



Investing in rural people

Indonesia

Design Report_Indonesia GEF5 SMPEI

Project design report

Main report and appendices

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Currency equivalents

Currency Unit	=	Indonesian Rupiah
US\$ 1.0	=	13,500

Weights and measures

1 kilogram	=	1000 g
1 000 kg	=	2.204 lb.
1 kilometre (km)	=	0.62 mile
1 metre	=	1.09 yards
1 square metre	=	10.76 square feet
1 acre	=	0.405 hectare
1 hectare	=	2.47 acres

Abbreviations and acronyms

AATPH	ASEAN Agreement on Transboundary Haze Pollution
ACC	ASEAN Coordinating Centre for Transboundary Haze Pollution Control
AMDAL	Analisis Mengenai Dampak Lingkungan/Indonesia EIA report
APMS	ASEAN Peatland Management Strategy
APFP	ASEAN Peatland Forests Project
APP	Asian Pulp and Paper
Bangda	Direktorat Jenderal Bina Pembangunan Daerah - Kementerian Dalam Negeri/ Directorate General of Regional Development Supervision of the Ministry of Home Affairs
BAPPEDA	Badan Perencanaan dan Pembangunan Daerah/Regional/District Development and Planning Board
BAPPENAS	Badan Perencanaan dan Pembangunan Nasional/Ministry of National Development Planning
BAU	Business as Usual
BIG	Badan Informasi Geospasial/Geospatial Information Agency
BKSDA	Badan Konservasi Sumber Daya Asli/ Natural Resources and Conservation Agency of the MoEF
BLH	BadanLingkungan Hidup Provinsi/Kabupaten/Provincial/District Environment Board
BMKG	Badan Meteorologi, Klimatologi dan Geofisika/ Meteorology, Climatology and Geophysical Board
BMP	Best Management Practices
BNPB	Badan Nasional Penanggulangan Bencana / National Disaster Risks Management Board
BPBD	Badan Penanggulangan Bencana Daerah / Disaster Risks Management Board at Province/ District level
Canal blocking	Putting dam(s) in a canal in order to control drainage
CEO	Chief Executive Officer
CIG	Common Interest Group

CPMT	Country Programme Management Team (IFAD)
CSO	Civil Society Organization
Ditjenbun	Direktorat Jenderal Perkebunan/Directorate General of Plantations of the Ministry of Agriculture
FDRS	Fire Danger Rating Systems
GEC	Global Environmental Center; a regional NGO based in Malaysia
GEF	Global Environment Facility
GEFSEC	GEF Secretariat
GHG	Greenhouse Gases
HPH	Hak Pengusahaan Hutan/Forest Concession Right
HTI	Hutan Tanaman Industri/Industrial Forest Plantation
IFAD	International Fund for Agricultural Development
IPOP	Indonesia Palm Oil Pledge
IUCN	International Union for the Conservation of Nature and Natural Resources
Illegal logging	Penebangan kayu di hutan tanpa ijin resmi dari yang berwenang/ illegal forest timber logging
Kemendagri	Kementerian Dalam Negeri/ Ministry of Home Affairs (MoHA)
Kementan	Kementerian Pertanian/ Ministry of Agriculture (MoA)
KHG	Kesatuan Hidrologi Gambut/ Peatland Hydrology Unit (PHU)
KLHK	Kementerian Lingkungan Hidup dan Kehutanan/ Ministry of Environment and Forestry (MoEF)
LAPAN	Lembaga Antariksa dan Penerbangan Nasional/National Institute of Aeronautics and Space
LSM	Lembaga Swadaya Masyarakat/ NGO
MPA	Masyarakat Peduli Api (MPA) - Community Fire Control Group
M&E	Monitoring and Evaluation
MoHA	Ministry of Home Affairs
MoA	Ministry of Agriculture
MoEF	Ministry of Environment and Forestry
MRV	Measuring, Reporting and Verification
NGO	Non-Government Organization/LSM
NOL	No Objection Letter
NSC	National Steering Committee
NSSMPI	National Strategy for Sustainable Management of Peatlands in Indonesia
NWC	National Wetlands Committee
PDR	Project Design Report
PEMDA	Pemerintah Daerah/Regional Government
Perpres	Peraturan Presiden/ Presidential Regulation
PCC	Provincial Coordination Committee
PHKA	Direktorat Jenderal Perlindungan Hutan dan Konservasi Alam/ Directorate General of Forest Protection and Nature Conservation of MoEF
PHU	Peatland Hydrology Unit or KHG/ Kesatuan Hidrologi Gambut
PIU	Project Implementation Unit
PMO	Project Management Office

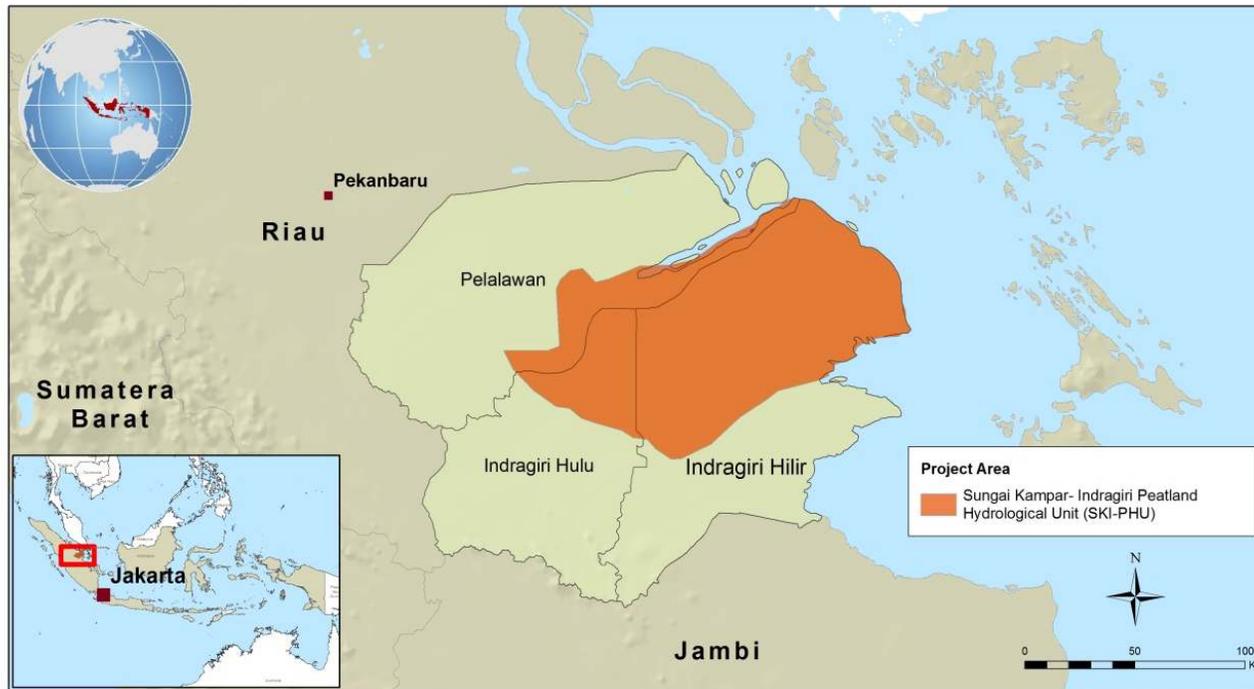
PP	Peraturan Pemerintah/ Government Regulation
PPMO	Provincial Project Management Office
PP71/2014	Government Regulation for the Protection and Management of Peatland Ecosystems (Perlindungan dan Pengelolaan Ekosistem Gambut, PPEG). (Status: endorsed By President of the Republic of Indonesia on 12 September 2014)
PPPES	Pusat Pengelolaan Ekoregion Sumatra / Sumatra Ecoregional Management Center of the MoEF
Puskonser	Pusat Konservasi LitbangHut/ Conservation Unit of Forest Research and Development Agency of MoEF
PWG	Project Working Groups
QE	Quality Enhancement
RAD GRK	Rencana Aksi Daerah Penurunan Gas Rumah Kaca/ Provincial Action Plan for GHG Reduction
RAPP	Riau Andalan Pulp and Paper Company
REDD+	Reduction of Emissions from Deforestation and forest Degradation plus conservation, sustainable forest management, and enhancement of carbon stocks
RTRWP	Rencana Tata Ruang Wilayah Propinsi/ Provincial Spatial Plan
SEA	South East Asia
SHG	Self Help Group
SKI-PHU	Sungai Kampar - Sungai Indragiri Peatland Hydrological Unit
SMPEI	Sustainable Management of Peatland Ecosystems in Indonesia
SOP	Standard Operational Procedures
Subsidence	Reduction of peat thickness due to oxydation, compaction, and/or consolidation
TWG	Technical Working Group
UNDP	United Nations Development Programme
UNEP	United Nation Environmental Programme
WB	World Bank
WI-I	Wetlands International Indonesia
WWF-I	World Wide Fund for Nature Indonesia
YMI	Yayasan Mitra Insani/Mitra Insani Foundation (a local NGO)

Maps of the project area

Map 1: Proposed project area in Riau Province

Indonesia

Sustainable Management of Peatland Ecosystems Project



The designations employed and the presentation of the material in this map do not imply the expression of any opinion whatsoever on the part of IFAD concerning the delimitation of the frontiers or boundaries, or the authorities thereof.
Map compiled by IFAD | 22-04-2015



The above land cover map of Sungai Kampar Indragiri Peatland Hydrological Unit (SKI-PHU) shows remaining natural forest in dark green, plantations in light green, recently cleared land in brown, agriculture land yellow, and mangrove in purple. The site is bounded in the north by the Kampar River, in the south by Indragiri River the east by the Malacca Straits, and in the West by an area of low hills with mineral soil.

Executive Summary

1. **Background:** The Sustainable Management of Peatland Ecosystems in Indonesia (SMPEI) was initiated jointly by the Ministry of Environment and Forestry and IFAD. Its inception was inspired by the success of the GEF funded ASEAN Peatland Forests Project (APFP), a regional IFAD/GEF project implemented between 2009 and 2014. The SMPEI builds on the work of APFP and seeks to establish a solid foundation for a larger scaling-up effort to be undertaken under a GEF6 funded project currently under negotiation. The baseline project for the SMPEI is an IFAD grant, which will be implemented by CIFOR, focusing on developing peatland-friendly livelihoods as an alternative to current slash and burn farming practices. The SMPEI is in line with the government's renewed commitments to protect Indonesia's peatlands and to control haze pollution as shown in the issuance of peatland regulations (PP71) in September 2014. In response to this significant national ownership, the Project would support and facilitate government actions both in Riau province and nationally. The Project will invest a total of US\$ 29.21 million over the course of 4 years from early 2016 to late 2019, consisting of US\$ 4.766 million grants from the Global Environment Facility (GEF), US\$ 14.95 million from the government, US\$ 9 million from the private sector and US\$ 0.495 million grant from IFAD.

2. **Rationale:** The size of relatively intact peatland forests in Indonesia has decreased from 25 million hectares (approximately 50% of world's total tropical peatlands) to 15 million ha between the period 1980 - 2011. Much of the remaining peatlands continue to be degraded by logging, drainage, and burning. At the macro level peatland degradation in Indonesia is driven by the following: i) increasing demand for palm oil for food, industrial and biofuel sectors; ii) increasing demand for pulp and paper, and timber; iii) growing population and shortage of alternative agricultural land in peatland regions; iv) poor inter-agency coordination, weak governance and inadequate enforcement; and v) climate change.

3. The expansion of plantations for oil palm and pulp and paper, and the associated drainage of peatlands, has been the primary cause of deforestation, biodiversity loss, and peatland subsidence. The drying out of peatlands due to drainage has made peat forests extremely susceptible to fire; this is further exacerbated by El Niño drought effects. Peatlands in Indonesia store an estimated 80 billion tons of carbon equivalent to approximately 5% of all global soil carbon. If burnt, peatlands can release up to 1,000 tCO₂/ha¹. Decreasing water levels by 70 cm can cause subsidence rates of more than 5 cm/year and consequent emissions of 70 tCO₂/ha/yr. From peatland degradation alone an estimated 2 billion tons of carbon dioxide (CO₂) is released per annum (equivalent to 5-6% of global emissions from fossil fuels).

4. In the past 15 years an estimated 3 million ha of peatland in the country have been burnt. The ensuing fires have led to massive biodiversity loss, depletion of carbon stocks, and premature deaths from respiratory diseases among other negative impacts. The 1997/98 peatland fires contributed the equivalent of 13-40% of the mean annual global carbon emissions from fossil fuels during the fire season². The regional impact of transboundary smoke haze pollution cost the region US\$9 billion during this disaster. Peatland fires are an annual occurrence effecting the health and economy of some fifty million people in five countries in the region.

5. Drained or degraded peatlands create negative impacts on: i) the regulation and maintenance of hydrological balance in dry and wet seasons, which is critical to prevent flood and drought in surrounding areas; ii) biodiversity conservation of endemic flora such as Jelutung (*Dyera polyphylla*), and Meranti (*Shorea spp*) and various fauna including orangutan (*Pongo abelii*), False Gharial (*Tomistoma schlegelii*), Sumatran Tiger (*Panthera tigris sumatrae*), Honey Bear (*Helarctos malayanus*), Tapir (*Tapirus indicus*), White Winged Wood Duck (*Cairina scutulata*) and the Lesser Adjutant (*Leptoptilos javanicus*), which are designated as threatened and endangered species; and iii) loss of high value timber such as "ramin" (*Gonistylus bancanus*) and non-timber forest products such as sap of Jelutung, and rattan.

