantan, 2006.....	5
Table 11	Key features of the Economic Planning Area.....	6
Table 12	Population changes in selected areas in the EPA, 2000-2005 (thousands).....	7
Table 13	Economic structure of the EPA, 2001 and 2006 (percentage non-oil GDP).....	8
Table 14	GDP of Kapuas and Pulang Pisau, 2000-2005 (IDR trillion, constant 2000 prices).....	8
Table 15	Economic structure of agriculture in Kapuas and Pulang Pisau, 2000 and 2005.....	8
Table 16	Labour market structure of EPA, 2001 and 2006 (percentage total employment).....	9
Table 17	Employment in Kapuas and Pulang Pisau, 2004-2006 (thousands).....	9
Table 18	Labour productivity in Kapuas and Pulang Pisau, 2006.....	10
Table 19	Agricultural productivity in the EPA, 2000 and 2006.....	16
Table 20	Productivity of paddy in the EPA, 2000 and 2006 (Ton/Ha).....	17
Table 21	Public financing of development expenditure.....	20
Table 22	Estimated annual public investment in EPA.....	24
Table 23	Financing plan for Theme 1: Fire Management.....	25
Table 24	Financing plan for Theme 2: Spatial Management, Land Use and Infrastructure.....	25
Table 25	Financing plan for Theme 3: Sustainable Peatland Management and Conservation.....	26
Table 26	Financing plan for Theme 4: Increasing Agricultural Productivity.....	27
Table 27	Financing plan for Theme 5: Community Empowerment and Improved Livelihoods.....	28

Table 28	Financing plan for Theme 6: Institutional Development and Capacity Building.....	29
Table 29	Relative competitiveness of district governments in Central Kalimantan, 2003-2005	31
Table 30	Agricultural land use in the EPA, 2000 and 2006.....	32
Table 31	Agricultural production in the EPA, 2000 and 2006.....	33
Table 32	Livestock in the EPA, 2000 and 2005	33

List of figures

Figure 1	Financing of central and regional government responsibilities.....	19
Figure 2	Government of Indonesia financing principles	21

List of abbreviations

APBD	<i>Anggaran Pendapatan dan Belanja Daerah</i> (regional government revenue and expenditure budget)
APBN	<i>Anggaran Pendapatan dan Belanja Negara</i> (national government revenue and expenditure budget)
BAPPENAS	<i>Badan Perencanaan Pembangunan Nasional</i> (National Development Planning Board)
BPS	<i>Badan Pusat Statistik</i> (Central Bureau of Statistics)
BUMD	<i>Badan Usaha Milik Daerah</i> (regional government-owned enterprise)
BUMN	<i>Badan Usaha Milik Negara</i> (state-owned enterprise)
CPO	Crude palm oil
EMRP	Ex-Mega Rice Project
EIA	Environmental impact assessment
EPA	Economic Planning Area
FMU	Forest Management Unit
GDP	Gross Domestic Product
GRDP	Gross Regional Domestic Product
GOI	Government of Indonesia
IDR	Indonesian Rupiah
Inpres	<i>Instruksi Presiden</i> (presidential instruction)
IRR	internal rate of return
O&M	Operation and maintenance
PLG	<i>Proyek Lahan Gambut</i> (peatland project)
PLN	<i>Perusahaan Listrik Negara</i> (state electricity company)
PP	<i>Peraturan Pemerintah</i> (government regulation)
RPJM	<i>Rencana Pembangunan Jangka Menengah</i> (medium-term development plan)
RPJMD	<i>Rencana Pembangunan Jangka Menengah Daerah</i> (regional medium-term development plan)
SPM	<i>Standar Pelayanan Minimal</i> (minimum service standard)
TP	<i>Tugas Pembantuan</i> (co-administered task)
UPT	<i>Unit Pelaksanaan Teknis</i> (technical implementation unit)
US\$	United States Dollar
VAT	Value added tax

Summary

Economic development options for the EMRP area

The first part of this report presents an economic profile of the EMRP area (and the wider area of Central Kalimantan) to provide a frame of reference for identifying economically viable activities to rehabilitate the area. The implications for economic development are as follows:

Population. Because of communal violence and economic hardship in the aftermath of the *krismon*, migration to Central Kalimantan has come to a standstill. As a result, the population growth rate of the EMRP area is now close to the national average of 1.5% p.a. The implications for economic development planning are twofold:

- The existing population of the EMRP area is likely to resist a large-scale transmigration program, such as the program proposed in Inpres 2/2007.
- To plan for basic infrastructure provision to the existing population of the EMRP area, government agencies should assume an annual population growth rate of up to 1.5% (instead of using BPS projections, which assume growth rates of 2.5% p.a. until 2020).

Economy. The economy of the EMRP area is poor in mineral resources and largely based on agriculture, of which non-food farming and livestock have rapidly increased in recent years. The area has strong links with nearby Banjarmasin, its largest market and most important port. Thus:

- Development of economic activities should aim at increasing the productivity of commercial crops and livestock farms.
- Because of its vicinity to Banjarmasin, the EMRP area may have a competitive advantage in manufacturing over Palangka Raya, because transport costs to its main outlet are lower. The obvious choice is to encourage the processing of the agricultural produce of the EMRP area.
- Because of its location, Banjarmasin will continue to be the main market for (most of) the EMRP area, even after completion of the Trans-Kalimantan Highway from Balikpapan to Palangka Raya. This means that investments aimed at providing (or improving) agricultural producers with access to markets should consist of collector roads that link production areas to the road from Palangka Raya to Banjarmasin.

Employment. From a perspective of job creation, economic development plans for the EMRP area should consider the following:

- At present, agriculture now employs approximately eight times as many workers as the manufacturing sector. In the short and medium term, most jobs in the EPA will continue to be created in the agricultural sector, and not in the processing of agricultural produce or other industries. This again suggests that economic development plans should aim at increasing the productivity of agricultural workers.
- Although the services sector is the second largest employer in the EMRP area, the economic prospects of most industries in the area appear to be linked to economic developments in agriculture and manufacturing. Prospects for the development of 'stand-alone' service sectors, such as transshipment or tourism, are limited.

Economic development scenarios

Three scenarios were considered for the long-term economic development of the EMRP area:

- Scenario 1 – No change
- Scenario 2 – Plantations
- Scenario 3 – Peatland rehabilitation and agricultural revitalization

The third scenario was deemed likely to produce better development outcomes than “no change” or “plantations”. In particular, under “peatland rehabilitation and agricultural revitalization” poverty rates will have a high likelihood of falling with relatively low risk that these gains will be undone through the dependence on a single commodity (a major risk of Scenario 2).

To encourage agricultural revitalization, the Government should not attempt to select commodities that farmers should grow (as implied by the Inpres 2/2007 financing plan). Instead, it should seek to remove or lower barriers that are currently preventing farmers (including but not limited to subsistence farmers) from generating higher financial revenue than is currently the case. Measures to achieve this include the following: (i) improve access to information, (ii) improve access to markets, and (iii) improve access to credit.

Financing economic development

Activities required to rehabilitate and revitalize the EMRP area in the short and medium term were assigned to six “themes”: (1) spatial management, land use and infrastructure, (2) sustainable peatland management and conservation, (3) increasing agricultural productivity, (4) community empowerment and improved livelihoods, (5) fire management, and (6) institutional development and capacity building. The estimated cost of implementing priority activities was estimated at about IDR 7 trillion (or approximately US\$ 750 million) for the five-year period 2009-2013. The proposed investment is expected to generate a wide range of benefits for the EMRP area and Indonesia, the most important of which are:

- Reduction of widespread fires from the area
- Labour productivity increases (and subsequent increases in welfare) due to better health and education of people living in the area
- Increase in yields of key agricultural commodities by 50-100% over a 25-year period
- Reduction of poverty in the area
- Reduction of carbon emissions in the order of several to several tens of millions of tons of carbon per year
- Reduction of long-term problems of flooding and other environmental problems that would otherwise require substantial future investments by the public sector for their amelioration

1 Economic Profile of Central Kalimantan

In statistical terms, the province of Central Kalimantan is an extreme case. It is one of the largest and least populated provinces of Indonesia. With a land area of about 150,000 km², it is larger than Java, although it has a population of only 2 million. Per capita income in the province is over twice the national average. Much of this is derived from oil palm plantations and the extraction of natural resources, of which coal mining and logging are the most important. Administratively, the province is subdivided in 13 regencies and one municipality, Palangka Raya, which also serves as the provincial capital (Table 1).

1.1 Population

Central Kalimantan has a lower population density than any other province in Indonesia except Papua and Irian Jaya Barat. The regional distribution of population in Central Kalimantan is extremely unbalanced. About half of the population lives in and around four medium-sized cities: Palangka Raya, Kapuas Hulu, Pangkalan Bun and Sampit. The rest of the population is concentrated in small towns along the coast and the rivers. The inland part of the province is virtually uninhabited.

Table 1 Area and Population of Central Kalimantan by District, 2005

District	AREA		POPULATION	
	'000 km ²	% Total	'000	% Total
WEST	54.2	35	721	36
Kab. Sukamara	3.8	2	34	2
Kab. Lamandau	6.4	4	56	3
Kab. Kotawaringin Barat	10.8	7	206	10
Kab. Seruyan	16.4	11	108	5
Kab. Kotawaringin Timur	16.8	11	317	16
CENTER	52.0	34	307	15
Kab. Katingan	17.5	11	133	7
Kab. Gunung Mas	10.8	7	86	4
Kab. Murung Raya	23.7	15	88	4
PALANGKA RAYA	2.4	2	183	9
BARITO	20.9	14	322	16
Kab. Barito Utara	8.3	5	114	6
Kab. Barito Timur	3.8	2	85	4
Kab. Barito Selatan	8.8	6	123	6
EX MEGA RICE	24.0	16	470	23
Kab. Pulang Pisau	9.0	6	118	6
Kab. Kapuas	15.0	10	351	18
TOTAL	153.6	100	2,004	100

Source: Consultant, based on BPS

Population growth

During 1971-2005, the population of Central Kalimantan increased from about 700,000 to over 2.0 million persons. In this period, average annual population growth consistently exceeded the national average. Until 2000, population growth rates were also higher than in other provinces in Kalimantan (Table 2).