¹ Assuming 30-50cm of peat is burnt

² Susan E. Page, Florian Siegert, John O. Rieley, Hans-Dieter V. Boehm, Adi Jaya & Suwido Limin. The amount of carbon released from peat and forest fires in Indonesia during 1997. *Nature* **420**, 61-65 (7 November 2002)

6. At the national level, Indonesia has set targets to significantly reduce wildfires, reduce GHG emissions, and eliminate smoke haze from peatlands compared to “business as usual”. The Government of Indonesia (GoI) committed in 2009 to reduce its national GHG emissions by 26% below the Business as usual (BAU) scenario by 2020 (or by 41% with international support). Considering that peatlands contribute over 60% of Indonesia’s GHG emissions, fundamental changes are necessary with regard to peatland conservation and management if GoI is to meet its commitments.

7. Added value of the GEF investment: The GEF intervention enables a multi-stakeholder and multi-level approach, linking national, provincial, and local government from different sectors, with communities and the private sector within an integrated peatland management framework. Special emphasis is being placed by the project on engaging women in sustainable peatland management activities. There is a nascent women’s movement of vocal defenders of peatlands who also have been actively involved in conservation, rehabilitation and advocacy activities. As such, the project seeks to socially and economically empower women through the formation of SHGs for pursuing peat-friendly income generation activities as a means for strengthening their voice. The project will also ensure that lessons learned from demonstration and pilot testing will help scale up national, provincial, and local land management activities as well as regional activities. The Project will also contribute to significant reductions in GHG emissions of at least 8 million tons of CO₂e from targeted peatlands, through enhanced water management within the hydrological unit as well as improvements in the fire management focused on prevention aspects and a holistic approach. The Project is also envisaged to link to the GEF focal area of Sustainable Forest Management (SFM)/Reducing Emissions from Deforestation and Forest Degradation (REDD) to achieve multiple benefits from the improved management of peatland forests in 1,000,000 ha of peatland in Indonesia zoned for integrated sustainable management including at least 600,000 ha of peatlands in Riau under integrated peatland management regime. The Project provides an opportunity for forest fire management, enforcement of forest and peatland-related policies, and biodiversity value improvements within the scope of SFM/REDD-1. The establishment of an enabling environment to reduce GHG emissions from deforestation and forest degradation and to enhance carbon sinks from Land Use, Land-Use Change and Forestry (LULUCF) activities underpins the SFM/REDD-2 objective. Ultimately, the GEF intervention would secure global environment benefits related to reduced emissions, a decreased rate of peatland degradation, and improved ecosystem services related to biodiversity, hydrology and carbon storage.

8. Target areas: Indonesia’s new Peatland Regulation (PP71/2014) requires all peatlands to be managed according to Peatland Hydrological Units (PHU). The selected project area is the Sungai Kampar - Sungai Indragiri Peatland Hydrological Unit (SKI PHU). The SKI PHU covers about 850,000 hectares (8,500 km²), equivalent to the size of 20% of Switzerland. It includes about 5% of the nation’s peatlands and 20% of the 4 million hectares in Riau, the province with the largest area of Indonesia’s peatlands. The project area is part of the three administrative districts of Indragiri Hilir (approximately 50 percent of the SKI PHU); Indragiri Hulu (30 percent); and Pelalawan (20 percent). Thirteen target villages include: Teluk Meranti, Pulau Muda, Kerumutan, Mak Teduh (Pelalawan District); Redang, Sialang Dua Dahan, Tanjung Sari, Pulau Jumaat, (Indragiri Hulu District); and Harapan Jaya, Bayas Jaya, Simpang Gaung, Rambaian, Teluk Kabung (Indragiri Hilir District).

9. Project goals and objectives: **The overall goal** of the SMPEI is to enhance sustainable peatland management and reduce GHG emissions from peatlands in Indonesia. **The objective** of the Project is to promote sustainable peatland management, secure carbon stocks, and conserve biodiversity while improving the living standards of local communities. This will be achieved by: (i) capacity building for sustainable peatland management; (ii) reducing peatland degradation and fires; and (iii) adopting best practices for integrated, sustainable management of peatlands at a landscape level through enhanced engagement of the private sector and local communities.

10. Project components: The SMPEI is comprised of the following three components:

11. Component 1: Capacity building and institutional strengthening for implementation of policies and regulations for sustainable peatland management will focus on enhancing capacity and the institutional framework for implementation of the National Peatland Regulation (PP71), and National/ASEAN Peatland Management Strategy at all levels. The SMPEI particularly focuses on generating the following

outputs: (i) enhanced policy, regulations and institutions for sustainable peatland management, (ii) strengthened capacity and knowledge management for sustainable peatland management; (iii) development of peatland hydrological unit (PHU) maps for management zoning in selected provinces.

Component 2: Monitoring peatland degradation, fires and GHG emissions. Component 2 aims to enhance the use of key tools and systems for fire prevention at national level but particularly in Riau and GHG emission reduction associated with project activities monitored focusing on the following two outputs: (a) National peatland fire prediction, monitoring and warning systems strengthened; and (b) Assessment of GHG emission reductions from targeted peatlands.

Component 3: Landscape level sustainable management of peatlands. To manage Sungai Kampar - Indragiri Peatland Hydrological Unit (SKI PHU) of which large areas are under the management of some large plantation companies in a sustainable, integrated manner, Component 3 will focus on the following two outputs: (a) Integrated sustainable management plan (ISMP) for SKI-PHU developed and implemented; and (b) Community livelihood from sustainable peatland management enhanced in targeted communities. The second output will be delivered with the financing of IFAD country grant and executed by CIFOR under the overall guidance of PMO and PPMO.

12. Implementation arrangements: SMPEI will be implemented over a period of four years (2016 – 2019) in partnership with various institutions of central, provincial, and district government, private sector, and communities. The Ministry of Environment and Forestry (MoEF) will be the Lead Agency for the Project. At the national level the proposed Project will be managed by a Project Management Office (PMO) hosted by the Directorate of Peat Degradation Control, Directorate General of Pollution Control and Environmental Degradation (DGPCED) of MoEF in Jakarta and under the guidance of a National Steering Committee (NSC). At the provincial level a Provincial Project Management Office (PPMO) will be based at the Provincial Environment Board (BLH) in Pekanbaru, Riau Province and under the guidance of a Provincial Coordination Committee (PCC) chaired by the Provincial Development and Planning Board (BAPPEDA). A grievance redress mechanism will be ensured at national, provincial and district levels particularly through output 3.1 activities.

13. Strategy for sustainability and replicability: SMPEI will support and link closely to the implementation of the National Peatland Regulations, National Peatland Strategy, and the National REDD+ Strategy. This will increase chances to directly apply the experiences and lessons learned under the Project to other districts and provinces in Indonesia. The Project will engender strong sustainability through increased community participation in sustainable peatland management practices. Partnerships established between communities with plantation companies operating in the same districts can help both parties improved management of natural resources. By supporting the management of the ASEAN Programme for Sustainable Management of Peatland Ecosystems (2014-2020), the Project will also be provided with opportunities for the scaling up framework at a policy level.

Logical Framework

Narrative Summary	Key Performance Indicators	Means of Verification	Assumptions (A) / Risks (R)
Goal:			
The overall goal of the project is to enhance sustainable peatland management and reduce GHG emissions from target peatland areas	<ul style="list-style-type: none"> ▪ 1 million ha of peatland in Indonesia zoned for integrated sustainable management ▪ At least 8 million tons of CO₂e mitigated 	<ul style="list-style-type: none"> ▪ National report by MoEF ▪ National and provincial MRV reports ▪ Project technical reports 	A: No significant climatic or economic shocks
Project Development Objective:			
The objective of this project is to sustainably manage peatlands at a landscape level for improving local livelihoods and reducing peat fire and GHG emission.	<ul style="list-style-type: none"> ▪ At least 30% reduction in the area burned compared to the baseline in 2014-15 in target site ▪ 20,000 beneficiaries (at least 50% women) made less vulnerable to exposure to peatland degradation and fires ▪ At least 600,000 ha of peatlands in Riau under integrated peatland management regime 	<ul style="list-style-type: none"> ▪ Project technical reports ▪ National and provincial MRV reports 	A: Government finding balance between enforcement of regulations and working in partnership with private sector and communities
Component 1 Capacity building and institutional strengthening for implementation of policies and regulations for sustainable peatland management	<ul style="list-style-type: none"> ▪ At least 3 sub-regulations of PP71 developed, approved and under implementation 	<ul style="list-style-type: none"> ▪ Expert perception survey at the baseline, MTR, and terminal evaluation ▪ Key stakeholder survey on adequate understanding of PP71 	A: Continued commitment by government to implement regulation PP71/2014
<p><u>Sub-component 1.1: Strengthen policy, regulations and institutional mechanisms for sustainable peatland management</u></p> <p><u>Sub-component 1.2: Strengthen capacity and knowledge management for sustainable peatland management</u></p> <p><u>Sub-component 1.3: Develop Peatland Hydrological Unit (PHU) maps for management zoning in selected provinces</u></p>	<ul style="list-style-type: none"> ▪ National Strategy on peatlands updated and regular reporting on implementation ▪ At least 70% of the capacity needs development plan achieved ▪ PHU maps developed for the SKI-PHU and another site (TBD) ▪ One additional PHU map developed following the revised methodology 	<ul style="list-style-type: none"> ▪ Report to National Steering Committee ▪ Project biannual report ▪ Post-training satisfaction survey report 	<p>R: Lack of political will or poor governance (Low)</p> <p>R: Weak enforcement of policies and regulations related to peatland management (Moderate)</p>

Narrative Summary	Key Performance Indicators	Means of Verification	Assumptions (A) / Risks (R)
Component 2: Monitoring peatland degradation, fires and GHG emissions	<ul style="list-style-type: none"> ▪ Monitoring system established for quantifying reduction in degradation, fires and GHG emissions 	<ul style="list-style-type: none"> ▪ Provincial report on fire incidents ▪ Provincial MRV reports 	A: Commitment by government at all levels incl. stricter enforcement and also fire prevention work
<p><u>Sub-component 2.1. Strengthen national peatland fire prediction, monitoring and warning systems</u></p> <p><u>Sub-component 2.2. Assessment of GHG emission reductions from targeted peatlands</u></p>	<ul style="list-style-type: none"> ▪ At least 20% increase in fire warnings received by stakeholders ▪ At least 6 sub-districts fire prevention strategies developed and implemented ▪ Consensus achieved on MRV methodology ▪ Baseline GHG emissions established and year-round emissions recorded in target sites 	<ul style="list-style-type: none"> ▪ Project technical report ▪ Technical report ▪ Project biannual report 	R: Climate change risk, including intensification of the periodic El Niño (Moderate)
Component 3: Landscape level sustainable management of peatlands	<ul style="list-style-type: none"> ▪ An Integrated Sustainable Management Plan (ISMP) for the SKI PHU implemented ▪ Multi-stakeholder partnerships established for implementation of the ISMP for SKI PHU ▪ At least 20% increase in income from peat-friendly livelihoods 	<ul style="list-style-type: none"> ▪ Baseline, MTR and TER studies ▪ Multi-stakeholder meeting reports ▪ Project M&E report 	A: Main parties finding mutual advantages for actively participating in the partnership
<p><u>Sub-component 3.1. Develop and implement an integrated sustainable management plan for Sungai Kampar - Indragiri Peatland Hydrological Unit (SKI PHU)</u></p> <p><u>Sub-component 3.2: Community livelihood from sustainable peatland management enhanced (financed by IFAD country grant)</u></p>	<ul style="list-style-type: none"> ▪ An ISMP for the SKI PHU developed ▪ At least 50,000 ha of peatlands with enhanced water management measures ▪ At least 10,000 beneficiaries adopt peat-friendly livelihood options ▪ Two models of credit schemes established to support on-farm or off-farm activities 	<ul style="list-style-type: none"> ▪ Baseline, MTR and TER studies ▪ Project biannual report ▪ Project biannual report 	<p>R: Reputational risk, including being drawn into politically and socially sensitive issues (Low)</p> <p>R: Increasing demand for industrial and biofuel sectors (including pulp and paper, timber, palm oil) in the global market (moderate)</p> <p>R: Potentially slow implementation of multi-stakeholder integrated management strategies (High)</p>

PART I: SITUATION ANALYSIS

A. Context

1. Indonesia has the largest economy in South-East Asia and has emerged since 2004 as a vibrant, competitive and decentralized democracy with a rapidly growing middle class. Its economy has been among the best performing in the region over the past few years. With the government's goal of 7% annual growth, Indonesia has potential to jump from the 16th largest economy in the world in 2012 to the 10th by 2025, as laid out in the Master Plan for Acceleration and Expansion of Indonesia's Economic Development 2011-2025. Indonesia showed robust economic performance during the global financial crisis 2008-2009 as seen from its GDP growth rate recovery from 4.6% in 2009 to a relatively stable 6% in 2010-2011 made possible by a boom in commodity exports, solid public finances, healthy financial sector balance sheets, and the strong domestic demands.

2. Despite such robust economic growth, the recent downturn of global commodity prices and non-inclusive growth are likely to be obstacles in meeting the government's target of "pro-growth, pro-jobs, pro-poor, and pro-green". For example, although the percentage of those living at US\$ 1.25 per day fell from 54% in 1991 to 18% by 2010³, approximately 40% of the population (95 million people) is still below or just over the poverty line. Households working in smallholder agriculture were found to be 2.1 times more likely to be poor than those working in other sectors. According to the World Bank (2012), Indonesia spent approximately 0.5% of GDP on social assistance between 2008-2012, almost 1/3 of average expenditure of other developing countries.

3. While the agriculture sector's share of the country's GDP declined markedly over the last five decades, still three out of five Indonesians in rural areas rely on farming as their main income source. Moreover, with its vast and abundant fertile soils, Indonesia is a major global producer and exporter of rice, palm oil, coffee, rubber, cocoa, spices (nutmeg, cinnamon, and cloves) and other tropical products. Crude palm oil from Indonesia, for instance, comprises more than 50% of global imports. As such, a key component of the Government's rural development strategy focuses on revitalizing the agricultural sector to facilitate robust growth of the economy.

4. The agricultural sector of Indonesia comprises large plantations (both state-owned and private) and smallholder farms. The large plantations tend to focus on commodities which are important export products (palm oil, rubber, and pulp/paper), while the smallholder farmers' focus on rice, soybean, corn, fruit, vegetables, and oil palm. A majority of farmers are smallholders who farm less than half of a hectare. The poorest people in rural areas tend to be labourers working on other people's land, or smallholders operating extremely small plots (<0.5 ha)⁴.

5. One of the most significant challenges in the agriculture sector is low productivity⁵. There are a number of structural constraints that affect agricultural productivity in Indonesia. The most important include lack of infrastructure; insufficient research and development (R&D); and a lack of a consistent policy on land tenure, with most forest lands coming under the central government and non-forest land under local government, and confusion caused by overlapping and conflicting spatial plans, lack of recognition of communal land rights and a slow registration process.

6. Indonesia has approximately 50% of world's tropical peatlands, distributed across the country (see below Map 2). Peatlands are formed from partially decomposed plant material that has accumulated over thousands of years under waterlogged conditions. Most well-known benefits/roles of peatlands globally are sequestering as much as 30% of global soil carbon (equivalent to double the total carbon in the biomass of all the world's forests) in the organic matter and conserving biodiversity of flora and fauna and particularly endangered species.

³ World Bank. 2012.

⁴ *Riyana Miranti et al.*, Trends in Poverty and Inequality in Decentralising Indonesia. NATSEM, University of Canberra. Presentation to the Working Party on Social Policy Meeting, OECD, Paris 29-30 November 2012.

⁵ World Bank, Indonesia beyond 2015, <http://www.worldbank.org/content/dam/Worldbank/document/EAP/Indonesia/Indonesia-Beyond-2015.pdf>

Figure 1: Map of Peatlands in Indonesia



7. Land use change from forest to other land uses has taken place in most peatland ecosystems in Indonesia. The size of relatively intact peatland forests in Indonesia has decreased from 25 million hectares (approximately 50% of worlds' total tropical peatlands) to 15 million ha between the period 1980 - 2011. Approximately 4 million ha has been converted to oil palm or pulp and paper plantations, another 4 million ha opened for agriculture (much of it abandoned), and an estimated 10 million ha logged. Over the past 25 years there has been an unprecedented level of peatland degradation in Indonesia with nearly 4 million ha affected by fire, 5-6 million ha drained, and up to 10 million ha logged. If this trend continues, most of the peatland resources in Indonesia would be degraded or destroyed in the next 10-15 years.

8. Peatland destruction happens by deforestation and drainage, followed by burning to remove unwanted surface debris (often more than one round of burning on each land parcel). Drainage has major effects causing drying out of peat swamps, which increases susceptibility to fire and subsidence and causes high emissions of greenhouse gases; disruption of the regulation and maintenance of hydrological balance in dry and wet seasons, which is critical to preventing floods and providing water supply to surrounding areas; biodiversity conservation of endemic flora such as Jelutung (*Dyera polyphilla*), and Meranti (*Shorea spp*) and various fauna including orangutan (*Pongo abelii*), False Gharial (*Tomistoma schlegelii*), Sumatran Tiger (*Panthera tigris sumatrae*), Honey Bear (*Helarctos malayanus*), Tapir (*Tapirus indicus*), White Winged Wood Duck (*Cairina scutulata*) and the Lesser Adjutant (*Leptoptilos javanicus*), which are designated as threatened and endangered species; and loss of high value timber such as "Ramin" (*Gonistylus bancanus*) and non-timber forest products such as sap of Jelutung, and rattan.

9. Decreasing water levels by 70 cm can cause subsidence rates of more than 5 cm/year and an emission of 70 tCO₂/ha/yr. Furthermore, peatland fires undermine carbon stocks, national economies, and public health (premature deaths from respiratory disease). In 1997, for example, burning peatland and vegetation in Indonesia contributed an estimated 13-40% of the mean annual global carbon emissions from fossil fuels during the fire season (Page *et al*, Nature, 2002). The regional impact of transboundary smoke haze pollution is massive; for example it is estimated that the 1997-1998 haze disaster cost the region US\$ 9 billion. The health and economy of some 50 million people in 5 countries in the region are affected by annual events of haze, in particular in Indonesia, Singapore and Malaysia

10. Peatland degradation in Indonesia at the macro level is mostly driven by: (i) increasing demand for palm oil for food, industrial, and biofuel sectors; (ii) increasing demand for pulp, paper, and timber; (iii) growing population and shortage of alternative agricultural land in peatland regions; (iv) poor inter-agency coordination, weak governance, and inadequate enforcement. Peatland fire is mainly driven by: (i) intentional land clearing for agriculture; (ii) limited enforcement; (iii) limited focus on fire prevention; (iv) poor fire control during the dry season; and v) climate change.

11. While peatlands in Indonesia store an estimated 80 billion tons of carbon, equivalent to approximately 5% of all global soil carbon, individual, large peatland fires can release up to 1,000 tCO₂/ha during the fire season. An estimated 1.5 to 2 billion tons of carbon dioxide was released per

annum from peatland degradation in Indonesia over the last 10-15 years, comprising 4-6% of global fossil fuel emissions.

12. The Indonesian Government has come under national and international criticism for not acting to manage or prevent fires and smoke haze or to enforce the regulations it has in place. Parts of the Government are sometimes accused of 'enabling' the fires, through elements such as patronage politics and political elites at the local level who have a vested interest and financial return associated with land clearing and fire activities. The international investment community has until recently taken a back seat to its responsibilities for transparent investments in industrial agriculture production that brings about peatland conversion from forest to plantation. More recently, both commercial manufacturers and sellers of agricultural products have begun a supply chain focus to improve transparency of production with the intent to move away from peat and fire-cleared landscapes. But others are finding ways around this and continue to sell commodities emanating from fire ridden plantations. The challenges in supply chain management within the small and large holder oil palm industry are complex and convoluted, and are prone to unravel easily. However, efforts need to be taken to harden up monitoring and chain-of-custody assurances.

13. The history of national and international efforts in Indonesia surrounding peatland fire has been dominated by fire suppression efforts. The past 17 years has not brought about marked change and has led to wide spread criticism of the government for not acting to avert the fires more strongly. But due to the use of fire as part of the land use change process that also drives economic development via commodity production, there is paradox in that the government wants the economic growth and development but not the fires associated with the land use change. As such, a paradigm shift in the approach to managing peatlands is required.

B. Rationale

14. **Vision of Sustainable Peatland Management.** In September 2013, drawing on the contributions of the IFAD/GEF regional project on the Rehabilitation and Sustainable Use of Peatland Forests in South-East Asia (referred to as ASEAN Peatland Forests Project - APFP) and EU-funded Sustainable Management of Peatland Forests in Southeast Asia (SEApeat) project, Environment Ministers of the 10 ASEAN Member States, including Indonesia, approved the establishment of an ASEAN Programme for Sustainable Management on Peatland Ecosystems (APSMPE) 2014-2020 to support the implementation of the ASEAN Peatland Management Strategy (APMS) 2006-2020. APSMPE has the following key targets:

1. All peatland areas in ASEAN identified and inventoried;
2. Zero-burning uniformly practiced to prevent any uncontrolled wildfires on peatland, in order to eliminate any widespread smoke haze;
3. Fire-prone sites rehabilitated by focusing on root causes of fire;
4. Peatlands sustainably managed through enhanced sustainable livelihoods and economic use;
5. Peatlands conserved to contribute to significantly reduced emissions of greenhouse gases, and increased peatland biodiversity in the region; and
6. ASEAN Peatland Management Strategy (APMS) and its National Action Plans (NAPs) implemented, and national and regional capacity enhanced.

15. At the national level, **Indonesia's Regulation for the Protection and Management of Peatland Ecosystems (PP71/2014)** was first drafted in 2010 and finally endorsed in September 2014 after several rounds of revisions. This regulation, known as PP71, contains one important chapter on the control of peat ecosystems. This chapter states that "peat ecosystems under development status" are categorized as damaged (rusak) when the groundwater table decreases more than 0.4 m depth from peat surface in peat deeper than 1 meter. If peat is less than 1 m thick, its degradation or damage status is regulated under environment permits (ijin lingkungan according to Art 24[2]). Private sector operations, mostly oil palm and pulp and paper industries, have argued that 0.5 m and 0.6 m of groundwater table, respectively, for oil palm and acacia, are needed for these commodities. As such, there is still work to be done for generating a consensus for effective management of peatlands.

16. The Ministry of the Environment and Forestry is drafting Ministerial Regulations related to the implementation of the PP71 with specifications on the following subjects: i) Peatland inventory (Article 8); ii) Determination of peatland function (Article 13); iii) Production of peatland protection and management plans (Article 19); iv) Criteria for the recovery of peatland (Article 30 [4]); and v) Procedure for measurement of water table in peatland utilization zone. The successful implementation and monitoring of the implementation of PP71 will require a broad consensus through multi-stakeholder consultations and harmonization of views on the sub-regulations of PP71. Against this background, and considering the momentum that is needed to turn around peatland degradation in Indonesia, the SMPEI would provide opportunities to strengthen staff capacities in consideration of the new institutional arrangement⁶, raise public awareness, and scale up best practices in peatland and fire management.

17. The concept of this project is strongly driven by Indonesia's emission reduction targets. In 2009 the Government of Indonesia (GOI) announced its commitment to reduce GHG emissions by 26% below the Business-as-usual (BAU) scenario by 2020 with its own resources, or GHG emission reductions up to 41% with the support of the international community. The National Medium-Term Development Plan for 2015-2019 (RPJMN 2015-2019), in line with the National Action Plan for Greenhouse Gas Emission Reduction (RAN-GRK), will contribute to GHG emissions reduction from five priority areas of forestry and peatlands, agriculture, energy and transportation, industry and waste. Among this, 80% of Indonesia's emission was land-based, and of that about 80% originate from fires, and of that 95% comes from peatlands. To meet Indonesia's GHG commitments, the prevention of peatland fires must be addressed, and the Project will support this objective by advancing a holistic approach to peatland management.

18. In 2014, the Indonesian Chamber of Commerce (KADIN) facilitated the signing of a collaborative pledge between major private actors of the palm-oil sector with the common goal to work towards "sustainable palm oil that is deforestation free, respects human and community rights and delivers shareholder value through collaborative multi-stakeholders efforts". The Indonesia Palm Oil Pledge (IPOP) was signed at the UN Climate Summit by Wilmar, Golden Agri Resources (GAR), and Cargill. The IPOP was joined by Asian Agri and Musim Mas in March 2015. This development while still at a nascent stage provides an avenue for engaging the large players in the oil palm and pulp and paper industries in advancing sustainable peatland management.

19. The extent of this year's forest fire is still unknown but it is expected to be significant considering that 2015 is an El Niño year. About 20,000 army personnel have been deployed for supporting firefighting efforts. Also, seven corporate executives have been arrested in connection with illegal forest fires which indicate a shift in the Government's approach and demonstrate a seriousness previously unseen.

20. The proposed Sustainable Management of Peatlands Ecosystems in Indonesia (SMPEI) project would be implemented for 4 years from 2016-2020 with GEF5 funding of USD 4.766 million, and co-funding of about USD 24.445 million (including USD 14.95 million from the government, USD 9 million from private sector and USD 0.495 million from an IFAD Country Grant). The IFAD country grant will focus on promoting peatland-friendly on- and off-farm livelihood options in order to reduce pressure on peatland resources.