Table 2 Population Growth Rates, 1971-2005 (percent per year)

	1971-80	1980-90	1990-95	1995-00	2000-05
Central Kalimantan	3.5%	3.9%	3.1%	2.7%	1.5%
Rest of Kalimantan	2.9%	2.9%	2.8%	1.4%	2.0%
Indonesia	2.4%	2.0%	2.0%	1.2%	1.3%

Source: BPS

Migration

Historically, the population of Central Kalimantan has rapidly increased because of substantial in-migration from other provinces. Without migration, the population of the province would have increased from about 950,000 in 1980 to approximately 1.5 million in 2005. The actual population in 2005 was estimated at around 2 million, indicating that since 1980 at least 500,000 persons have migrated to Central Kalimantan. Until the late 1980s, migration moved to the province under the central government's *transmigrasi* program. From the early 1990s until the 1997/98 monetary crisis, spontaneous migration accounted for a major portion of total in-migration. Because of economic hardship and communal violence in the aftermath of the *krismon*, net migration has come to a virtual standstill since 2000 (Table 3).

Table 3 Population of Central Kalimantan, 1980-2005 (thousands)

	1980-90	1990-95	1995-00	2000-05
Total population, start of period	954	1,397	1,628	1,857
+ Natural increase*	206	120	96	116
+ Net migration	236	111	133	31
= Total population, end of period	1,397	1,628	1,857	2,004
Net migration per year	24	22	27	6

Source: Consultant, based on BPS

* Assuming increase at national population growth rates during the same period

Social welfare

Poverty incidence increased from 2004 to 2006, although it remains substantially lower than the national average, both in urban and rural areas (Table 4). At the same time, disposable income (as measured by per capita motorcycle registrations and electricity connections) and the availability of public infrastructure (such as medical facilities and water supply) are all below the national average (Table 5). These apparently conflicting observations suggest that a substantial portion of the population lives just above the poverty line.

Table 4 Poverty incidence, 2004-2007 (percentage total population)

	2004	2005	2006	Mar 2007
Central Kalimantan				
Urban poverty rate	6.1	6.6	7.0	6.7
Rural poverty rate	12.2	12.8	13.4	10.8
Indonesia				
Urban poverty rate	12.1	11.7	13.5	12.5
Rural poverty rate	20.1	20.0	21.8	20.4

Source: Consultant, based on BPS

Table 5 Selected welfare indicators, 2001 and 2006 (percentage non-oil GDP)

Indicator	Central Kalimantan		Indonesia	
	2001	2006	2001	2006
Access to piped water*	15.0	19.5	18.9	18.6
Hospital beds**	30	36	61	63
Motorcycle registrations***	5.7	7.0	8.3	10.4
Per capita GDP (IDR million)	6.1	7.0	6.4	7.0

Source: Consultant, based on BPS

* Percentage of households (figures for piped water apply to 2000 and 2003)

** Per 100,000 persons

*** Per 1,000 persons

1.2 Economy

The economy of Central Kalimantan is characterized by a heavy dependence on the extraction of natural resources, mainly mining and logging. Because of low population densities and an underdeveloped road network, the provincial economy has the characteristics of an island economy: high transport costs, dependence on a limited range of economic activities, and an inflexible market for labour and goods.

Economic sectors

The sectoral composition of the economy of Central Kalimantan is markedly different from the national economy (Table 6). The agricultural sector accounted for about 38% of provincial GDP in 2006, against less than 15% for Indonesia as a whole. Manufacturing (mainly wood processing) is of minor importance to Central Kalimantan, although it still accounted for over one-third of national GDP in 2006. The share of mining (primarily copper and gold) has doubled in recent years and now accounts for 8% of GDP, which is comparable to the national share. Services continue to dominate the provincial and national economies.

Table 6 Economic structure, 2001 and 2006 (percentage non-oil GDP)

Economic Sector	Central Kalimantan		Indonesia	
	2001	2006	2001	2006
Agriculture	40.4	37.6	15.4	14.5
Mining	4.9	8.3	11.3	9.3
Manufacturing	14.3	13.3	34.1	34.7
Services (incl. construction)	40.4	40.8	29.2	41.5
Total	100.0	100.0	100.0	100.0

Source: BPS

Economic growth

During 2001-2006, the economy of Central Kalimantan expanded by 5.1% per year in real terms, slightly below the national average of 5.7%. Surveys indicate that the economic development of Central Kalimantan is especially hampered by the poor state of physical infrastructure (see Annex 1 for details). During 2004-2006, mining accounted for almost over half of total GDP growth (Table 7). In contrast, the agricultural sector (which employs over 60% of the labour force) contributed 20% of GDP growth in same period.

Table 7 GDP of Central Kalimantan, 2004-2006 (IDR trillion, constant 2000 prices)

Sector	2004	2005	2006	Increase 2004-2006	
				IDR trn	% Total
Agriculture	5.25	5.30	5.58	0.33	20
Mining	0.54	0.93	1.23	0.49	43
Manufacturing	1.90	1.96	2.01	0.11	7
Services*	5.58	5.85	6.06	0.48	30
Total	13.26	14.03	14.88	1.62	100

Source: BPS

* Including construction and utilities

1.3 Employment

Although the economic structure of Central Kalimantan is very different from Indonesia's, the structure of the labour market is broadly similar (Table 8). As in most other parts of Indonesia, agriculture remains the single most important source of employment, and now provides over 60% of all jobs. However, this sector is characterized by a significant degree of underemployment and low labour productivity. The services sector employed about 27% of total employment, the remainder being employed by the manufacturing and mining sectors.

Table 8 Labour market structure of Central Kalimantan, 2001 and 2006
(percentage total employment)

Sector	Central Kalimantan		Indonesia	
	2001	2006	2001	2006
Agriculture	60.6	60.7	49.8	44.5
Mining	3.6	3.4	NA	1.0
Manufacturing	8.5	8.5	20.0	17.0
Services*	27.3	27.4	30.2	37.5
Total	100.0	100.0	100.0	100.0

Source: BPS

* Including construction and utilities

Employment growth

In the period 2004-2006, about 70,000 new jobs were created in Central Kalimantan, mainly in agriculture (Table 9). Employment in forestry has been in decline since 2000. Agricultural was also registering net job losses. Growth of direct employment in mining and manufacturing was about 5,000 or 7% of total employment growth (although the two sectors accounted for over half of total GRDP).

Table 9 Employment in Central Kalimantan, 2004-2006 (thousands)

Sector	2004	2005	2006	Increase 2004-2006	
				'000	% Total
Agriculture	474	492	530	56	79
Mining	27	23	29	2	3
Manufacturing	71	64	74	3	4
Services*	230	246	239	9	13
Total	801	826	872	71	100

Source: BPS

* Including construction and utilities

Labour productivity

In 2006, average labour productivity, as measured by gross regional domestic product per employed person, varied enormously among sectors, from IDR 10 million in agriculture to IDR 43 million in mining (Table 10). Productivity was also relatively high in manufacturing and certain services, notably construction and transportation. A sector with a high average labour productivity usually employs larger amounts of capital per worker than low-productivity sectors. The need to operate capital efficiently and the relatively scarcity of skills do this (bulldozer drivers, computer operators) usually push up wage rates in capital-intensive sectors. This explains why jobs in agriculture are abandoned as soon as new jobs were created in better-paid sectors. Also, note that agricultural output barely increased from 2004-2006, suggesting that the 56,000 persons who entered the sector in those years did not add any significant value to it.

Table 10 Labour productivity by sector in Central Kalimantan, 2006

Sector	GRDP (IDR trillion)	Employment ('000)	Productivity (IDR m/employee)
Agriculture	5.58	530	10.5
Mining	1.23	29	42.5
Manufacturing	2.01	74	27.2
Services*	6.06	239	25.3
Total	14.88	872	17.1

Source: BPS

* Including construction and utilities

2 Economic Profile of the EMRP Area

2.1 Definition of the Economic Planning Area

Inpres 2/2007 provides a detailed definition of the area designated for the Ex Mega Rice Project (EMRP). The area covers about 14,600 km² in four districts: Kota Palangka Raya and the *kabupaten* of Kapuas, Pulang Pisau and Barito Selatan (refer to Chapter 1 for an economic profile of Central Kalimantan). It is assumed that the implementation of the EMRP Masterplan will directly affect all persons living in the 19 sub-districts that are partly or wholly covered by the area defined in the Inpres. This 'area of influence' is hereafter referred to as the Economic Planning Area (EPA). In 2005, the EPA had an estimated population of about 457,000, or 20% of the provincial total. It covers an area of over 26,700 km², almost twice the acreage of the area designated in the Inpres.

Rationale for defining an EPA

For two reasons, an economic planning area was defined that is larger than the area designated in Inpres 2/2007:

- The economic impacts of the implementation of the Masterplan are expected to spill over to areas beyond the boundaries of the EPA.
- The Masterplan will be implemented with assistance of district government agencies, of which sub-districts are the smallest planning units.

Basis for socio-economic analysis

There is substantial overlap between the EPA and the administrative areas of Kabupaten Kapuas and Kabupaten Pulang Pisau. The EPA contains almost 90% of the population of these *kabupaten*. In contrast, the Economic Planning Area only covers a small portion of the population of the other two districts (Table 11). For these reasons, it is assumed that the socio-economic characteristics of Kabupaten Kapuas and Kabupaten Pulang Pisau are representative for the entire EPA.

Table 11 Key features of the Economic Planning Area

District	Kecamatan in EPA (#)	Area (km ²)	Population ('000)	%Population in EPA
Kab. Kapuas	10	13,380	314	89
Kab. Pulang Pisau	7	10,450	105	88
Kab. Barito Selatan	2	2,350	27	22
Kota Palangka Raya	1	580	11	6
Total	20	26,750	457	

Source: PODES 2005

2.2 Population

The south-eastern part of the EPA, which borders South Kalimantan, has one of the highest population densities in the province. This area accounts for over 60% of the total EPA population. The rest of the population is concentrated in small towns along the road from Kuala Kapuas to Palangka Raya. The areas north and south of that road are mainly covered by peat and forest lands.

Population growth

During 1980-2005, the population of the EPA increased from about 260,000 to almost 460,000 persons. In this period, average annual population growth consistently remained below the provincial average. In 2005, the population of the EPA was slightly lower than in 2000 (Table 12).

Table 12 Population changes in selected areas in the EPA, 2000-2005 (thousands)

District	Population ('000)		Change from 2000	
	2000	2005	'000	%
Kab. Kapuas				
- Pulau Petak + Kapuas Murung	70.9	63.7	(7.2)	(10.2)
- rest of Kab. Kapuas	233.3	251.0	17.7	7.6
Kab. Pulang Pisau	115.5	104.5	(11.0)	(9.5)
Kab. Barito Selatan	26.5	27.2	0.7	2.8
Kota Palangka Raya	11.6	11.1	(0.5)	(4.5)
Total	457.8	457.5	(0.3)	(0.0)

Source: Consultant, based on BPS

Migration

If, from 2000 onward, the population of the EPA had increased at the average provincial growth rate of 1.5% p.a., the area would have had an estimated population of 493,000 in 2005. The actual population in that year was 457,500 (Table 12). This suggests that approximately 35,000 left the EPA during 2000-2005. A recent study suggests that transmigration villages were experienced massive depopulation in recent years. This finding was confirmed by an analysis of sub-district population data, which shows that traditional transmigration areas (such as Maliku and Pandih Batu in Kab. Pulang Pisau and Pulau Petak and Kapuas Murung in Kab. Kapuas) lost approximately 10% of their total population since 2000.

2.3 Economy

The economy of the EPA is dominated by agriculture, of which commercial crops and forestry are the most important. Palangka Raya and nearby Banjarmasin are the most important market for agriculture produce. Most commercial crops are exported via the port of Banjarmasin, which is closer to Kuala Kapuas (the main economic centre of the EPA) than Palangka Raya.

Major economic sectors

The EPA is even more dependent on agriculture than the economy of Central Kalimantan (Table 13). The agriculture sector of Kabupaten Kapuas and Kabupaten Pulang Pisau (which are used as a proxy for the EPA) dominate the local economy and account for about 50% of GDP. Manufacturing is relatively important, possibly because of the EPA's vicinity to Banjarmasin. The EPA is poor in mineral resources, and mining is insignificant. Perhaps surprisingly, from 2001 to 2006 all major economic sectors lost a share in GDP to the services sector.

Table 13 Economic structure of the EPA, 2001 and 2006 (percentage non-oil GDP)

Economic Sector	Kapuas / P.Pisau		Central Kalimantan	
	2001	2006	2001	2006
Agriculture	55.3	51.7	40.4	37.6
Mining	0.3	0.3	4.9	8.3
Manufacturing	16.6	13.6	14.3	13.3
Services*	27.7	34.3	40.4	40.8
Total	100.0	100.0	100.0	100.0

Source: Consultant, based on BPS

* Including construction and utilities

Economic growth

Growth rates of Kabupaten Kapuas and Kab. Pulang Pisau suggest that, from 2004-2006, the economy of the EPA expanded by 16% per year in real terms. During the same period, the provincial economy increased by 12%. The above-average increase was almost entirely caused by growth in the agricultural and services sectors (Table 14).

Table 14 GDP of Kapuas and Pulang Pisau, 2000-2005 (IDR trillion, constant 2000 prices)

Sector	2004	2005	2006	Increase 2004-2006	
				IDR trn	% Total
Agriculture	1.17	1.22	1.30	0.13	38
Mining	0.01	0.01	0.01	0.00	1
Manufacturing	0.32	0.33	0.34	0.02	5
Services*	0.66	0.70	0.86	0.19	57
Total	2.16	2.26	2.50	0.34	100

Source: BPS

Economic growth of agricultural subsectors. Since 2001, the share of forestry and fishery in local GDP declined. This decline was offset by relatively high growth in non-food farming and livestock. The share of food farming, which largely consists of subsistence agriculture, remained unchanged. These observations apply to both Kabupaten Kapuas and Kabupaten Pulang Pisau (Table 15).

Table 15 Economic structure of agriculture in Kapuas and Pulang Pisau, 2000 and 2005 (percentage non-oil GDP)

Sector	Kapuas		Pulang Pisau	
	2000	2005	2000	2005
Food farming	16.7	17.9	18.6	19.6
Non-food farming	16.5	18.5	14.2	16.7
Livestock	3.8	4.7	3.4	3.2
Forestry	8.0	6.7	7.1	6.1
Fishery	6.7	6.6	8.0	8.3
Other (non-agriculture)	48.2	45.6	48.6	46.1
Total	100.0	100.0	100.0	100.0

Source: Consultant, based on BPS

2.4 Employment

The structure of the EPA's labour market is similar to that of Central Kalimantan as a whole (Table 16). Agriculture remains the single most important source of employment, and provided almost three-quarters of all jobs in 2006, up from about 70% in 2001. However, this sector is characterized by a significant degree of underemployment and low labour productivity. Since the opening of the bridge over the Kapuas River, a substantial part of the EPA's manufacturing base (which largely consists of the processing of agricultural products) has disappeared because of increased competition from manufacturers based in Banjarmasin. This explains why the EPA lost half of its manufacturing jobs from 2001 to 2006. The services sectors accounted for about 16% of total employment in 2006, which was substantially lower than the provincial average.

Table 16 Labour market structure of EPA, 2001 and 2006 (percentage total employment)

Sector	Kapuas / P.Pisau		Central Kalimantan	
	2001	2006	2001	2006
Agriculture	70.5	74.7	60.6	60.7
Mining	4.7	2.9	3.6	3.4
Manufacturing	13.6	6.0	8.5	8.5
Services*	11.2	16.4	27.3	27.4
Total	100.0	100.0	100.0	100.0

Source: Consultant, based on BPS

* Including construction and utilities

Employment growth

In the period 2004-2006, over 20,000 new jobs were created in the EPA, mainly in agriculture (Table 17). During the same period, the services sectors shed an estimated 33,000 jobs, so total employment decreases by approximately 12,400.

Table 17 Employment in Kapuas and Pulang Pisau, 2004-2006 (thousands)

Sector	2004	2005	2006	Increase
Agriculture	155.0	143.6	170.6	15.6
Mining	6.7	4.2	6.7	0.0
Manufacturing	8.4	16.6	13.6	5.2
Services*	70.6	45.4	37.4	(33.2)
Total	240.7	209.8	228.3	(12.4)

Source: Consultant, based on BPS

* Including construction and utilities

Labour productivity

In 2006, average labour productivity, as measured by gross regional domestic product per employed person, varied enormously among sectors, from IDR 1.5 million in mining (which mainly consists of quarrying for construction materials) to IDR 25 million in manufacturing (Table 18). Productivity was also relatively high in certain services, notably construction and transportation. A sector with a high average labour productivity usually employs larger amounts of capital per worker than low-productivity sectors. The need to operate capital efficiently and the relatively scarcity of skills do this (bulldozer drivers, computer operators) usually push up wage rates in capital-intensive sectors. This explains why jobs in agriculture are abandoned as soon as new jobs were created in better-paid sectors. Note that agricultural output increased from 2005 to 2006 by 8%, whereas the number of

agricultural worked increased by almost 20% in that year, suggesting that the majority of persons who entered the sector in 2005 did not add any significant value to it.

Table 18 Labour productivity in Kapuas and Pulang Pisau, 2006

Sector	GRDP (IDR trillion)	Employment (‘000)	Productivity (IDR m/employee)
Agriculture	1.30	170.6	7.6
Mining	0.01	6.7	1.5
Manufacturing	0.34	13.6	25.0
Services*	0.86	37.4	23.0
Total	2.50	228.3	10.9

Source: Consultant, based on BPS

* Including construction and utilities

2.5 Implications for Economic Development of the EPA

The purpose of the economic profile of the Economic Planning Area (and the wider area of Central Kalimantan) is to provide a frame of reference for identifying economically viable activities to rehabilitate the EMRP area. The implications for economic development of the area are summarized below.

Population

Because of communal violence and economic hardship in the aftermath of the *krismon*, migration to Central Kalimantan has come to a standstill. As a result, the population growth rate of the EPA is now close to the national average of 1.5% p.a. The implications for economic development planning are twofold:

- The existing population of the EPA is likely to resist a large-scale transmigration program, such as the program proposed in Inpres 2/2007. Conversely, potential migrants (especially those from other provinces) may be reluctant to relocate to the EPA.
- To plan for basic infrastructure provision to the existing population of the EPA, government agencies should assume an annual population growth rate of up to 1.5% (instead of using BPS projections, which assume substantially higher growth rates of 2.5% p.a. until 2020).

Economy

The economy of the EPA is poor in mineral resources and largely based on agriculture, of which non-food farming and livestock have rapidly increased in recent years. The area has strong links with nearby Banjarmasin, its largest market and most important port. This suggests that:

- Development of economic activities should aim at increasing the productivity of commercial crops and livestock farms. Promoting food farming, which generates lower added value than any other economic activity, is unlikely to create interest in migration to the EPA.
- Because of its vicinity to Banjarmasin, the EPA may have a competitive advantage in manufacturing over Palangka Raya, because transport costs to its main outlet are lower. The obvious choice is to encourage the processing of the agricultural produce of the EPA.
- Because of its location, Banjarmasin will continue to be the main market for (most of) the EPA, even after completion of the Trans-Kalimantan Highway from Balikpapan to Palangka Raya. This means that investments aimed at providing (or improving) agricultural producers with access to markets should consist of collector roads that link production areas to the national road from Palangka Raya to Banjarmasin.

Employment

From a perspective of job creation, economic development planning for the EPA should consider the following:

- At present, agriculture now employs approximately eight times as many workers as the manufacturing sector. In the short and medium term, most jobs in the EPA will continue to be created in the agricultural sector, and not in the processing of agricultural produce or other industries. This again suggests that economic development plans should aim at increasing the productivity of agricultural workers.
- Although the services sector is the second largest employer in both Central Kalimantan and the EPA, the economic prospects of most industries in the EPA appear to be linked to economic developments in agriculture and manufacturing. (Prospects for the development of 'stand-alone' service sectors, such as transshipment or tourism, are limited.) This suggests that economic development plans should not seek to actively develop the services sector.