PART II. PROJECT DESCRIPTION

A. Project area and target groups

21. Riau is the province with the largest area of peatland and situated a short distance across the Malaccan Strait from Singapore and Malaysia. Out of the total 8.7 million ha of land in Riau, over 4

⁶ The control of Indonesia's climate change agenda will be under the responsibility of the Directorate-General for the Climate Change of MoEF. The National Council on Climate Change (DNPI), which was created in 2008 after the COP-13 in Bali in 2007, as well as the REDD+ Task Force (BPREDD) was absorbed into this new Directorate-General.

million hectares (about the size of Switzerland) is peatlands. Peatlands in Riau are subject to rapid change and conversion with large-scale degradation and fires.

22 Indonesia's new Peatland Regulation (PP71/2014) specifies that peatlands must be managed on the basis of Peatland Hydrological Units (PHU). Such an approach is in line with international best practice and is fundamental to moving peatland management to a more sustainable regime. If different land managers adopt various water management approaches, peatland will be fragmented with differential subsidence and frequent flooding and fires. In order to ensure the effective implementation of PP71, it is key to demonstrate the integrated management of a PHU as an effective modality for reconciling competing land uses.

23 The SMPEI has therefore selected the Sungai Kampar - Sungai Indragiri Peatland Hydrological Unit (SKI PHU) which covers about 850,000 hectares (8,500 km²) that is equivalent to 5% of Indonesia's peatlands and 20% of those in Riau province. The SKI PHU covers the 350,000 ha Kerumutan Nature Reserve, inclusive of the Kerumutan Peat dome and adjacent hydrologically-linked areas, of which three sides are bordered by two large rivers (Kampar and Indragiri) and the sea. The criteria used for selecting the PHU included: (a) significant peatland area (sufficiently large; of national and regional importance with remaining forest; and with important biodiversity); (b) PHU facing challenges (fire, drainage, degradation); (c) potential for multi-stakeholder partnership with government agencies at various levels, private sector, and communities; (d) feasible to address challenges and generate results during the project timeframe and budget; and (e) interested partners and co-funding support.

24 The project area is part of the three administrative districts of Indragiri Hilir (approximately 50 percent of the SKI PHU); Indragiri Hulu (30 percent); and Pelalawan (20 percent) [see Map of the SKI PHU on pages vii and viii]. Within the SKI PHU, 13 target villages have been selected based on the following criteria: (i) poverty level; (ii) location inside of the PHU; (iii) proximity to the remaining intact peat swamp forest; (iv) peat depth over one meter; (v) severity of peatland management issues such as drainage, illegal logging, fires, unstable community livelihood; and (vi) expressed interest of the community to participate in the project. The 13 villages are: Teluk Meranti, Pulau Muda, Kerumutan, Mak Teduh (Pelalawan District); Redang, Sialang Dua Dahan, Tanjung Sari, Pulau Jumaat, (Indragiri Hulu District); and Harapan Jaya, Bayas Jaya, Simpang Gaung, Rambaian, Teluk Kabung (Indragiri Hilir District).

25 A significant portion of the PHU is under the management of the private sector, including 13 industrial tree plantations, more than 10 oil palm plantations, and one large coconut plantation. A significant portion of the community lands also have oil palm and coconuts. Coconut plantations are facing serious problems due to salt water intrusion and pests; a number of the oil palm plantations are impacted by subsidence and fire; and some of the industrial tree plantations are facing water management challenges.

26 The majority of the population in the project area is local people including some indigenous groups⁷. There are also migrants, who either came via transmigration programs or independently. The overall, poverty rate in the targeted sub-districts is 32%. Poverty rates are significant in the sub-districts of Indragiri Hilir, ranging between 33 and 56 percent (see Table 1. In the sub-districts of Indragiri Hulu the poverty range is from 24 to 41 percent. The rates are lowest in Pelalawan, ranging from 20 to 23 percent.

⁷ Suku Petalangan was a minority indigenous people long time ago. Petalangan tribes are mainly living in Pelalawan, Riau province. Villages of Petalangan people are located about 60-95 kilometers from the city of Pekanbaru. Most of these people live from harvesting forest rubber and as fisherman. The term of Petalangan is derived from the word of *talang* which is a kind of bamboo. The tribe also refers to itself as the 'land people'. The number of people in Petalangan estimated 58,400 inhabitants (1993). Petalangan Malay culture is now endangered following the depletion of the forests. Those who live in Pelalawan are highly dependent on forests, including for preserving their culture. On the east coast of the SKI-PKU there is another indigenous group known as Suku Duano (sub-Suku of Orang Laut) living as the coastal communities (YASA, 2006, other sources).

Table 1 Percentage of poor population in district and sub-district in project area

SUB-DISTRICT	Total POPULATION	NO OF POOR	PERCENTAGE
PELALAWAN			
• Kuala Kampar	18,028	4,213	23.37%
• Kerumutan	13,638	2,723	19.97%
• Teluk Meranti	16,483	3,379	20.50%
INDRAGIRI HULU			
• Batang Cenaku	24,022	9,802	40.80%
• Rengat Barat	32,579	8,706	26.72%
• Rengat	53,109	12,512	23.56%
INDRAGIRI HILIR			
• Tempuling	53,117	19,060	35.88%
• Batang Tuaka	23,374	13,202	56.48%
• Gaung Anak Serka	23,271	7,618	32.74%
• Gaung	40,290	14,359	35.64%
TOTAL	297,911	95,574	32.08%

Source: Riau Province government on YASA, 2006.

27. The main livelihood of the people is mostly from farming and fishing. About 60% of the people are still dependent on the forest for food, medicine, housing, and wood for boat construction. At several locations in the area the peat swamp forest is used by the community as agricultural land and grows crops and commodities such as rubber, sago, rice, corn, coconut, and horticultural crops.

28. In Indonesia women's role as agricultural producers is as important as their domestic activities. Their role in agricultural production is mostly focused on crop operations such as weeding, harvesting, threshing and storage, and on small livestock production, as well as, small-scale trading. Depending on the availability of time after women's household and farm work, women also get involved in paid-employment in agriculture or other sectors depending on the opportunities available. Generally women are not given equivalent access to land, credit or extension services. Restricted access to land has implications for access to credit as women are far less likely than men to have collateral for loans; although some survey results show that women often did not consider the limited access to land as a barrier because household decisions are generally made jointly. In meetings held in Riau province about the potential impact of a pulpwood plantation on forests and agricultural lands, men dominated the discussion, and of the women present, none were provided an opportunity to voice their opinions. A similar dynamic was observed during community discussions as well. There is however a nascent movement of women coming together to contest the destruction of peatlands and to demand action on haze pollution as many children are suffering from respiratory disease and early childhood mortality. This provides an opportunity for SMPEI to provide targeted support to empower these groups so that they may be more effective in advocating for sustainable peatland management.

29. The SMPEI builds on past experience and existing opportunities. For example, the Desa Harapan Jaya in Indragiri Hilir has been a pilot site for the village-based fire prevention program in the SEApeat Program. Various approaches and techniques were used and the best practice can be replicated in other villages. It is proposed that Harapan Jaya will be a community-based learning center for fire prevention activities in this project. Likewise, Desa Pulau Jumat and Desa Tanjung Sari are two villages in Indragiri Hulu where social forestry opportunities can be pursued, considering that initial discussions have taken place between the villagers and related government agencies. Mapping the potential and the initial approach for the social forestry program was undertaken in 2014/early 2015. The social forestry program seeks to transfer natural resource management rights over to the community through the provision of defined rights and obligations.

30. Desa Teluk Meranti and Desa Pulau Muda are two villages in Pelalawan in the northern border of the Sungai Kampar-Indragiri PHU. They have a fairly close relationship with the Kerumutan Nature Reserve as most community agriculture/plantation sites are located around this protected area. De-escalation of conflict will be pursued under the SMPEI facilitating greater clarity of boundaries,

development of ecotourism and other livelihood enhancement activities. These two villages have also become the center of ecotourism linked to river surfing on the tidal Bore (Bono) on the Kampar River.

31. The SMPEI will directly benefit 1000 households (HHs) through access to alternative livelihoods and indirectly benefit 20,000 HHs through improvement of ecosystem services and reduced haze exposure.

B. Project goal and objectives

32. **The overall goal** of the SMPEI is to *enhance sustainable peatland management and reduce GHG emissions from target peatland areas*. **The objective** of SMPEI is to *sustainably manage peatlands at a landscape level for improving local livelihoods and reducing peat fire and GHG emissions*. This will be achieved by: (i) capacity building and institutional arrangement for sustainable peatland management; (ii) reducing peatland degradation and fires; (iii) adopting best practices for integrated, sustainable management of peatlands at a landscape level with enhanced engagement of the private sector and local communities; and iv) developing peatland-friendly livelihood options.

33. Approximately 400,000 ha of peatlands in the SKI-PHU will be placed under an enhanced sustainable management regime, at least a 30% reduction of the fires in the areas will be achieved compared to the baseline of 2014/2015, and at least 2,000 ha of the PHU will be rehabilitated. Additionally, with the support of the IFAD country grant, there will be at least 20% increase in income generation will be achieved through sustainable peatland management activities in targeted communities.

C. GEF added value

34. Without GEF support, co-funding, and other leveraged assistance, the degradation of peatlands in Indonesia will lead to continuing subsidence, annual fires, associated GHG emissions, and serious transboundary haze. Targeted interventions from the SMPEI will seek to enhance multi-stakeholder partnership approaches linking national, provincial, and local government from different sectors, communities, and the private sector to develop and manage peatlands in a more sustainable integrated manner, as opposed to the current fragmented sectoral approach. In the business-as-usual (BAU) scenario, government efforts related to peatland fires will likely continue to focus mainly on fire suppression and control rather than fire prevention – in other words the symptoms rather than the causes. Enforcement will continue to be ineffective in preventing fires and government expenditure on fire-fighting will continue to be allocated too late to prevent large-scale fires and degradation. Through SMPEI efforts will be taken to engage all relevant stakeholders in a coherent framework of sustainable peatland management actions that include protection of intact peatlands, fire prevention, and regeneration of degraded peatlands, while lifting poor communities out of poverty.

35. The expected value added of the proposed GEF intervention would secure global environment benefits related to the reduction in the rate of peatland degradation, thereby leading to improved ecosystem services related to biodiversity, carbon storage, and reduced emissions. It will also help support the implementation of the ASEAN Peatland Management Strategy (APMS) and the National Peatland Strategy (NPS) and national regulations on peatlands, further contributing to the sustainability of peatland management initiatives. SMPEI allows for a multi-stakeholder, multi-level and cross-sectoral approach to integrated peatland management.

36. Comparison of baseline and GEF-funded activities is summarized in the table below:

Table 2 Comparison of baseline and GEF-funded activities

Baseline	GEF-funded activities (incl. co-financing)
Component 1 Capacity building and institutional strengthening for implementation of policies and regulations for sustainable peatland management	
Policy and Regulations: Regulation on Protection and management of Peatland Ecosystems adopted September 2014	Relevant policies and procedures updated and harmonized. Sub regulations articulated, adopted and implemented in partnership with a range of stakeholders

(PP71) but no sub-regulations and significant contradictions with other policies	
Capacity: New institutions established e.g.: Ministry of Environment and Forestry through mergers but limited capacity building of personnel; <i>ad-hoc</i> sectorally-based capacity development.	Targeted capacity development activities based on a needs assessment; integrated capacity building approach involving multiple stakeholders; building on national and regional best practice.
Peatland Mapping: Peatland mapping undertaken by MOEF by consultant teams undertaking ground surveys; limited sharing of information with other agencies/sectors.	Peatland mapping undertaken through combination of field assessments and latest technology (e.g. LIDAR, radar and optical satellite sensors), integration and data sharing between government, private sector and research community.
Component 2; Monitoring peatland degradation, fires and GHG emissions	
Peatland Fires: Focus of efforts on Peatland Fire suppression and control through use of expensive water bombing and ground fire control teams (in the current 2015 fires 20,000 army personnel also have been mobilized for firefighting)	Focus of fire management efforts on prevention through cost effective enhanced water management, control of development expansion; and multi-stakeholder collaboration with adoption of guidelines at national level and demonstration at province and local levels.
GHG: GHG emission data is unavailable due to lack of an agreed upon quantification methodology and limited capacity at provincial and local levels for data gathering.	GHG emission data collected through updated GHG emission quantification methodology and data sharing with the central level and between sectors and provincial and local agencies in Riau Province.
Component 3: Landscape level sustainable management of peatlands	
Management of Peatland Hydrological units: Limited capacity among provincial and local staff for working with a PHU management methodology. As such, it is anticipated that fragmented management by sectoral departments, local governments and private sector is inevitable.	Integrated multi-sectoral approach to develop and implement a landscape-based approach for the 850,000 ha Peatland Hydrological Unit in Southern Riau Province.
Community development: scattered and fragmented community development - often conflicting with sustainable peatland management.	Integrated community development with support from multiple financing sources (project, government, private sector) to enhance livelihoods and community welfare linked to sustainable peatland management.

Project Components, Outputs and Activities

37. The SMPEI comprises the following three components:

- (i) *Capacity building and institutional strengthening for implementation of policies and regulations for sustainable peatland management* - provides training opportunities for the staff of relevant agencies to obtain necessary technical skills to manage peatlands, and enhance institutional arrangements to effectively implement the new government regulations by developing mechanisms and tools to manage and monitor peatlands.
- (ii) *Reducing peatland degradation, fires and GHG emissions* - focuses on assessing and reducing GHG emissions in Indonesia through enhancing the national-level fire prevention system and preventing fire in selected districts/districts of Riau; and
- (iii) *Landscape level sustainable management of peatlands* - will demonstrate the techniques and approaches, including the building of essential partnerships with key stakeholders, for achieving integrated management of peatlands within a Peatland Hydrological Unit (PHU).