3 Economic Development Scenarios

3.1 Outline of Development Scenarios

The first part of this chapter outlines three scenarios for the socio-economic development of the Economic Planning Area during 2008-2033:

- Scenario 1 – No change
- Scenario 2 – Plantations
- Scenario 3 – Peatland rehabilitation and agricultural revitalization

It will be argued that the third scenario is likely to produce better socio-economic development outcomes than “no change” or “plantations”. For this reason, the second part of this chapter reviews development options for agricultural revitalization.

3.1.1 Scenario 1 – No Change

Population and land use

From 2005 to 2033, the population of the EPA will increase at the provincial average growth rate of 1.5% p.a., and reach approximately 690,000 at the end of the projection period. Land use will remain based on a mix of smallholder farm systems with degraded peatland covering most of the area. Much of the presently idle land will be developed by smallholders as a result of population increases leading to continued fires, which will remain a persistent and intermittent problem. Land use remains sub-optimal due to continued land and water management problems and peat subsidence will continue over much of blocks A, B and C.

Regional development

In the “no change” scenario, economic growth will remain dependent on agriculture with limited advances in local processing of agricultural produce. Assuming year-on-year economic growth of 3%, per capita GRDP in 2033 would be IDR 7.6 million compared to current per capita GRDP of IDR 5.1 million (constant 2000 prices). This rate is lower than the annual growth rates of national and provincial economy (which were 5.7% and 5.1%, respectively, during 2001-2006). However, the likelihood of sustained annual economic growth higher than 3% would require significant changes in agriculture as agricultural productivity has not increased over the past few years in the EPA, which has caused growth rates to taper off (see Section 3.2 for details).

Poverty alleviation

Because of limited livelihood opportunities, low economic growth and an increasing population, poverty will remain pervasive in the EPA, and continue to exceed the provincial average. This may cause spontaneous outmigration, as local entrepreneurs seek more remunerative income-earning opportunities elsewhere in Central Kalimantan. Transmigration is unlikely to result in positive outcomes without a new approach that addresses underlying problems with land and water management. More importantly, as long as poverty incidence remains high, the Government will have difficulties to find migrants willing to move into an area with poor soil quality and limited public services.

3.1.2 Scenario 2 – Plantations

Population and land use

As under the "no change" scenario, the population of the EPA in 2033 will increase at the provincial average growth rate of 1.5% p.a., and reach approximately 690,000 at the end of the projection period. Plantation companies may bring in labour from outside the area (especially in those areas where there are few resident communities), but this is unlikely to materially affect the assumed population growth rate for the area as a whole. It is assumed, however, that a substantial proportion of the labour force would move from subsistence agriculture to employment in the plantation sector and – indirectly – to jobs in the services sector, causing substantial migration within the EPA. Land use will change to consist of 400,000 Ha of plantations, principally oil palm, and a mix of smallholder farm systems covering a smaller area than the no change scenario. Degraded peatland will cover a smaller area due to expansion of oil palm on peat. Land use remains sub-optimal due to continued land and water management problems. Fires will remain an intermittent problem in degraded peat areas (major fires once in ten years) and plantation areas (major fires once in 20 years). Subsidence will be relatively high in Blocks B and C where the current plantation permits are located. The peat area in the south of block C and block B will largely disappear leaving mostly mineral soils and shallow peat.

Regional development

Unsurprisingly, the "plantations" assumes that economic growth in the area will become largely dependent on the global market for oil palm and productivity of oil palm in the area. Based on the average world market price of crude palm oil during 2002-2007 (US\$ 500 per ton) and an estimated yield of 3.5 tons per hectare, 350,000 Ha of oil palm would produce revenues of IDR 5.6 trillion (approximately US\$ 600 million) per year. The impacts of this scenario on regional development can be summarized as follows:

- **Job creation in the agricultural sector.** The establishment of 350,000 Ha of oil palm plantations may create 60,000 to 100,000 jobs with possible opportunities for 35,000 farmers as plasma growers. However, the benefits accruing to the workforce and the plasma farmers depend on the company's policies and ability to work in partnership with plasma growers and NGOs report cases of poor performance in this regard. It is likely that average incomes will increase, as farmers will move from subsistence agriculture to better-paid jobs in the oil palm sectors. However, income growth will remain limited given the availability of a large reservoir of unemployed (and underemployed) workers elsewhere in the province.
- **Job creation in the services sector.** The creation of jobs in the oil palm sector is likely to boost the services sector in the project area ("multiplier effect"). It assumed that this would add 1% to the annual economic growth rate assumed under the "no change" scenario. The increase in the growth rate, combined with revenue from the plantations sector, is expected to increase per capita GRDP in 2033 from IDR 7.6 million under the "no change" scenario to over IDR 18 million.
- **Increased tax revenue for regional governments.** Assuming a 15% net profit margin, plantation companies would generate taxable profits in the order of IDR 0.8 trillion (or US\$ 90 million) per year. (A relatively low margin was assumed to account for the relatively high establishment and operating costs in peat areas arising from the need for extra drainage and fertilizer.) Total tax revenues, which would consist of revenue from the land and buildings tax, VAT for crude palm oil (CPO) sold on the domestic market, corporate income tax and personal income tax, would account for around IDR 0.7 trillion (US\$ 80 million) per year. Of

this, less than 2 percent of all tax revenues (or US\$ 15 million) would accrue directly to district and provincial governments related to the EPA, and the remainder to the central government and other sub-national governments in the country.

The major drawback of this scenario is that it exposes the EPA to considerable risks. Widespread development of oil palm will make the region sensitive to changes in the global price of CPO. Indeed, the assumptions described above imply that oil palm sector would account for 45% of total GRDP of the EPA. There is also a risk that salaries in the CPO sector will not increase significantly, as has been reported in other areas (presumably because of the availability of large numbers of underemployed agricultural workers). In addition, widespread development of oil palm may increase demands on future public expenditure to: (i) maintain road and other infrastructure, and (ii) address additional flooding caused by subsidence in plantation areas on peat, particularly with the risks of sea level rise from climate change.

Poverty alleviation

The "plantations" scenario is likely to reduce poverty incidence in the EPA by providing for persons that are currently working in subsistence agriculture with better-paid jobs in the plantations and services sectors. Studies of oil palm development have shown that smallholders guided by experienced companies may have good outcomes on farmer earnings with relatively good records of payment of credit, while others highlight problems of oil palm in terms of credit terms and the existence of a market monopoly by local companies (local prices should respond to world prices). Independent smallholders tend to have much more varied outcomes, in part due to lower quality seed. However, the outcome of the plantation scenario on poverty may be affected by the fact that inputs required for oil palm on peat are higher than mineral soils reducing profitability and require specialized land and water management practices. Farmers may become over-dependent on a single commodity that means a fall in the price of oil palm can quickly lead to much lower incomes for farmers and a rise in poverty. These suggest that farmer incomes could be lower and carry higher risk than those reported elsewhere – it is worth noting that farmers in the area have diversified livelihood strategies to manage such risks.

3.1.3 Scenario 3 – Peatland Rehabilitation and Agricultural Revitalization

Population and land use

Under this scenario, the population of the EPA in 2033 will increase at a rate of 2% p.a., and reach about 800,000 at the end of the projection period. It is assumed that increased agricultural productivity and the absence of dependence on a single commodity (such as oil palm) would, in the long run, attract migrants and lift population growth above the provincial growth rate of 1.5%. Land cover and use will change to consist of regrowing forests, a limited number of tree crop plantations and smallholder agro-forests in and near the peat areas with a mix of plantations, rice and new land uses dominated by specific crops. Degraded peatland will cover a smaller area due to expansion of regenerating forests and agro-forests. Land use is improved due to improved land and water management infrastructure and practices, although population pressures mean that much of the land is used for agriculture with continued encroachment into protected forest areas. Away from the peat areas, rice production will increase through better land and water management and plantation crops led by oil palm and rubber are successfully developed in suitable areas. Effective fire management and peatland rehabilitation is able to control wildfires. As a result, subsistence rates will fall and become a long-term process that does not have a major impact on the landscape over a 50-year period.

Regional development

Economic growth in the EPA is based on the development of a range of commodities through a government-sponsored agricultural revitalization program that will result in increased productivity of existing farmland, with some new areas brought under cultivation. Although the economic outcomes are uneven with some schemes failing, annual economic growth would average 5% p.a. A number of oil palm concessions (in the region of 100,000+ hectares) outside of peat area also contribute up to IDR 1.6 trillion (US\$ 175 million) per year to the regional economy and roughly 15-25,000 jobs assuming the price of oil palm remains around US\$ 500 per ton (in constant 2007 prices) throughout the projection period. The carbon emissions reductions from successful rehabilitation and fire control in the peat areas are also traded and, conservatively assuming a carbon price of US\$ 5 per ton CO₂, realize revenues in the order of US\$ 160 million per year less transaction costs. (It should be noted, however, that this amount is higher than the world market for voluntary emission reductions in 2007.)

These revenues can be shared between the carbon project, local communities and government according to the specific agreements of each contract. It is likely that the revenues accruing to the region from carbon projects would be greater than oil palm but this depends on the nature of the contract, the regulatory framework that defines benefit sharing and the world market price of CPO during the projection period. Carbon projects would also provide employment for several thousand people for fire management, canal blocking and maintenance and reforestation as well as creating improved livelihood opportunities for communities. Under this scenario, per capita GRDP is estimated at IDR 15 million per year in 2033 (in constant 2000 prices). In addition, a much higher proportion of revenues from carbon trading would be channelled to sub-national government revenues than the almost negligible portion (2%) of tax revenue from oil palm plantations - thereby freeing up more funds for the financing of much-needed improvements in public services and development programs.

Poverty alleviation

The proposed revitalization program is expected to result in improved agricultural yields, thereby increasing farmer income and reducing poverty incidence. In addition, new income-generating opportunities from carbon finance and the plantations sector all help to raise household incomes. Although market opportunities will not always match the main commodities and farmers only growing rice struggle to make ends meet while the price is controlled by the government, the mixed nature of the economy makes it resistant to shocks in any one commodity. The increased fiscal capacity of government, primarily as a result of shared revenue from carbon finance, is expected to contribute to further reductions in poverty through improved public services - notably improved access to health and education for local communities. In summary, under the "peatland rehabilitation and agricultural revitalization" scenario poverty rates will have a high likelihood of falling with relatively low risk that these gains will be undone through the dependence on a single commodity.