Component 1: Capacity building and institutional strengthening for implementation of policies and regulations for sustainable peatland management (GEF grant US\$ 1.656 million)

38. Recently there have been major changes in national and regional policy, and institutional arrangements for peatland management, which require significant efforts to operationalise. The following are some of the changes:

- Ratification by Indonesia of the ASEAN Agreement on Transboundary Haze Pollution (AATHP) in January 2015. AATHP is the key regional mechanism for cooperation in addressing peatland degradation and fires.

- The revision of the ASEAN Peatland Management Strategy 2006-2020 (APMS) and the establishment of the ASEAN Programme on Sustainable Management of Peatland Ecosystems 2014-2020 (APSMPE) in September 2013.
- Moratorium of New Permits and Finalization of Management for Primary Forest and Peatland (Presidential Instruction No. 10/2011; No. 6/2013 and 2015). This Presidential Instruction covers a moratorium on new licenses for two years and other instructions aimed at reducing GHG emissions compared to the Business as Usual (BAU) scenario.
- The approval of the Indonesian National Peatland Regulation (PP71) in September 2014. PP71 specifies the designation, assessment, and mapping of peatland hydrological units (PHU) as a key regulatory and planning tool for sustainable peatlands management by 2018.
- The merging of the Ministry of Environment, Ministry of Forestry, REDD+ Agency and National Climate Council to form the Ministry of Environment and Forests (MOEF) in October 2014.
- The major reorganization of structure, function and personnel in the new ministry between October 2014 and June 2015
- The establishment and initial staffing of the Directorate for Peatland Degradation Control in MOEF in June 2015.
- The establishment and initial meeting of the ASEAN Task Force on Peatlands in June 2015.

36. The outcome of Component 1 would be *capacity and institutional framework enhanced for implementation of National Peatland Regulation (PP71), and National/ASEAN Peatland Management Strategy at all levels*. To address the significant opportunities and challenges as a result of the above mentioned changes, Component 1 will generate the following:

- 1.1 Strengthen policy, regulations and institutions for sustainable peatland management
- 1.2 Strengthen capacity and knowledge management for sustainable peatland management
- 1.3 Develop Peatland Hydrological Unit (PHU) maps for management zoning in selected provinces

Sub-component 1.1: Strengthen policy, regulations and institutional mechanisms for sustainable peatland management

40. The recent changes in the national and regional policy and institutional arrangements for peatland management referred to above require operational protocols and procedures for achieving sustainable peatland management. For instance, PP71/2014 which was approved in September 2014 and became effective immediately is the first specific regulation on peatlands in the country. The PP71/2014 requirements for managing peatlands are the following:

- a) Requiring, within a maximum of 2 years (i.e. by September 2016) that all peatlands in Indonesia to be mapped within respective Peatland Hydrological Units (PHU) which include all areas of peat soil and adjacent lands to the respective rivers and coast throughout Indonesia (covering more than 20 million ha);
- b) Requiring, within a maximum of four years (i.e. by September 2018), all PHUs to be surveyed to enable peat depth maps to be prepared and functional classification of the PHU to be undertaken;
- c) To establish zoning of all PHUs into Protection and Utilization Zones with a minimum of 30 percent of protection of the total area of the PHU, including the centre of the peat dome and its surroundings. Additional protection is also given beyond the core 30 percent of PHU if the following are found:
 - Peat with a depth of 3 metres or more;
 - Specific or endemic genetic resources;
 - Protected species based on current laws; and
 - Peatland that is already protected in existing spatial plans and conservation areas
- d) Requiring the development and implementation of Integrated Protection and Management Plans for each PHU; and
- e) Requiring average water levels to be maintained at no more than 0.4 m below the surface in the utilization zones to minimize subsidence and reduce fire risk.

41. In order to implement the PP71 a number of sub regulations need to be prepared and enforced. To ensure that these sub-regulations are effectively implemented a consensus needs to be arrived at among the different stakeholders.

4.2. Other important policy and regulation adjustments which are needed, include:

- a) Reviewing the National Strategy on Sustainable Peatland Management to ensure that it is compatible with the new peatland regulations and changes in government institutions and also to take into consideration changes in the related APMS.
- b) Reviewing the compatibility of other regulations with PP71 – e.g. the water level requirements under the Indonesian sustainable palm oil standard (ISPO) and facilitating harmonisation.

4.3. The expected result from this sub-component is *an effective partnership approach taken to oversee the implementation of PP71 and to develop and promote sub-regulations of PP71 and other relevant policies*. The SMPEI will facilitate this by enhancing the capacity and level of engagement of a range of stakeholders (central, provincial and local government, research institutions, CSOs, communities, and the private sector) in the promotion and implementation of regulation PP71 and in the protection of designated peatland conservation zones. Early engagement of these stakeholders in the implementation of the regulation will engender a sense of ownership over the process and outcome, and set the stage for an effective and efficient implementation.

4.4. The following participatory activities will be supported:

- Revise the National Strategy on Peatlands in light of PP71 and changes in the APMS, and support the development of Ministerial Regulations for the implementation of PP71 including preparing technical studies, organizing consultation workshops and meetings, and reporting for developing the following: i) Methodology for delineation of PHUs and measurement of water levels, and inventorying and assessing peat ecosystems for zoning purposes; ii) Format and guidelines for preparing Protection and Management Plans for PHUs, and criteria for peatland rehabilitation; and iii) Guidelines and protocols for monitoring the implementation of the regulations.
- Facilitate the establishment of institutional mechanisms to oversee the implementation of the PP71 through: i) Developing terms of reference (TOR) for the institutional mechanisms set up to oversee peatland management at national, provincial and district levels; ii) Establishing and operationalising a National Interagency Steering Committee, National Technical Working Group, and Provincial Steering Committee(s) (for Riau and other key provinces) on sustainable peatland management (SPM); and iii) Organise regular meetings of the respective groups
- Prepare annual plans and progress reports on the implementation of the National Strategy on Sustainable Peatland Management in Indonesia, PP71 and associated regulations, and ASEAN Peatland Management Strategy and APSMPE
- Prepare selected strategic studies on policy and planning measures including use of technical workshops particularly on water management requirements for peatland utilization, peatland restoration techniques and costs, and sustainable community livelihoods on peat

Sub-component 1.2: Strengthen capacity and knowledge management for sustainable peatland management

4.5. There is a major need to enhance the capacity of stakeholders at national, provincial and district levels considering that many staff have not worked on peatland issues before, and that they need to be trained in multi-stakeholder partnership development and integrated peatland management. Key stakeholders and target groups include: local communities; NGOs and community organisations; staff of the new peatland directorate; staff of new sections in the MOEF dealing with peatlands; members of national and provincial steering committees and working groups; staff of other government agencies related to peatlands including Ministries of Agriculture, Public Works, Home Affairs, Health, provincial and district governments etc.; research institutes; and private sector. For the provision of strategic technical advice and capacity building a consortium⁸ of technical expert organisations led by the Global Environment Centre⁹ will be established through a direct contract. The rationale for the selection of the Global Environment Centre (GEC) is the following:

⁸ In addition to national expert institutions, the consortium will include regional and international expert groups such as FAO, UNEP, World Bank, CIFOR, IUCN, Wetlands International, GIZ and other key organisations.

- (a) GEC is the Technical and Operational Support Partner of the ASEAN Peatland Management Strategy and ASEAN Programme on Sustainable Management of Peatland Ecosystems 2014-2020 (APSMPE)
- (b) GEC has been working with ASEAN Member States including Indonesia to support implementation of regional and national projects on sustainable peatland management
- (c) GEC has been coordinating the network of CSOs and research institutes in peatland management issues in ASEAN including Indonesia
- (d) GEC has been providing technical advice to MoEF related to peatlands management and national regulation setting through the APFP and GEF-5 project formulation phases

46. The following activities will be supported:

- Develop and implement a capacity development programme to support implementation of PP71 and associated regulations, and for effective participation in ASEAN processes (APMS, AATHP and APSMPE, ASEAN Task Force on Peatlands and TWG/MSC on Haze), through undertaking a peatland related capacity needs assessment for MoEF and other levels. The capacity development programme will include: targeted departmental and individual training; technical workshops and field visits in Indonesia, ASEAN and elsewhere; and on-the job training and mentoring.
- Develop a knowledge management (KM) strategy that focuses on leveraging behavioural change at the local level, coordinated action at district and provincial levels, and evidenced based policy development (see Section B under Project Implementation for more detail on KM).

Sub-component 1.3: Develop Peatland Hydrological Unit (PHU) maps for management zoning in selected provinces

47. The SMPEI will conduct surveys to develop more detailed maps of individual hydrological units in Riau Province for demarcating the units of management that would be governed by PP71. This will be done based on the following existing maps and methodologies: i) baseline maps developed by Wetlands International and the Bogor Soil Research Institute in 2002-2006; ii) maps refined between 2010-2013 as part of the National REDD+ Strategy Development (ICCC and National Council on Climate Change); iii) REDD+ One Map System; iv) maps used for monitoring the Forest and Peatland Moratorium; and v) the initial PHU outline maps developed by the Ministry of Environment in 2011. The detailed survey results will generate maps that will form the basis for land use planning and will guide the future conservation and sustainable use of each hydrological unit.

48. The key activities are the following:

- Develop a demonstration PHU Map and functional classification of the targeted Kampar-Indragiri PHU (the project site) and Pulau Bengkalis in Riau at a scale of 1:50,000
- Undertake aerial survey of peatlands along the coast of western Sumatra using LIDAR and analyse the results to determine location and nature of peat domes
- Organise workshop(s) to share experience and lessons learned from the above two activities. This will also serve as an opportunity to review and refine the approach and develop a cost-effective methodology for scaling up assessments of PHUs to achieve the 2018 target of all peatlands being surveyed. Based on the enhanced methodology undertake mapping and assessment of Giam Siak Kecil PHU in Northern Riau.

Component 2: Monitoring peatland degradation, fires and GHG emissions (GEF grants US\$ 1.03 million)

49. The focus on reducing haze in Indonesia for the past 18 years has been dominated by fire suppression efforts, which has failed spectacularly. Top-down approaches such as Zero Burning have also been unable to accomplish any major improvement. As such, a paradigm shift is required that focuses more on prevention rather than suppression, and one that adopts an Integrated Fire Management (IFM) approach at the national level and a Community-Based Fire Management (CBFiM) approach at the village level. CIFOR's tropical forest risk study¹⁰ also confirms this finding by stating that there is no strict line of command for forest fire management in normal daily activities and that a

¹⁰ Herawati, Hety and H. Santoso. Tropical forest susceptibility to and risk of fire under changing climate: a review of fire nature, policy and institutions in Indonesia. Forest Policy and Economics, Volume 13, Issue 4, April 2011 page 227-233.

range of legislation in response to large fires only emphasize fire control and suppression rather than addressing the underlying causes. The study concludes that the authorities seldom involve relevant stakeholders in formulation of the legislation such as prohibiting the use of fire for land clearing. Local communities have not been consulted, nor traditional knowledge on the use of fire in agriculture, or provision of incentives for local communities and other stakeholders for non-use of fire were not considered, resulting in the failure of implementation of fire management regulations.

50. The previous Indonesian administration developed a draft “National Standard Operating Procedure for Fire Prevention”, which was called POSNAS. POSNAS was signed by 4 of the 5 necessary ministries to enact it as a law, but unfortunately was not finalised before the end of the last government. Currently MoEF is considering a review of the core elements of POSNAS as a mechanism of introducing fire prevention more strongly into the National, Provincial and District institutional structures. It is proposed that SMPEI will advance national efforts to develop and promulgate a law that is similar in construct and alignment with POSNAS.

Sub-component 2.1. Strengthen national peatland fire prediction, monitoring and warning systems

51. The SMPEI will support capacity building for fire prediction, use of early warning systems, and improvement of the available tools and systems for peatland fire prediction and monitoring in Indonesia. The main existing tools and systems for peatland fire prediction and monitoring in Indonesia currently include: (i) fire danger rating systems based on weather stations supplemented by satellite-based rainfall monitoring; and (ii) hotspot monitoring¹¹ using satellite data input, and dissemination of hotspot data to national agency web sites and others. These systems need to be enhanced through improvement of validated data sets, shift to real-time data collection, especially from fire-prone peatlands; upgrading of fire risk prediction products including Fire Danger Rating System (FDRS) and hotspot monitoring and notification (see www.kebakaranhutan.or.id); and most importantly the development and implementation of standard operating procedures (SOPs) for specific fire control measures once a fire has started.

52. The Project will work to improve the analysis and dissemination of timely information, including data from automated weather stations and weather satellites for data generation to run the FDRS. The Project will use near real time fire hotspot data from analysis of NOAA and MODIS satellite data sets. Also, analyses using VIIRS and recently launched satellites that have increased resolution capacity (including a thermal imaging system), down to 30m pixels (compared with 1000 m for NOAA) will be explored.