3.2 Economic Development of the Agricultural Sector

3.2.1 Development options

As mentioned in Chapter 2, in the short and medium term, most jobs in the EPA will continue to be created in the agricultural sector, and not in the processing of agricultural produce or other industries. This suggests that economic development plans should aim at increasing the productivity of agricultural workers. During 2000-2006, agricultural productivity growth was low or negative for rice-based agriculture, which continues a primary source of income for most farmers in the area (Table 19). This implies that the welfare of these farmers has not improved, and reinforces the notion

that most farms are not (or barely) financially feasible, forcing farmers to seek additional sources of income.

Table 19 Agricultural productivity in the EPA, 2000 and 2006

Crop	Production ('000 ton)*		Cultivated Area ('000 Ha)		Productivity (ton/Ha)	
	2000	2006	2000	2006	2000	2006
Rice-based						
Wetland paddy	195.3	232.0	73.4	81.7	2.66	2.84
Dryland paddy	63.9	21.5	11.9	31.7	2.66	1.81
Tree-crop based						
Rubber	20.3	66.3	83.7	105.2	0.24	0.63
Coffee	0.2	0.5	1.4	1.6	0.13	0.29

Source: Consultant, based on BPS

* *Kadar karet kering* in the case of rubber

Limitations to policy interventions

The economic prospects of the agricultural sector are difficult to forecast, because the financial return on the investment of a farmer is heavily dependent on two highly volatile – and inherently unpredictable – factors: the market price for the farmer's produce, and the cost of fertilizer. For example, the price of fertilizer doubled in 2005, whereas the world market price of palm oil increased by 25% in the first six months of 2007. Needless to say, farmers are aware of these changes and seek to benefit from expected increases in market prices. For example, many smallholders in the EMRP area are currently investing in rubber trees, to benefit from the historically high market world prices for this commodity, and are abandoning rice-based agriculture.

Creating the enabling environment

If the Government wishes to improve the economic prospects of the agricultural sector, it should not seek to select the commodities that farmers should grow (as implied by the Inpres 2/2007 financing plan, which contains detailed provisions for investments in pineapple peeling and coffee processing machines), because it is unlikely that the Government will be better at selecting the highest-yielding commodities than farmers themselves. Instead, it should seek to remove or lower barriers that are currently preventing farmers (including but not limited to subsistence farmers) from generating higher financial revenue than is currently the case. Measures to achieve this include the following:

- **Improve access to information**, through, for example, the provision of properly trained extension workers and support for re-establishment of village cooperatives.
- **Improve access to markets**. Field research indicates a substantial difference between farm gate prices and market prices of paddy, which is to a large extent caused by high transport costs from rice producing areas in the EPA to Palangka Raya and Banjarmasin. Improved water and road infrastructure is needed to reduce this "gap", thereby boosting farmer profits.
- **Improve access to credit**. Because many farmers normally do not have access to credit, they are highly vulnerable to unexpected changes in input and output prices, and are less able (or unable) to switch to financially more rewarding crops (such as rubber or pepper), which require substantial start-up investments. To lower these constraints the Government may consider requesting BRI to expand its micro-credit network in the EMRP area.

Box 1 The need for Improved Access to Markets

Paddy (*gabah kering*) is the most commonly traded agricultural commodity in the EPA. According to the Ministry of Agriculture, the average farm gate price of paddy was IDR 2000/kg, not including the cost of milling, which was estimated at IDR 50/kg. Field research indicated that prices in kabupaten of Kapuas and Pulang Pisau were slightly higher (IDR 2300/kg and IDR 100-150/kg, respectively). In the EPA, farmers sell (milled or unmilled) paddy to a “collector” for up to IDR 2500/kg. The collectors resell their product to a distributor. The distributor, in turn, sells the product to the final seller (such as a shop or a market vendor), who sells the milled paddy to the final customer at a price of IDR 5000-5500/kg. The difference between the farm gate price of paddy and the market price of “milled rice” is in the order of IDR 3000/kg. This amount covers the operating costs and profits of the collectors, distributors, and sellers. Compared to other regions in Indonesia, the mark-up of $(3000/2500 =)$ 120% is high, which is primarily caused by the high cost of transport from the producing areas to the major markets (Palangka Raya and, more importantly, Banjarmasin).

Source: Consultant

3.2.2 Benefits of Increased Agricultural Productivity in the EPA

This section provides a brief review of the potential for increases in productivity for two crops to which a major agricultural land in the EPA is allocated: wetland paddy and dryland paddy (refer to Annex 2 for a more detailed review of recent developments in the agricultural sector of the EPA). Based on this review, it then sets a series of productivity targets to be achieved through policy interventions, and presents indicative estimates of the potential financial benefits of these interventions.

Current productivity levels

From 2000 to 2006, the production per Ha for both types of paddy increased by about 1% to 2% per year in the EPA, whereas it decreased elsewhere in Central Kalimantan (Table 20). In 2006, the yield of wetland paddy was approximately 2.84 ton per Ha, which was slightly lower than the provincial average. The yield of dryland paddy in the EPA was about 10% higher than yields in other parts of Central Kalimantan. In spite of these increases, yields of both dryland and wetland paddy in the EPA remain far lower than in all other provinces of Indonesia, including other provinces in Kalimantan where similar agricultural techniques are being used. For example, in 2006 the average yield on dryland and wetland paddy was approximately 3.54 ton/Ha in nearby South Kalimantan, which was about 60% higher than the yield in the EPA (2.19 ton/Ha in 2006).

Table 20 Productivity of paddy in the EPA, 2000 and 2006 (Ton/Ha)

Crop	EPA			Other Central Kalimantan		
	2000	2006	Change	2000	2006	Change
Wetland paddy	2.66	2.84	+6.7%	3.03	2.88	-5.1%
Dryland paddy	1.81	2.02	+11.1%	1.95	1.91	-1.6%

Source: Consultant, based on BPS

Productivity targets

This report assumes that the proposed policy interventions would increase the average yield of dryland and wetland paddy to the level of South Kalimantan by the end of a 25-year projection period. The productivity in South Kalimantan would increase by the long-term productivity growth rate in Indonesia, which is estimated at 1.5% p.a. Based on these assumptions, estimated productivity in the EPA is estimated at 5.14 ton/Ha at the of the 25-year period.

Potential economic benefits

Even if no new agricultural land for paddy would be developed, the productivity increase would cause the EPA to produce 3.7 million tons more paddy (during the 25-year period) than would be the case without the proposed policy interventions. Assuming a price of US\$ 500 per ton, the additional revenue accruing to farmers would be US\$ 1.8 billion in constant prices, a financial benefit of about US\$ 75 million per year (refer to Annex 3 for limitations to the use of IRR-based analysis).

Interpretation of the potential financial benefits

It should be emphasized that the figure of US\$ 75 million represents a highly indicative estimate of gross financial benefits from increased productivity in the rice-farming sector in the EPA. To achieve these benefits, both the government and the private sector (i.e. rice farmers) will need to invest. As described elsewhere in this report, the government has planned substantial investments in roads, waterworks, extension services, and other activities that are likely to increase agricultural productivity. Farmers may need to invest in agricultural machinery, additional fertilizer, etc. The figure of US\$ 75 million represents a crude upper limit to total annual investment by both the public and private sector (investments beyond this amount would result in negative benefits). The proportion of public productivity-increasing investments represents a wealth transfer from the government to rice farmers in the project area. At present, data are not available to prepare a detailed assessment of the net benefits of the proposed investment. The simplified analysis presented here demonstrates that:

- high levels of investments (of about US\$ 200 per year per inhabitant of the project area) are financially justifiable if they can increase productivity of dryland and wetland paddy areas to levels in South Kalimantan (even though the productivity in that province is far below the national average), and
- the publicly financed portion of these investments is a direct transfer of wealth from the government (who finances activities to increase productivity) to farmers (who benefit from such activities in the form of higher prices for agricultural produce).

4 Financing Economic Development

4.1 Legal and Institutional Framework

Law 32/2004 allocates responsibilities for government affairs to central and regional governments (these are further detailed in Government Regulation 38/2007). The law also stipulates that the centre will provide regional governments with financial resources to implement tasks for which they are responsible (so-called 'decentralized tasks'). These resources are channelled to the regions as grants (mainly as DAU, DBH or DAK), and form part of the provincial or district government budget (APBD). Tasks for which the centre remains responsible are implemented either by central government departments or by regional government agencies. In the latter case, the centre would provide the regions with financial resources from the national government budget (APBN) as *Dana Dekonsentrasi* or *Tugas Pembantuan* (Figure 1).

Figure 1 Financing of central and regional government responsibilities

IMPLEMENTATION	RESPONSIBILITY	
	Centre	Regions
Centre	Centralized Tasks	(none)
Regions	Deconcentrated and Co-Administered Tasks	Decentralized Tasks

Source: Consultant

Centralized tasks

Law 32/2004 confers the responsibility for all government affairs to provinces, *kabupaten* and *kota*, with the exception of:

1. **Six 'core' affairs.** These are: foreign affairs, defense, security, justice, fiscal and monetary policy, and religion.
2. **Affairs stipulated in PP38/2007.** This government regulation defines, in great detail, the allocation of responsibilities among central, provincial and *kabupaten/kota* governments.

In addition, the central government is responsible for:

3. **Affairs that affect more than one province (*lintas propinsi*).**
4. **Affairs of a national strategic interest (such as revitalizing the EPA)**

To carry out (part of) its responsibilities, the central government needs to implement tasks in the regions. Since the implementation of Law 32/2004 (and its predecessor Law 22/1999), central government departments responsible for any of the six 'core' government affairs have maintained regional offices throughout the country. These offices are known as *kantor wilayah* (KanWil) at the provincial level and *kantor departemen* (KanDep) at district level. In more general terms, such offices are also referred to as 'technical implementation units' (*Unit Pelaksanaan Teknis* or UPT). Tasks for which the centre is responsible and that are carried out in the regions by the central government departments themselves are defined as 'centralized tasks'.