53. Agencies slated to be involved in this work include the ASEAN Specialized Meteorological Centre in Singapore, the Indonesian Agency for Meteorology, Climatology and Geophysics (BMKG), the Indonesian Space Agency (LAPAN), and IPB who has developed a fire risk projection system. SMPEI will work to enhance the use and dissemination of such information for fire prevention and control at local level through the use of mobile technology, social networking, radio and TV.

54. SOPs for the use of the FDRS at local level, and demarcation of hotspot geospatial coordinates will be developed and disseminated. This will increase the effectiveness of changes on the ground of community and company activities to prevent fires as well as assist to create the procedures of what to do when a fire occurs. Feedback will also be generated from local levels to enhance the accuracy of the prediction and monitoring systems. SMPEI via the creation of an IFM and linked CBFiM framework will also work to better clarify jurisdictional responsibilities for fire management and provide training at local levels on SOPs and the use of the FDRS fire hotspot, fire risk assessment and yet to be developed monitoring tools.

55. The key activities are the following:

¹¹ ASEAN Haze Action Online: <http://haze.asean.org>. BMKG have a hotspot interface along with ASMC and the newly created Si Pongi and KMS web site hosted by MoEF along with the Global Forest Watch web site. It must be stated that all these hotspot web sites use the same satellite data from NOAA and MODIS and the only possible variability is via the interpretive algorithm. While some attempts to confirm whether hotspots are real or not has taken place, better methods and systems are needed.

- Validate hotspots and improve fire detection using the following technology options in collaboration with BMKG, LAPAN and partner agencies through the following possible measures: i) airborne (plane or drone based) thermal imaging (FLIR) cameras, ii) high resolution satellite based thermal imagers (a newly launched satellite is delivering 30m resolution data, including a thermal imager, but as yet this is untested in Indonesia); iii) satellite based application from VIIRS satellite which can measure live and smoldering fires down to a 50-100 m accuracy on-ground; and iv) Feedback from site-based observers and fire suppression teams.
- Refine algorithms and tools for hotspot detection, and also, enhance warning and monitoring reports using hotspots (linked to MOEF Sipongi system) as well as FDRS warning tools in support of work by BMKG and MOEF Land and Forest Fire Directorate (LFFD) - measures include local language smartphone apps and SMS notifications, social media, and print and electronic media.
- Develop and refine Standard Operating Procedures (SOPs) in collaboration with LFFD for response at national, provincial and district levels to different FDRS warning categories and hotspot occurrence and density. Disseminate and test SOPs at different levels and with different agencies.
- Develop a guideline and information/training materials on Integrated Fire Management. In order to introduce the Integrated Fire management concept it will be necessary to develop national guidelines and training materials on the system in partnership with key national stakeholders led by the LFFD.

Sub-component 2.2. Assessment of GHG emission reductions from targeted peatlands

56. GHG emissions in targeted peatlands will be assessed against a baseline. The proposed assessment will build on methodologies already being used or developed in Indonesia – such as those proposed for the Monitoring Reporting and Verification (MRV) of emissions under the National REDD+ Strategy. In addition, SMPEI will draw on guidelines recently published by IPCC¹². SMPEI will focus primarily on documentation of activity data (i.e. area of drained, burnt or rewetted peatland, etc.) for the project areas and support for refinement of emission factors linked to planned project activities (i.e. rewetting, fire prevention, improved water management). This can help verify emission reductions as a result of the Project as well as contribute to ongoing work by the REDD+ Unit of the MOEF and other agencies to develop appropriate MRV methodologies for peatlands (especially for fire-related emissions).

57. The following key activities will be pursued:

- Organise technical workshops bringing together key players involved in GHG emission MRV work for establishing an appropriate MRV methodology for peatlands (especially for fire related emissions) suitable for use in the target pilot sites. GHG monitoring will include two main aspects: (i) refinement of peatland GHG assessment methodologies to measure change over time; and (ii) monitoring of encroachment and forest cover loss in the Sungai Kampar-Indragiri PHU (which is an input component to the GHG monitoring) via the use of airborne or satellite sensors. Considerable work has recently been put into forest cover monitoring as part of the One Map initiative¹³, and this Project aims to leverage that knowledge.

¹² The IPCC has issued (with inputs from APFP) a 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands, which provides guidance for quantification of GHG emissions from peatlands. The report provides “updated emission factors and methods for both drained and rewetted organic soils including for off-site carbon dioxide (CO²) emissions via waterborne carbon losses. Guidance on methane (CH⁴) emissions from rewetting of organic soils, ditches on drained inland organic soils and CO², CH⁴ and carbon monoxide (CO) emissions from peat fires”.

¹³ The Indonesia one-map policy, as stipulated in Law No. 4/2011 on geospatial information has been implemented to help resolve disagreements resulting from the use of different data and maps that often cause land disputes and overlapping permits for plantation and mining operations. The process is led by the Geospatial Information Agency (BIG) and includes preparation of a basic geospatial information map (IGD) alongside several

- Develop a GHG emission baseline to determine current and projected emissions, and undertake an ex-post assessment of pilot sites to measure changes in fire occurrence and extent (fire scars/hotspots), in water table level in protection (through rewetting and canal blocking) and utilization zones (through enhanced water management), in rate of clearing and extraction of forest resources and peatland rehabilitation. Compute and document changes in GHG emission and trends.

Component 3: Landscape level sustainable management of peatlands (GEF grants US\$ 1.68 million and IFAD country grant US\$ 0.495 million)

58. Riau Province in Sumatra covers 8.8 million ha, of which about 4 million ha are peatlands. The most serious peatland degradation and fires in recent years have taken place in Riau. Riau is undergoing rapid development for agriculture and plantations. Since 2011, new permits for conversion of peatlands and intact forests to oil palm and forest plantations have been banned. Still, more than 150,000 ha of peatland burnt in June 2013 in northern Riau due to medium and small-scale operations and illegal land conversions. The national government has recently been successful in legal action against one company in violation of the moratorium; however, such action takes significant time and effort.

59. The large-scale violation of the moratorium is connected to the lack of capacity or political will at district and local levels to enforce the moratorium. In order to address this problem, it is necessary to work at both district and sub-district levels through support to fire prevention and alternative development strategies which maintain the integrity of the peatland hydrological units. This needs to be implemented in partnership with central, provincial, and local government, private sector, and local communities. Support is also needed at sub-district and village levels to establish fire/haze free villages, where fire is no longer used for land clearing and where there is local capacity to prevent and control fires that occur.

60. The Sungai Kampar-Indragiri Peatland Hydrological Unit (SKI-PHU) covers an area of about 850,000 ha in southern Riau Province. The current management practice is more sectoral, and this is one of the main challenges to tackle in order to reduce continuing degradation of the system. The project aims to introduce a multi-stakeholder integrated approach to peatland management, including the development of common strategies and master plans for the entire peatland hydrological unit. Using the PHU as the unit of operation allows for a landscape approach to ecosystem management based land-use zoning that includes, improved water management, biodiversity conservation, land rehabilitation, sustainable natural resource use, and sustainable livelihoods. Lessons learned from the APFP and other project experiences on integrated peatland management (e.g. community-based management) will guide the establishment of demonstration sites for facilitating large-scale protection and rehabilitation efforts.

61. For successful integrated sustainable peatland management, multi-stakeholder partnerships need to be established bringing together the private sector, government administration and local communities with clearly defined rights, roles and responsibilities. Although the private sector and local communities are responsible for the clearance, burning, and degradation of the region's peatlands, there are opportunities to engage their active participation in sustainable peatland management through development of appropriate controls and incentives to encourage wise stewardship of the peatlands. Lessons learned from these experiences will be documented to inform scaling up at the regional and national levels. CSOs, including Mitra Insani Foundation, Jikalahari (Riau Forest Protection Network), Roundtable on Sustainable Palm Oil (RSPO), and the Global Environment Centre (GEC), will help build partnerships between the private sector, local administration, and communities in the SKI-PHU, and support capacity building for sustainable peatland management, fire prevention, community development, and conservation and rehabilitation of intact peatlands.

62. Furthermore, a heightened focus needs to be placed on fire prevention to encourage the development and implementation of this mostly overlooked feature of fire management. Integrated Fire Management (IFM) and Community-Based Fire Management (CBFIM) plans and activities that leverage

thematic maps (IGT) that comprise a national land-cover map. Basic maps were released in December 2014 – but additional work is underway to complete the process.

the core features of "prevention, preparedness and response" will be developed in a participatory manner. IFM and CBFiM will link horizontally and vertically across the landscape. At the *Kabupaten* (District) level a Fire Management Coordinating Committee will be supported for bringing together the land and disaster management agencies, communities and private sector for facilitating the sharing of knowledge, capacity, resources, and training for achieving a coherent response to fire management. An IFM plan will be developed at the sub-district (*Kecamatan*) level as this is the right scale with areas of about 100,000 - 300,000 ha per sub-district. Village (*Desa*) level CBFiMs will also be developed, which will facilitate the integration of community knowledge and input to orient and ground-truth the IFM. The IFMs will be aggregated for inclusion in the integrated sustainable management plan (ISMP) for the SKI-PHU.

33. The outcome from the Component would be a *functioning multi-stakeholder partnership established for integrated sustainable management of Sungai Kampar - Indragiri Peatland Hydrological Unit (SKI-PHU) and enhanced community livelihoods*. The scaling-up strategy will be based on the Integrated Management Plan prepared for the PHU as well as effective demonstration of Community-Based Fire Management (CBFiM) plans at the village levels, which are scaled up to sub-district Integrated Fire Management (IFM) Plans, which after successful demonstration can be replicated in other districts and provinces.

Sub-component 3.1. Develop and implement an integrated sustainable management plan for Sungai Kampar - Indragiri Peatland Hydrological Unit (SKI PHU) (funded by GEF grant)

34. About half of the peatland in SKI-PHU has been developed for oil palm, coconut and pulp and paper plantations, and other areas are under community agriculture. The amount of degradation and fires in the peatlands is less than in the northern portion of Riau Province, but the trend of such problems is increasing as more areas are coming under development. Based on a number of recent stakeholder dialogues, the PHU has been identified as one where there is high potential to establish a partnership between the district administration, private sector plantations, and the local communities to promote sustainable peatland management approaches. Some large regional plantation companies, including Sinar Mas, APRIL, and Sime Darby, which have a combined area under management of more than 250,000 ha in the PHU, have agreed in principle to join such a partnership to enhance peatland management and prevent fires and degradation. In addition, a successful model of village development without use of fire has been pioneered in Harapan Jaya Village in INHIL the southern portion of the PHU through the APFP/SEApeat project.

35. The following key activities will be undertaken:

- Develop and implement an Integrated Sustainable Management Plan (ISMP) for SKI-PHU through undertaking the following sub-activities: i) Ecological assessment of peatland areas and preparation of zoning maps for protected peatland areas and use; ii) Classify the degradation status of the PHU, and define rehabilitation actions under the different categories of degradation (including rapid assessments to identify priority areas for protection and rehabilitation¹⁴ and development of a protection and conservation plan); iii) develop an overall hydrological management plan for the SKI-PHU through the articulation of sub-plans; and iv) develop sub-plans for integrated fire management (see points below), and community livelihood development (see sub-component 3.2). The approach of developing sub-plans is to ensure full buy-in from the respective sector departments in charge of water, land, and forests. The articulation of sub-plans will be done collectively to facilitate synergy building and to clearly define roles and responsibilities of each agency.
- Develop and implement CBFiM plans (haze-free village plans) in targeted villages based on the following approach: a) Scene setting - introductory meetings with local government, stakeholders and community participants to determine the response of residents, private sector

¹⁴ Spatially targeting peatland restoration practices is important because the same restoration technique/strategy may not produce the same outcome in all locations due to the biophysical, social and economic characteristics of the peatlands. A spatial analysis can assist in prioritizing the peatland areas that can be targeted to maximize the delivery of ecosystem services (or global environmental benefits), reduce costs and maximize benefits, across multiple stakeholders. The following paper outlining a framework for spatially assessing peatland restoration is an important reference: Glenk, K. et al. A framework for valuing spatially targeted peatland restoration. *Ecosystem Services*. 09/2014; 9

and government to fire; b) Fire, vulnerability and livelihood assessment - discussion of fire and livelihood assets, and impact of fire on capital assets and livelihoods (develop calendar related to fire, historical context of fire and loss of capital assets); d) Village mapping - village transects for identification of economic, physical and natural assets, identification of hot spots and vulnerable areas, and validation of maps; c) Establishing/strengthening village fire prevention groups, building on existing MPAs or other related groups; and d) Deploying government and private sector incentive schemes (see sub-component 3.2 for more information related to group formation).