Deconcentrated tasks

Since 2001, central government departments that are not responsible for any of the six 'core' affairs no longer have a network of regional offices. These departments are required to delegate the implementation of responsibilities in the regions to the Governor, who acts as a representative of the centre. The Governor, in turn, delegates the implementation of these 'deconcentrated tasks' to the relevant provincial government agencies (for example, tasks of the Ministry of Health are delegated to *Dinas Kesehatan Propinsi*). The implementation of deconcentrated tasks is financed from APBN through two mechanisms:

- **Dana Dekonsentrasi.** 'Dana Dekon' may only be allocated to non-physical activities (such as capacity building programs or awareness campaigns).
- **Tugas Pembantuan.** In some cases, central government departments request a Governor to implement physical activities. Such activities are financed through the *Tugas Pembantuan* (TP) mechanism. In practice, most physical activities in the regions continue to be financed directly by the central government ministries.

Decentralized tasks

Article 11 of Law 22/1999 stated that regional governments were responsible for all government affairs that are not explicitly defined as a central government responsibility. Its successor law, Law 32/2004, has shifted some of the responsibilities back to central government agencies (as described in detail in PP38/2007). The central government finances decentralized tasks from equalization funds, of which DAU, DBH and DAK are the most important.

Inpres 2/2007 provides central government agencies with additional budgetary resources for the specific purpose of financing the revitalization of the EPA. Such funds are part of the central government budget (APBN), and are either channelled to UPTs of central government ministries, to provincial agencies (as *Dana Dekon*), or to districts (as *Tugas Pembantuan*). GOI would expect provincial and district governments to finance from own resources activities for which they are responsible according to PP38/2007 (as shown in Table 21).

Table 21 Public financing of development expenditure

Funding Source	Flow of Funds	Implementing Agency	Programs
Central government (APBN)	Direct	UPT	Forest conservation, reforestation, management of cross-provincial water resources
	<i>Dana Dekonsentrasi</i>	Provincial Technical Agency	Specific national programs (agricultural development, community empowerment, transmigration, etc.)
	<i>Tugas Pembantuan</i>	District Technical Agency	Specific national programs (agricultural development, community empowerment, transmigration, etc.)
Provincial government (APBD- <i>Provinsi</i>)	Direct	Provincial Technical Agency	Delivery of public services with a regional character (secondary drainage, provincial roads, etc.)
District government (APBD- <i>Kab/Kota</i>)	Direct	District Technical Agency	Delivery of basic public services (primary health care, elementary school, local roads, etc.)

Source: Consultant

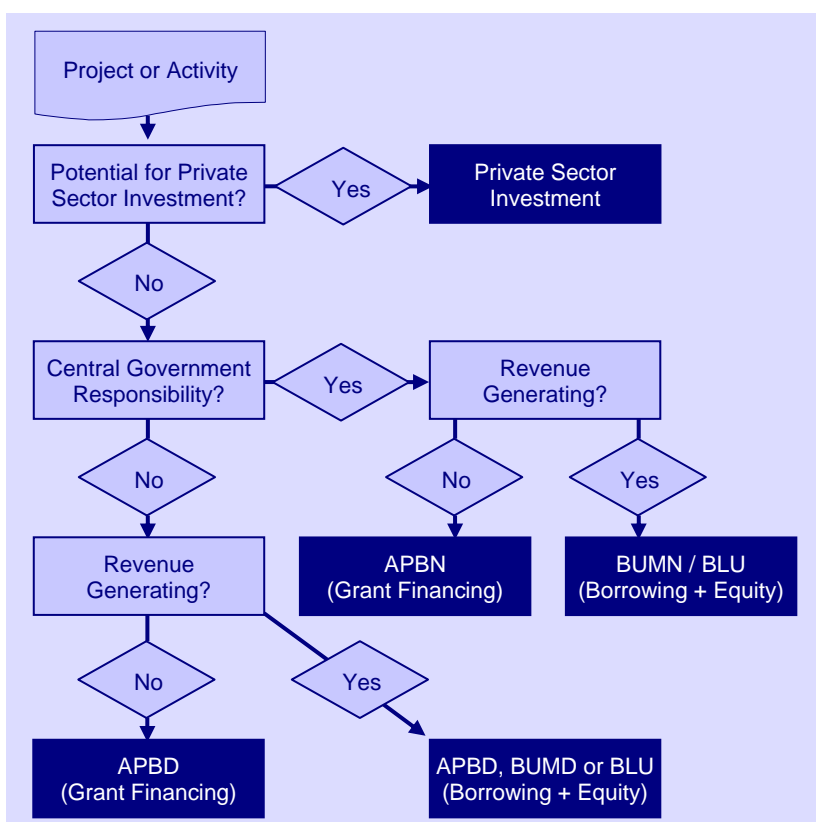
4.2 Financing Framework

Financing principles of the Government of Indonesia

The rehabilitation of the EMRP area requires substantial investments from public and private sources in a large number of activities. The selection of the channelling mechanism for an individual activity depends on three factors:

- The potential availability of private sector investment for the activity.
- The formal responsibility for the public financing of the activity (if private sector investment would not be available).
- The revenue-generating potential of the activity.

Figure 2 Government of Indonesia financing principles



Source: Consultant

Private sector investment

The 2005-2009 Medium-Term Development Plan (*Rencana Pembangunan Jangka Menengah* or RPJM), which is issued every five years by BAPPENAS, states that GOI will only finance projects or activities that are unlikely to be undertaken by the private sector. The central government appears to adhere to this principle, as evidenced by the sale of significant shares in state-owned enterprises.

Public investment by state-owned enterprises

BUMNs are required to finance activities that: (i) constitute a central government responsibility according to PP38/2007, (ii) are unlikely to be implemented by the private sector, and (iii) generate revenue. According to Article 7 of PP2/2006, an activity is deemed 'revenue generating' if the use of the infrastructure or services [arising from the implementation of that activity] results in financial

revenue that accrues to APBN or APBD. State-owned enterprises are required to finance the required public investment from retained earnings, equity investments and loans. Large and profitable BUMNs are able to raise capital on the domestic capital markets (through the sale of shares and corporate bond issues). GOI provides financial support to unprofitable BUMNs through direct equity investments and by providing preferential access to soft loans.

A General Service Unit (Badan Layanan Umum or BLU) is an option to manage carbon credit transactions in relation to conservation and peatland rehabilitation and reforestation. Based on PP 23/2005, a BLU is formed in term of economic development or public service delivery.

Central government grant financing

The central government finances non-revenue generating projects or activities under its responsibility (such as national roads, primary drainage systems or universities) from APBN.

Loan and equity financing by regional government-owned enterprises

In principle, regional government-owned enterprises, such as municipal water utilities, are required to finance regional government responsibilities that are revenue generating (and unlikely to be provided by the private sector). Until recently, most of the financing requirements from BUMDs were financed from multilateral loans, which were channelled through the Ministry of Finance. Since 2000, however, MoF no longer lends directly to BUMDs, although creditworthy regional governments may borrow on behalf of their enterprises.

Regional government grant financing

Regional governments finance non-revenue generating projects or activities under their responsibilities (such as tertiary drainage or local roads) from APBD.

Potential financiers of the rehabilitation of the EPA

Prospective financiers of the indicative investment plans for the rehabilitation of the EPA consist of:

- Private financiers of conservation projects
- Bilateral and multilateral development agencies
- Sub-national governments (the province of Central Kalimantan and the four *kabupaten* that share a border with the EPA)
- Central government ministries

Government financing policies

The utilization of the above financiers for the implementation of the Master Plan is constrained by long-term central government policies, which can be summarized as follows:

- **Forest conservation.** GOI has stated that it does not wish to finance this sector from foreign loan proceeds, but encourages financing from carbon credits and bilateral grants. BAPPENAS is especially interested in donor support for establishing mechanisms to provide non-cash compensation to communities economically affected by forest conservation. It considers to test REDD schemes, to be developed under the Indonesian-German Forest and Climate Change Programme, in the EPA.
- **Agricultural development.** BAPPENAS has expressed an interest to finance investments in supporting rural infrastructure from multilateral loans, but has not discussed this proposal with World Bank, ADB or other lenders. BAPPENAS does not wish to channel grants provided through the National Community Empowerment Program (PNPM) – which it coordinates – to ERMP, because of current uncertainties about future land use, but also

because PNPM supports small-scale infrastructure which is unlikely to yield much benefits without first investing in macro-infrastructure (roads, dams, etc.).

- **Transmigration.** BAPPENAS does not see a bright future for small-scale agriculture in the EPA, because of poor soil quality. For this reason, it does not seek foreign funding sources to co-finance investments in transmigration.

Private financiers

Such financiers may be willing to mobilize 'carbon finance' for CO₂ emission reduction projects in conservation areas, provided that GOI agrees to enforce land use rights, and pledges to minimize infringements to the project area. (Carbon finance is discussed in a separate technical report.)

Bilateral and multilateral development agencies

ADB, World Bank and IFAD may be willing to co-finance macro infrastructure and basic infrastructure. This group of financiers is likely to impose the following constraints:

- loan proceeds are channelled through central government agencies, and not as on-lending or on-granting to sub-national governments,
- loan proceeds are channelled as a 'project loan' to finance pre-defined projects (as opposed to 'program loans', for which this is not the case), and
- the implementation of investment projects will have limited – and preferably no – adverse social or environmental impacts (this effectively rules out donor financing of transmigration programs).

In addition, bilateral and multilateral development agencies also offer carbon finance, and are likely to request similar conditions as private financiers.

Provincial and district governments

As of November 2007, none of the sub-national governments involved in the implementation of the EMRP Master Plan had allocated a budget for the rehabilitation of the area. The province of Central Kalimantan does not intend to allocate funds for this purpose, based on the (legally correct) argument that the rehabilitation of the EPA is a central government responsibility, and should therefore be financed from central government budgets. The province, and the four kabupaten that cover part of the area, will need to invest in public infrastructure in accordance with their medium-term regional development plans (*Rencana Pembangunan Jangka Menengah Daerah* or RPJMD).

Central government ministries

BAPPENAS has publicly stated that it seeks foreign co-financing of the substantial cost of rehabilitating the EMRP area. In November 2007, central government budgets covered less than 20% of the financing requirements for 2008, as estimated by the team responsible for coordinating the preparation of the EMRP Master Plan.

4.3 Application of Financing Principles to a Medium-Term Financing Plan for EPA Rehabilitation

4.3.1 Background

In 2001, several years after the Mega-Rice Project was halted, the Government of Indonesia started decentralized the responsibility for a large number of public services to provincial and district governments that were hitherto in the domain of the central government. To help finance these

services, the central government provides sub-national governments with a general allocation (*Dana Alokasi Umum* or DAU), a share in revenue from taxes and natural resources exploitation (*Dana Bagi Hasil Umum* or DBH) and grants that are earmarked for sector-specific investments (*Dana Alokasi Khusus* or DAK). Together, these sources account for over 80% of district revenue, and approximately 50% of provincial government revenue. In recent years, revenue from central government transfers has increased at very high rates, primarily because of a recent increase in central government revenue from oil and gas.

Present levels of public investment in the EPA

In 2006, investment by the central government accounted for about 48% of total public investment in the EPA, which is estimated at IDR 630 billion in that year (Table 22). Since Inpres 2/2007 was issued, the central government intends to increase its investment sixfold, to IDR 1.8 trillion per year (or IDR 9 trillion during 2007-2011). It should be noted that this investment plan constitutes an optimistic scenario, given that the central government has thus far spent less than IDR 500 billion from early 2007 until mid-2008.

Table 22 Estimated annual public investment in EPA

	Base case (No Inpres 2/2007)			Optimistic case (with Inpres 2/07)		
	IDR bn	US\$ m	%Total	IDR bn	US\$ m	%Total
Central government	304	33	48%	1,800	196	85%
Provincial government	77	8	12%	77	8	3%
EMRP districts	250	27	40%	250	27	12%
Total	631	69	100%	2,127	231	100%

Source: Consultant, based on SIKD and BPK

Note: Based on FY 2006 with expenditures in EMRP estimated as a proportion of total expenditure weighted by population. Total Inpres expenditure is assumed to be IDR9 trillion over five years. Public investment expenditures are defined as expenditures on services and infrastructure development.

4.3.2 Theme-Based Financing Plan for Revitalizing the EMRP Area

The summary master plan report identifies a series of activities – broken down in six ‘themes’ – that are required to rehabilitate and revitalize the EPA in the short and medium term. These themes are: (1) spatial management, land use and infrastructure, (2) sustainable peatland management and conservation, (3) increasing agricultural productivity, (4) community empowerment and improved livelihoods, (5) fire management, and (6) institutional development and capacity building.

This section presents a financing plan for those activities that are scheduled for implementation in 2009-2013, based on the financing policies of GOI and other potential financiers as discussed above. It should be emphasized that this financing plan is highly indicative only¹. The estimated cost of the medium-term investment plan is estimated at about IDR 7 trillion (or approximately US\$ 750 million) for the five-year period 2009-2013. For two reasons, this estimate is lower than the total amount in Inpres 2/2007 financing plan (IDR 9 trillion for 2007-2011):

1. A substantial portion of the funds in the Inpres 2/2007 is allocated to transmigration; this Master Plan report assumes that the transmigration program will be much reduced in scope.

¹ Estimates were based on Inpres 2/2007 financing plans, adjusted and supplemented by Consultant’s estimates.

2. A major share of funds in the Inpres 2/2007 (IDR 1.3 trillion) is allocated to the expansion of privately held farms; these investments are not included in the one of the six theme-based financing plans.

Table 23 Highly indicative financing plan for Theme 1: FIRE MANAGEMENT

Activity	Type of Activity	Cost Estimate (IDR billion)
Strengthen policies, institutions and operations	Routine government	5
Capacity building	Routine government	5
Integrated planning and budgeting	Routine government	5
Up scaling village based fire brigades in close collaboration with local Gol, including monitoring impact assessment	Routine government	20
Expansion of non-community based capacity	Routine government	20
Maintain information campaign	Routine government	5
Maintain monitoring capability	Routine government	5
TOTAL		65

Source: Consultant, based on Inpres 2/2007

Table 24 Highly indicative financing plan for Theme 2: SPATIAL MANAGEMENT, LAND USE AND INFRASTRUCTURE

Activity	Type of Activity	Cost Estimate (IDR billion)
Revision of maps of Inpres 2 and RTRWP	Routine government	-
Review of status of area (kawasan khusus. Kawasan strategis)	Consulting services	5
Conduct detailed spatial planning	Consulting services	5
Revision of district spatial plans	Consulting services	5
Program for standardization of spatial data management in Central Kalimantan	Consulting services	20
Program for the control of spatial plans and land management (based on UU26/2007)	Consulting services	20
Program to improve spatial data on topography, relevant bio-physical, characteristics and integrated land suitability in priority areas	Consulting services	20
Production of a macroinfrastructure investment strategy	Consulting services	5
Major infrastructure improvements		
- Roads	Civil works	800*
- Bridges	Civil works	50*
- River transport	Civil works	50*
TOTAL		980

Source: Consultant, based on Inpres 2/2007

* Cost estimates marked with * are based on Inpres 2/2007 financing plans

Table 25 Highly indicative financing plan for Theme 3: SUSTAINABLE PEATLAND MANAGEMENT AND CONSERVATION

Activity	Type of Activity	Cost Estimate (IDR billion)
Guideline for integrated peatland rehabilitation	Routine government	5
Detailed planning of peatland rehabilitation	Consulting services	5
A. Hydrological Rehabilitation		
Development of hydrological rehabilitation plans	Consulting services	5
Establishment of hydrological monitoring (part of long-term monitoring system)	Consulting services	10
Blocking canals and introduction of water control structures in management units I-III	Civil works	100
Review of water management in peatland areas	Routine government	10
B. Forest Rehabilitation		
Applied research on regeneration and succession	Various	20
Species selection trials	Various	20
Development of silvicultural treatments	Various	20
Piloting community-based forest management, reforestation and smallholder forest plantations schemes	Various	100
Reforestation of up to 500,000 Ha	Various	1,000
Establishment of multi-stakeholder platform	Routine government	10
C. Conservation and Environmental Management		
Delination of conservation areas	Routine government	10
Action against conservation threats	Routine government	50
Collaborative management of conservation and protection areas (by FMU)	Routine government	15
Review of EIA's in area	Routine government	5
Strengthening of EIA procedures for peatland	Consulting services	10
D. Boundary Establishment and Forest Management		
Review Kepmen 166/Menhut/VII/1996	Routine government	-
Review, revise and revoke plantation licenses	Routine government	5
Forest resource survey, inventory and mapping	Routine government	20
Community-based participatory land mapping and consultations on boundaries	Various	5
Issue Ministerial Decree on forest boundaries	Routine government	-
Establishment of boundaries on the ground	Routine government	20
Establishment of FMU's / KPH	Routine government	5
Detailed zoning and development of management plans for FMUs/KPH	Various	15
Pilots for carbon finance and strengthening of institutions	Various	50
TOTAL		1,515

Source: Consultant, based on Inpres 2/2007

Table 26 Highly indicative financing plan for Theme 4: INCREASING AGRICULTURAL PRODUCTIVITY

Activity	Type of Activity	Cost Estimate (IDR billion)
Detailed planning of programs	Routine government	5
Integrated land suitability assessments	Various	20
A. Strengthening Agricultural Farm Systems		
Program for agricultural infrastructure and facilities	Various	250
Strengthen the extension services	Various	20
Reclamation of new land in suitable areas (say 20,000ha)	Various	200
Program to support access to finance for farmers	Various	150
Program to support access to markets for farmers	Various	50
Provision of quality agricultural inputs	Various	100
Local village-based land suitability and pest control assessments	Various	10
Conduct on-farm studies, establish on-farm demonstration plots and facilitate visits to productive farms by local farmers.	Various	20
Piloting and upscaling of techniques for land clearance without burning that can be applied by farmers	Various	20
B. Land and Water Mangement		
Review and redesign of water management infrastructure in management units VI-XII and transmigration areas in management units II-III	Consulting services	25
Rehabilitation of existing water management infrastructure in development zone	Civil works	500
Strengthen on-farm water management practices and institutions	Various	50
Assessment of flood control options on Barito and other rivers	Various	5
Implementation of flood control measures	Civil works	200
Monitoring, review and maintenance of water management infrastructure and practices	Various	5
C. Fisheries		
Cage aquaculture program	Various	20
Pond aquaculture program	Various	20
Ornamental fish program	Various	5
Traditional fish capture (beje) program	Various	5
Institutional strengthening program for fisheries sector	Routine government	10
D. Agro-processing		
Development of cooperatives, small enterprises and processing areas for adding value to products	Routine government	20
TOTAL		1,710

Source: Consultant, based on Inpres 2/2007

Table 27 Highly indicative financing plan for Theme 5: COMMUNITY EMPOWERMENT AND IMPROVED LIVELIHOODS

Activity	Type of Activity	Cost Estimate (IDR billion)
Detailed planning	Routine government	5
A. Community Empowerment		
Recruitment, placement and support of village facilitators	Various	50
Public information campaign	Routine government	5
Resolution of land tenure and land claim issues	Routine government	10
Program for strengthening village institutions and governance	Routine government	50
Community development planning, including provision of technical support and training, monitoring and impact assessments	Consulting services	50
B. Basic Services and Infrastructure		
Program for improving access to quality health services	Routine government	50
Program for improving access to quality education services	Routine government	50
Provision and upgrading of rural and village infrastructure where possible through community-based programs	Civil works	825
Improve local access to drinking water and sanitation, including provision of technical support and training, monitoring and impact assessments	Civil works	50
Access to electricity in villages	Civil works	50
C. Socio-economic Development		
Piloting, through market analysis, value chain development and promotion of value chain addition for 'best bet' agricultural activities	Consulting services	135
Formation of producer groups, associations etc	Various	40
SME development and agro-processing centres	Various	25
NTPP commercialisation	Various	10
Piloting of Payment for Ecosystem Services approaches (inc. REDD)	Various	50
D. Transmigration		
Review of food crops based transmigration	Consulting services	5
Implementation of transmigration refill program in Lamunti, Dadahup and Palingkau	Various	350
New transmigration to limited number of new sites	Various	500
TOTAL		2,210