- Develop and implement IFM plans in target sub-districts through the merger of CBFiMs and hydrological sub-plans, as well as, through developing a mechanism for pooling fire prevention/suppression resources from the various departments, operationalising FDRS and hotspot monitoring early warning systems and SOPs, enhanced measures for fire prevention and control by all private companies in PHU including support for fire prevention and control on adjacent community lands, and activating government and private sector incentive schemes. Also, support the establishment and/or operationalization of district level Fire Management Coordination Committees for harmonised fire prevention/suppression action.
- Develop and test public and private incentive mechanisms to be deployed at targeted sub-district and village levels for sustainable peatland management and fire prevention. Monetary incentives could include increased finances for community development funds for haze-free villages, conditional cash transfers to fire prevention groups, better paid plantation labour opportunities, interest free investment credit for transitioning to peat-friendly agricultural practices or establishment of off-farm business ventures, establishing value chains with a premium for haze-free products, and student scholarships, to name a few. Non-monetary incentives could include a monthly basket of food for meeting food security needs during the transition to peat-friendly agriculture systems, firefighting equipment, national awards to haze-free villages etc.
- Undertake forest protection and rehabilitation measures within PHU, including: i) enhanced protection of 120,000 ha of Kerumutan Wildlife Reserve (including increased aerial and ground patrols, partnership with local communities on forest protection, control of illegal logging, development of ecotourism); ii) improved protection of estimated 150,000 ha of remaining forest in PHU protection zone (existing forested land to be protected under PP71); iii) coordinated management of conservation areas within separate industrial tree plantation concessions; and iv) rehabilitation of 3000 ha of abandoned Acacia plantation back to natural forest adjacent to the conservation zones (including removal of Acacia, blocking of drainage canals, support for natural regeneration and replanting of indigenous species, fire prevention and monitoring)
- Support the development and implementation of best management practices (BMPs) including PP71 requirements by oil palm, pulp and paper and coconut plantations (large scale and smallholders) within PHU. Specific co-investments will be provided to the following: inventorying all land and concession owners in the PHU; development by each concession of operational management plans for all management entities within PHU; develop pilot plan for community owned plantations; review of plans by experts and approval by government; implementation by land owners of water management, fire prevention and other measures in plans; monitoring and evaluation of implementation of plans; facilitate compliance audit of the responsible parties (private sector and local government) within PHU (including within protection and development area) in managing peatland area.
- Develop in partnership with local government and conservation CSOs viable opportunities for community engagement in peatland and forest conservation and management. Investments will be made for establishing and training (on different peatland management activities¹⁵) of community forest protection and rehabilitation groups to work in various areas including forest conservation areas managed by industrial tree plantation concessions, and to be supported through incentive schemes discussed above. Exposure visits will be undertaken to APFP demonstration sites for facilitating replication of good practice on canal blocking and peat

¹⁵ E.g. patrolling conservation area boundaries, reporting on illegal logging and harvesting as well as land clearing and encroachment; blocking drains and canals, establishment of forest nurseries, forest rehabilitation and maintenance

rewetting and agroforestry activities in Sepahat, Tanjung Leban, Pelintung, Guntung, and Mumugo and peer-to-peer learning. Community groups will be supported to establish financing mechanisms to be utilized for peatland rehabilitation, fire prevention and livelihood development.

- Operationalise the MRV methodology developed under Sub-component 2.2 through, among others: i) monitoring changes in forest and land cover through remote sensing and periodic aerial surveys; ii) implementation of water level monitoring system and management (0.4 m below surface) through installation and data collection from in-situ piezometers and other instrumentation; and iii) monitoring effectiveness of management measures.

Sub-component 3.2: Community livelihood from sustainable peatland management enhanced (financed primarily by IFAD country grant)

66. Lessons learned globally about practices of peatland management confirm that it is important for communities to gain social and economic benefits for managing peatlands sustainably. As such, it is important to develop peat-friendly sustainable livelihoods and incentive mechanisms that facilitate the sharing of benefits from improved peatland management. Subsequent to the merger of the Ministry of Environment with Forestry (MOEF), a greater emphasis has been placed on working with communities to avoid land clearance using fire and to adopt more peat-friendly livelihoods. Preliminary economic and financial analysis indicates that alternative crops and green employment opportunities provide good incentives for facilitating a shift away from practices that contribute to peatland destruction. For example, in comparison to the highest return from current agriculture (maize) generating IDR 5 500 250 (at current exchange rates US\$395), the alternative chilli crop provides a return of IDR 6 420 000 (US\$462). With regard to green employment opportunities such as canal blocking, the wage rate is higher considering the semi-skilled nature of the work as opposed to farm labour. It is estimated that for undertaking canal blocking for the PHU a total of approximately IDR 14.4 billion (US\$1,034,762) can be generated in wages (see Appendix 8 for more details).

67. The significant difference between locations and communities in terms of peatland structure and depth, local capabilities, distance to markets, transport costs etc, are key criteria that need to be considered for facilitating a successful shift to peat-friendly livelihoods. In consideration of the site-specific nature of the alternative income generating activities, for each of the target villages, a "village profile" will be developed including an analysis of potential peat-friendly income generating activities. The analysis will focus on on-farm peat-friendly crops and agricultural systems, poultry and livestock, and off-farm activities such as non-timber forest product (NTFP) collection such as gum from Jelutong (*Dyera costulata*), wild honey, mushrooms, reeds, rattan and fruits, to name a few. Also, further analysis will be undertaken to map out green employment opportunities and capacity building needs for ground-truthing remote sensed data, canal blocking, tree seedling nursery establishment, forest rehabilitation, basket weaving, broom manufacture, and sewing etc. Considering IFAD's experience in working with smallholder farmers, an IFAD grant of US\$495,000 will support the development of sustainable peat-friendly livelihoods.

68. The Center for International Forestry Research (CIFOR) will implement the IFAD grant bringing with them the following strengths: a) the capacity to link scientific information and cutting-edge knowledge on peatland management and fire management practices to community livelihoods development; b) proven experiences in working with various NGOs and well-established working relationship with the central and local governments; c) technical specialties in agro-forestry and peatland ecosystem management to guide the selection, piloting and expansion of income-generating activities on peatlands; d) experiences in developing landscape-based livelihood models; and e) proven strong experience in knowledge management to generate materials for capacity development, lessons learned, best practices, and policy dialogue and learning related to peatland-based livelihoods development. In Riau province, CIFOR was the only institute identified to fulfil the above mentioned criteria (for more detail, see appendix 9. IFAD Small Grant Design Document for Haze Free Sustainable Livelihoods Project).

69. The main objectives of the IFAD country grant are the following:
- To support communities in identifying and accessing livelihood activities that meet local development needs, comply with available government programs and policies, and

integrate private companies' land use management plans such as community livelihood plantation.

- To provide technical services and knowledge management of livelihood options and facilitating community group formation, including Women's Self-Help Groups (SHG), on livelihood activities
- To enable community groups working on livelihood activities to actively participate in multi-stakeholder partnership processes involving local government, private sector and communities

70. The IFAD grant will provide the following key activities in support of SMPEI:

- *Development of models for sustainable on-farm and off-farm income generating activities for adoption by households in target villages:*
 - Socio-economic profiling of villages to identify income sources, poverty levels, constraints for livelihood development, community structure, organization and facilities
 - Documentation of impacts/conflicts (if any) with adjacent plantation or development activities as well as nature of cooperation/community development activities with plantation companies
 - Identification of existing and planned development activities to be supported by funding from District, Ministry of Villages or other sources
 - Review of existing and potential livelihood activities related to sustainable peatland management
 - Models and demonstration plots/activities for: i) on-farm community options that synergize with peatland conservation and restoration strategies; and ii) off-farm income generation focusing on creating green jobs related to peatland conservation and rehabilitation efforts, such as training in construction of canal blocks, seedling nursery management, repair of fire management equipment, and ground-truthing for hydrogeological mapping, as well as, handicraft production and ecotourism
- *Community-based producer organizations and business developed and capacitated:*
 - Develop value chain analyses of potential peat-friendly commodities linked with community on-farm and off-farm activities, and a strategy for community uptake of these commodities.
 - Form Common Interest Groups (CIGs) and Women's SHGs for enabling access to conditional credit via a revolving fund capitalized by the private sector financing committed for SMPEI, and/or access to social forestry licenses (HKM and or HTR) .
 - Training and business partnership facilitation with community-based producer organizations. The participation of these organisations in the SMPEI project's multi-stakeholder partnership platforms will be facilitated.
 - Produce knowledge products such as a web portal, videos, policy briefs, newsletters, guidebooks and scientific articles (the KM work will be complementary to that of the SMPEI).

71. Groups will be formed by women and men coming together for pursuing a peat-friendly income generating livelihood activities of common interest. At least 50% of the Common Interest Groups (CIG) will be formed as women's self-help groups (SHG) to ensure that the specific interests of women are served as well as for initiating a process of empowerment. The Common Interest Groups (CIG) size will not exceed 30 members for maintaining cohesiveness and each member will be required to pay a nominal monthly membership fee. The Community Facilitators will lead the process of forming the CIGs, and the CIGs will be incentivised through the provision of collateral-free low-interest credit via a revolving fund made available to the CIG. The revolving funds will be initially capitalised with co-financing committed by the private sector to SMPEI, and will be administered by a bank or micro-finance institution (MFI) for transfer of funds to the CIG. The CIG will provide credit to individuals of the group and will ensure repayment based on agreed upon terms. Each CIG revolving fund will be capitalised with US\$1000 and the funds will be held in an account in the bank or MFI. The borrowing ceiling will be US\$300 per member per 12 months; subsequent loans will be provided upon 100% repayment of the previous loan based on the lending terms. Three hundred (300) CIGs will be initially established and

the project will work to mobilise a larger number of CIGs through tapping into additional Corporate Social Responsibility (CSR) budgets.

72. All CIG members shall attend a monthly meeting to review loans, repayment and administration. Loan appraisal and approval will be delegated to a Loan Committee comprised of the Chairperson, Secretary and Treasurer and four members; this Committee will have an 18 month tenure. All members will undergo financial literacy training and the top three scorers of the financial literacy exam will be assigned to the posts of Chairperson, Secretary and Treasurer respectively. The process will be repeated at the end of the 18 month period for selection of the next Loan Committee. CIG members will be eligible to borrow at any time during the year based on the provision of a basic business plan. Training will be provided to CIG members on developing peat-friendly business plans and the group will have an opportunity to review each business plan for providing advice and comments (the Project Implementation Manual [PIM] will detail the criteria for assessing whether a business plan is peat-friendly). The training needs of the Women's SHGs will be assessed during the village profiling exercise and specific trainings will be provided, including on handicraft production, tailoring, food processing, basket weaving etc.

73. CIFOR will work under the overall guidance of the SMPEI executing agency, which is the Directorate-General of Pollution Control and Environment Degradation, Ministry of Environment and Forestry and under the direct coordination of the Project Management Office headed by Director of Peatland Degradation Control. The IFAD grant and SMPEI will have different grant agreements; the SMPEI agreement will be between IFAD and the Ministry of Environment and Forestry, and the IFAD grant will be between IFAD and CIFOR. The agreements will cross-reference each other showing how they are part of an organic whole. Furthermore, the Annual Work Programme and Budget (AWPB) of the IFAD grant will be jointly developed together with the SMPEI AWPB to ensure full integration and harmonisation between them. The harmonized AWPB will be approved by the National Steering Committee. Supervision and implementation support will be undertaken jointly, while CIFOR will be responsible for delivery of sub-component 3.2 activities. Although CIFOR reports directly to IFAD it will develop its financing and narrative reports together with the SMPEI for joint submission to IFAD.

D. Country eligibility, country ownership and drivenness

74. The broad benefits of the SMPEI support the two GEF focal areas (FA) of Land Degradation (LD) and Climate Change (CC). Within the LD FA, the project is directly related to Strategic Objective 3 through strengthening the policy and institutional framework for initiating and promoting integrated management and rehabilitation of peatlands and avoiding the degradation of peatlands. With relation to CC, Strategic Objective 5 will be operationalized for engendering: a) good management practices in LULUCF adopted both within the forest land and in the wider landscape; b) restoration and enhancement of carbon stocks in forests and non-forest lands including peatland; and c) GHG emissions avoided and carbon sequestered.

75. The Project will link to the focal area of SFM/REDD to achieve multiple benefits from the improved management of peatland forests. The Project provides an opportunity for forest fire management, enforcement of forest and peatland-related policies, and biodiversity value improvements within the scope of SFM/REDD-1. The establishment of an enabling environment to reduce GHG emissions from deforestation and forest degradation and to enhance carbon sinks from LULUCF activities underpins the SFM/REDD-2 objective.

76. The issuance of the National Regulation PP71/2014 and the merger of the Ministries of Environment and Forestry are steps in the right direction. The fire and related haze problem is both a national and regional priority with the new President. H.E. Joko Widodo, and the Minister of Environment and Forestry both making significant statements and also regularly visiting peatlands in Riau province. The government's recent (2015) arrest of seven corporate executives in connection with illegal forest fires shows a shift in the Government's approach and demonstrates seriousness previously unseen. Thus, significant national ownership exists, and the proposed Project would support and facilitate government actions both in Riau province and also nationally.