Source: Consultant, based on Inpres 2/2007

Table 28 Highly indicative financing plan for Theme 6: INSTITUTIONAL DEVELOPMENT AND CAPACITY BUILDING

Activity	Type of Activity	Cost Estimate (IDR billion)
Development of an integrated program through Working Groups and Coordination Teams	Routine government	5
Formation of Partnership, Secretariats and Technical Support Facility	Various	50
Initiate and maintain a long-term monitoring system with data collection and management and reporting as part of annual review process	Consulting services	50
Implement capacity building program as part of Inpres 2/2007	Routine government	50
Review and determine the long-term institutional arrangements for the management of the EMRP area	Routine government	5
TOTAL		160

Source: Consultant, based on Inpres 2/2007

4.3.3 Summary of Overall Economic and Financial Benefits

The proposed expenditure of IDR 7 trillion is expected to generate a wide range of benefits for the area and Indonesia, the most important of which are:

- Reduction of widespread fires from the area
- Labour productivity increases (and subsequent increases in welfare) due to better health and education of people living in the area
- Increase in yields of key agricultural commodities by 50-100% over a 25-year period
- Reduction of poverty in the area
- Reduction of carbon emissions in the order of several to several tens of millions of tons of carbon per year
- Reduction of long-term problems of flooding and other environmental problems that would otherwise require substantial future investments by the public sector for their amelioration

Annex 1 Analysis of Regional Economic Competitiveness

The KPPOD survey

Since 2001, a non-governmental organization called KPPOD (*Komite Pemantauan Pelaksanaan Otonomi Daerah* or Committee for the Monitoring of the Implementation of Regional Autonomy) has conducted an annual survey of the competitiveness of most (though not all) *kabupaten* and *kota* in Indonesia from the point of view of potential private investors. *Kabupaten* and *kota* are ranked by five sets of criteria, which measure performance on:

- institutional development,
- socio-economic development,
- regional economy,
- employment and productivity, and
- infrastructure.

Summary of results

Because the total number of district governments covered by the survey was not same in every year, rankings were converted into deciles. In 2005, all EMRP districts (for which data were available) were in the bottom 20% on almost all scores (Kab. Barito Selatan scored relatively well on 'regional economy' and 'employment and productivity'). Since 2003, the rankings of the districts have deteriorated vis-à-vis *kabupaten* and *kota* in other provinces. From a policy perspective, it is especially important to note that districts in the project area were ranked in the lowest 10% for the quality of their 'infrastructure'. For detailed results, refer to the table overleaf.

Table 29 Relative competitiveness of district governments in Central Kalimantan, 2003-2005
Deciles (1 = highest, 10 = lowest)

Criteria	2003	2004	2005	Increase 2003-2005
Institutional Development				
Kab. Kapuas	3	5	7	(4)
Kab. Barito Selatan	6	5	10	(4)
Kota Palangka Raya	NA	10	9	1
Socio-Economic Development				
Kab. Kapuas	2	5	6	(4)
Kab. Barito Selatan	6	6	9	(3)
Kota Palangka Raya	NA	9	8	1
Regional Economy				
Kab. Kapuas	3	4	5	(2)
Kab. Barito Selatan	3	3	3	–
Kota Palangka Raya	NA	10	9	1
Employment and Productivity				
Kab. Kapuas	2	7	5	(3)
Kab. Barito Selatan	2	1	3	(1)
Kota Palangka Raya	NA	7	6	1
Infrastructure				
Kab. Kapuas	4	9	5	(1)
Kab. Barito Selatan	7	9	10	(3)
Kota Palangka Raya	NA	9	10	(1)
OVERALL SCORE				
Kab. Kapuas	2	4	6	(4)
Kab. Barito Selatan	6	7	9	(3)
Kota Palangka Raya	NA	10	10	–

Source: Consultant, based on KPPOD

Annex 2 Agriculture in the EPA

This annex describes developments in the agricultural sector of the EPA from 2000 to 2006, based on an analysis of BPS data by *kabupaten*. As described elsewhere, there is a substantial overlap between the EPA and the *kabupaten* of Kapuas and Pulang Pisau. However, Kabupaten Pulang Pisau did not exist in 2000. It was split off from Kabupaten Kapuas in 2002, together with Kabupaten Gunung Mas. The analysis presented here therefore uses the original (pre-2002) Kabupaten Kapuas as a proxy for developments in the EPA.

Agricultural land use

Most agricultural land in the EPA is devoted to wetland paddy, dryland paddy and rubber. During 2000-2006, the total cultivated area increased significantly for all three crops (Table 30). The area used for cultivation of wetland paddy and rubber increased at similar rates elsewhere in Central Kalimantan, so that the share in the provincial total remained largely unchanged. This observation does not apply to dryland paddy. During 2000-2006, the cultivated area of this crop tripled in the EPA, whereas it remained virtually unchanged elsewhere in the province, causing the share in total provincial dryland paddy area to increase from about 20% to over one-third of the total. Because dryland paddy is a low-yielding, marginally profitable crop, this trend indicates an increase in the population's dependence on subsistence agriculture.

Table 30 Agricultural land use in the EPA, 2000 and 2006

Crop	Cultivated Area ('000 Ha)			Cultivated Area (% Central Kalimantan)		
	2000	2006	Change	2000	2006	Change
Rice-based						
Wetland paddy	73.4	81.7	+8.3	78.9	73.9	-3.0
Dryland paddy	11.9	31.7	+19.9	19.4	33.4	14.0
Maize	2.8	1.5	-1.4	45.9	58.5	12.5
Soybeans	1.2	0.1	-1.1	25.2	19.4	-5.8
Tree-crop based						
Rubber	83.7	105.2	+21.4	25.6	26.8	1.2
Coffee	1.4	1.6	+0.2	25.1	19.8	-5.2
Palm oil	-	0.3	+0.3	-	0.1	+0.1

Source: Consultant, based on BPS

Production of rice-based and tree-crop commodities

With the exception of dryland paddy, the share of all major crops grown in the EPA declined during 2000-2006 as a percentage of the provincial total (Table 31). In the case of soybeans, an absolute decline was observed. In the case of wetland paddy, rubber and coffee, productivity increased but at lower growth rates than elsewhere in the province - highlighting low productivity levels.

Table 31 Agricultural production in the EPA, 2000 and 2006

Crop	Production (ton)*			Production (% CK)		
	2000	2006	Change	2000	2006	Change
Rice-based						
Wetland paddy	195.3	232.0	36.7	75.7	76.6	-0.9
Dryland paddy	21.5	63.9	42.4	18.3	34.5	16.2
Soybeans	1.2	0.1	-1.1	24.5	19.6	-4.8
Tree-crop based						
Rubber	20.3	66.3	+46.0	29.4	28.5	-1.0
Coffee	0.2	0.5	+0.3	30.7	16.5	-14.2

Source: Consultant, based on BPS

* *Kadar karet kering* in the case of rubber

Livestock

Meat cows, goats, hens and pigs are the most important livestock raised in the EPA. During 2000-2006, trends in livestock resembled developments in the production of agricultural commodities: the share of the Project area declined as a percentage of the provincial total in all case, with the exception of a low-yielding subsector (goats; see Table 32). Stated differently, the production of livestock increased at higher rates elsewhere in the province, except for the most marginal and least profitable of livestock animals.

Table 32 Livestock in the EPA, 2000 and 2005

Livestock	Numbers ('000)*			Numbers (% CK)		
	2000	2005	Change	2000	2005	Change
Meat cow	12.4	11.9	-0.5	28.9	26.3	-2.5
Goat	3.1	11.0	+7.9	10.7	39.0	28.4
Pig	28.9	18.2	-10.8	17.8	15.6	-2.2
Hen	1305	1102	-203	51.9	45.3	-6.6

Source: Consultant, based on BPS

* Not including Kab. Gunung Mas in 2000

Annex 3 Limitations to the Use of IRR-Based Investment Analysis

A standard project economic feasibility analysis (which results in an EIRR) is useful if: (i) most of the economic costs and benefits of the project can be quantified with a reasonable degree of accuracy, and (ii) the results of the analysis are used to rank similar projects. Subprojects proposed for the rehabilitation of the EMRP area are unlikely to meet these criteria, given that:

- Several important expected economic benefits of EMRP cannot be quantified, such as reduced incidence of forest fires, reduced regional disparities, and improved biodiversity conservation.
- Activities will be proposed for several sectors (such as forestry and watershed management), the EIRRs of which are not readily comparable.

At present, detailed subproject cost information is not available to assess the EIRR of suggested investments in public infrastructure (such as roads or public health facilities). More importantly, the Government of Indonesia does not use such analyses to justify its public investment. Instead, with the issuance of PP38/2007, it has requested technical ministries to prepare minimum service standards (*Standar Pelayanan Minimal* or SPM). Sub-national governments are responsible for meeting such standards, but the central government will have the right to support investments in public infrastructure and services through the *Dana Dekon* and TP fund channelling mechanisms as long as such standards are not met.

Similarly, the calculation of financial internal rates of return for revenue-generating agricultural activities proposed in the EMRP area is fraught with difficulties because of the high volatility in two major determinants of net financial revenue from such activities: the world market price for agricultural commodities, and – especially in the case of smallholder farming – the unit price of fertilizer (see Section 3.2).



Bappenas
Secretariat
Inpres 2/2007

**Bappeda
Central
Kalimantan**
Secretariat Inpres
2/2007

**Royal
Netherlands
Embassy**

**Euroconsult
Mott MacDonald**

**Deltares | Delft
Hydraulics**

Jl. Taman Suropati
No.2,
Jakarta 10310

Jl. Diponegoro 60,
Palangka Raya
73111,
Kalimantan Tengah

Jl. H.R. Rasuna
Said Kav. S-3,
Kuningan
Jakarta 12950

S. Widjojo Centre, lt. 3
Jl. Sudirman Kav. 71
Jakarta 12190

P.O. Box 177
2600 MH Delft
The Netherlands

www.bappenas.go.id

www.kalteng.go.id

indonesia.nlembassy.org

www.euroconsult.mottmac.com

www.wldelft.nl