E. Lessons Learned

77. IFAD operations: Many lessons have emerged from IFAD's considerable implementation experience in Indonesia. Two country programme evaluations were conducted in 2004 and 2012 focusing on the best approach to deal with rural poverty, investment decisions, partnerships, targeting, sustainability, and generating impact. Some of these lessons include:

- (a) **Formation of Farmer and Fisheries Groups:** The formation of groups has been an important IFAD strategy in Indonesia, but for the future this strategy should be even more focused on smallholder farmers and fisher folk;
- (b) **Focus on Agriculture and Fisheries Sector:** IFAD can enhance its impact by an even sharper focus on agriculture, livestock, and the fisheries sectors;
- (c) **Community Infrastructure:** When supplied in a cost-effective way, public goods will generate higher returns than investments in private inputs because they will create positive externalities for the economy as a whole;
- (d) **Rural Finance Innovations:** IFAD can play an innovative role by partnering with commercial banks, MFIs, and other types of financial institutions and facilitate links with smallholder producers for accessing a range of financial services including savings, loans, and transfer payments;
- (e) **Participation of the private sector:** IFAD-financed projects should further facilitate links between small producers with the full spectrum of private sector players in the different agriculture crops and the fisheries sector;
- (f) **Recognition of the role of NGOs:** NGOs can play a useful role in organizing smallholder producers and local communities and have been especially important in organizing women's groups; and
- (g) **Participation of women:** Self-Help Groups enhance the role of women, and in this regard the cooperation with NGOs is critical.

78. Specific lessons learned on peatland management. In the Southeast Asia region the IFAD/GEF ASEAN Peatland Forests Project (APFP) was executed between 2009 and 2014¹⁶. It included pilot activities in Indonesia. The main lessons from that experience included:

- (a) The APFP project experience showed that integrated peatland management is a complex undertaking involving the interest and inputs of many different stakeholders (e.g. local administration, technical agencies, land owners, local communities, NGOs). In this regard, an appropriate and effective framework for cooperation and coordination among stakeholders is critical to optimize the use of resources and efforts. As such, an integrated multi-stakeholder consultation approach needs to be adopted right from the inception to ensure there is buy-in from all actors to work within an agreed upon cooperation framework.
- (b) Multi-stakeholder engagement with interested partners especially from private sector is crucial in steering good management practices include fire preventive measures and rehabilitation of degraded peatland areas where private sector collaborated with national and local government agencies in providing support to community fire brigade in terms of training and equipment, seed grant for integrate planting of cash-crops and trees to generate operation cost and construct canal blocks to raise water table in the degraded peatland areas.
- (c) Capacity building and institutional strengthening is needed for sustainable peatland management on fire prevention, suppression and control; good agricultural practices on peat including food processing by women group; alternative livelihood options for the community living within the buffer zone, etc. The Terminal Evaluation Report of the APFP highlighted the need to further strengthen capacity and institutional frameworks for achieving sustainable peatland management.
- (d) Focus Group Discussions with specific groups of technical personnel to share experience and knowledge with national, provincial and local level officials as well as amongst the

¹⁶ The APFP was working at the macro scale, enhancing capacity and stakeholder engagement, developing plans and strategies, and documenting best management practices. Its focus was primarily on biodiversity and land degradation issues. In Indonesia it worked simultaneously in three provinces and several pilot sites.

- technical groups working on peatland matters. The outcomes of the discussions were shared with national and local implementing partners
- (e) Community development programmes and rural finance are important for sustainable management of peatlands. Construction of public infrastructure and alternative livelihoods programmes are key incentives.
 - (f) Water management at landscape level is a critical factor in peatland management.
 - (g) Identification of best practices on sustainable peatland management in forestry and agriculture sectors, and potential peatland areas for ecotourism for further development to support national and provincial economies.

79. In terms of techniques for sustainable peatland management the APFP piloted a number of canal blocking models to determine the best value-for-money options. These models serve as basis for replication in similar contexts. Likewise, the following peat-friendly practices proved successful and will be considered for replication under SMPEI:

- (a) A traditional method in Java, Indonesia, where population density is high and space for planting limited, *Sogas* farming is an intensive method for growing crops on alternately raised beds and drainage troughs in peatland areas. Crops are grown on the raised beds while aquaculture practiced in the troughs; rice too could be grown in the troughs.
- (b) Buying Living Trees System (BLTS) is an approach pioneered in Indonesia that engages local communities in reforestation activities over a period of 4 – 5 years for ensuring optimal seedling survival. An area for reforestation is demarcated and individuals or households are assigned subplots in the reforestation zone. Each participating member can choose a mix of tree species for planting his/her subplot however with no land clearance and preparation by fire. Every 3 months the participating member together with a certification/checkbox counts the number of seedlings and a payment is made according to the number alive. Dead seedlings are replaced and can be accounted for in the next round of verification. This approach proved effective in peatland forest restoration and is being replicated in the Philippines through a national environment-based conditional cash transfer programme via a collaborative approach of the Department of Interior and Local Government, Department of Environment and Natural Resources and the Department of Social Welfare and Development.
- (c) A successful "haze-free" village development model was pioneered in the Harapan Jaya Village in INHL, the southern portion of the PHU under the APFP/SEApeat project. This was achieved through the establishment of partnerships, joint strategies and implementation for engaging different stakeholder groups in a common endeavour. The head of the district administration (*Bupati*) has requested for this model to be scaled up to other villages.
- (d) Under the Green Contract in U Minh Thung National Park (UMTNP), Viet Nam, landless settlers were given a temporary lease on a 5-hectare plot of land in the buffer zone of the peatlands and a US\$700 performance-based grant disbursed in two instalments. Three hectares are designated for crops or any other agriculture development activity including fish-rearing and livestock, while the remaining 2 hectares are reserved for planting *Melaleuca*, a native tree used as timber, furniture and fencing. Under the APFP this approach proved highly successful.
- (e) Seedling buy-back system developed for community group at North Selangor Peat Swamp Forest. The community group formed Friends of North Selangor Peat Swamp Forest (*Sahabat Hutan Gambut Selangor Utara*). The group was supported by the APFP and SEApeat projects with small grants to set up nurseries at village compounds and seedlings were purchased for government and Corporate Social Responsibility (CSR) rehabilitation/replanting activities.

80. Furthermore, a significant amount of research/knowledge has been accumulated globally on peatland restoration and rewetting. The common methods and strategies for restoration can be confirmed in several national and international peatland restoration guidelines including those of the

UK¹⁷, Canada¹⁸, Ireland¹⁹, International Mire Conservation Group (IMCG)²⁰, the Ramsar Convention on Wetlands²¹ and RSPO²². The experience of the APFP project validates many of the techniques and approaches promoted in these guidelines. Under the APFP and the subsequent APSMPE - demonstration sites for peatland rehabilitation have been established in Indonesia (Mentangai River Peatlands, Central Kalimantan), Malaysia (North Selangor Peat Swamp Forest), Thailand (Pru to Daeng) and Viet Nam (U Minh Thoug). Experiences and lessons learned from these sites can be used to support design of rehabilitation measures in SKI-PHU)

F. Global environmental benefits

81. *Climate Change:* The Project will contribute to significant reductions in GHG emissions from targeted peatlands, through enhanced water management within the hydrological unit and adoption of integrated fire management. According to estimates of carbon emissions from drained peatlands, if a 10% reduction of drained area could be achieved in Riau province, a reduction of CO₂ emissions between 10-57 million tonnes annually could be achieved. Currently, the emissions from the degradation of peatlands in Indonesia are estimated to be around 1.5 - 2 billion tonnes annually due to drainage of peatlands and decomposition of peat as well as from peatland fires. This constitutes a significant percentage of Indonesia's annual GHG emissions and contributes to mark Indonesia as the third largest GHG emitter following China and the USA. In 2009, the Indonesian government pledged to reduce its emissions to 26 percent below the business-as-usual levels by 2020, and as much as 41 percent, if international funding support was forthcoming. The SMPEI will help the country achieve such targets by mitigating at least 14 million tons of CO₂e through improved peatland management and at least 30% of reduction in the area burned in the target site compared to the baseline in 2014-15 (see appendix 7. GHG emission reduction benefits assessment).

82. *Land Degradation and Sustainable Forest Management:* The key global environmental benefits will arise from the protection, rehabilitation, and sustainable management of key peatland areas which play a critical role in the economy and ecology by providing timber and non-timber products, regulating water supply and flood control, supporting livelihoods of community groups living in and adjacent to the peatlands. The project will contribute to zoning of 1,000,000 ha of peatlands in Indonesia for integrated sustainable management including at least 600,000 ha of peatlands in Riau under integrated peatland management regime.

83. *Other global environmental benefits:* The tropical peat swamp forests of Indonesia feature some of the highest freshwater biodiversity of any habitat in the world and are home to the largest remaining populations of orangutan, among other fauna. Likewise, there are various rare flora that are under threat. Rehabilitation and sustainable management of these globally important peatlands will enable them to support these species over the longer term. Preventing the degradation of peatlands and encouraging rehabilitation, conserving globally important biodiversity, and taking action to promote sustainable land and forest management will contribute towards the fulfillment of Indonesia's obligations under the CBD (Aichi targets), UNCCD (Land Degradation targets) and UNFCCC (Emission Reduction targets).

84. The M&E and KM Officer will be in charge of monitoring incremental global environmental benefits according to GEF indicators and report to IFAD by filling in and submitting GEF tracking tools ahead of the mid-term review and terminal evaluation missions.

G. Linkages with other related initiatives

¹⁷ Guidelines for monitoring peatland restoration <http://naturalengland.etraderstores.com/NaturalEnglandShop/TIN097>

¹⁸ Peatland Restoration Guide: http://tourbehorticole.com/wp-content/uploads/2015/07/Peatland_Restoration-e.pdf and Restoration Operation Manual: http://tourbehorticole.com/wp-content/uploads/2015/10/guide_restoration_EN_web_low.pdf

¹⁹ Guidelines for peatland restoration: <http://www.qpani.org/documents/PeatlandRestorationguidelinesfinal.pdf>

²⁰ IMCG Global Peatland Restoration Manual http://www.imcg.net/media/download_gallery/books/gprm_01.pdf and Catalogue of Restoration Activity http://www.imcg.net/media/download_gallery/books/gprm_02.pdf

²¹ RAMSAR Guidelines for Global Action on Peatlands: http://archive.ramsar.org/cda/ramsar/display/main/main.jsp?zn=ramsar&cp=1-31-107%5E21389_4000_0

²² RSPO Manual on Best Management Practices for Existing Oil Palm Cultivation on Peat: <http://www.sustainablepalmoil.org/files/2012/11/RSPO-Manual-on-BMPs-for-Existing-Oil-Palm-Cultivation-on-Peat-SMALL-120812.pdf>

85. There are multiple international development projects occurring in Indonesia that are related to peatland and which have potential synergies with the SMPEI. Leveraging these projects will be of benefit to the SMPEI and the other projects simultaneously. A description of the major initiatives is below.

1) World Bank Fire Prevention, Landscape Approach and Social Forestry Initiative

86. The World Bank in Indonesia has been undertaking a Fire Prevention Policy Initiative since October 2014. The draft policy concepts are now available and closely align with the proposed SMPEI in terms of the Peatland Hydrological Unit (PHU), Integrated Fire Management (IFM), and Community Based Fire Management (CBFiM) approaches.

87. The World Bank had been working in collaboration with the BP REDD Agency, but with the recent integration of that Agency with the Ministry of Environment and Forestry, it is now engaging with MoEF. There is clear and positive potential for SMPEI and the World Bank project to collaborate on concepts, designs, and field implementation sites to implement activities.

2) GIZ FORCLIME Initiative

88. The GIZ FORCLIME is a long-term forest governance, management and support program, funded until 2020. The focal areas are:

1. National and subnational regulatory framework (advisory services on forestry and climate policy)
2. Development of Forest Management Units (FMU's)
3. Sustainable forest management in cooperation with the private sector
4. Integration of biodiversity protection and development (Green Economy)
5. Support for training institutions

3) USAID Landscape initiatives (LESTARI project)

89. The USAID LESTARI program is a 5-year, circa USD \$40 million initiative to improve biodiversity conservation and forest management in Aceh, Kalimantan and Papua (and approx. 6 districts). The LESTARI project is aimed at a wide landscape-scale approach and is cross-cutting in technical and governance approaches. LESTARI is working in other provincial locations where peatlands are prevalent, and the SMPEI should provide advice and support into LESTARI's implementation across other provinces and leverage the SMPEI knowledge.

4) EU/ASEAN peatland, fire and haze program

90. The Euro 20 million EU/ASEAN program on Sustainable Utilisation of Peatlands in ASEAN (SUPA) is approved in principle but awaiting formal approval by EU and ASEAN before further design and implementation expected starting 2016. It is a regionally-designed program with a substantive effort planned for Indonesia. The program is aimed at continuing the work initiated with the EU-funded SEApeat project as well as to support the implementation of the APSMPE. It is expected that the areas of sustainable peatland management, biodiversity conservation and institutional support will be a component element of the work program and coincide with the work of SMPEI, but under a wider ASEAN approach, not only focusing on Indonesia. The SMPEI and SUPA will be closely coordinated as they are both operating under the Directorate of Peatland Degradation Control as well as the ASEAN Secretariat/ ASEAN Programme on Sustainable Management of Peatland Ecosystems (APSMPE) to ensure synergy and avoid overlap.

5) JICA Community-based forestry and fire projects in West Kalimantan and Riau

91. JICA has been undertaking a series of longer-term engagements in Community Based Fire Management, focussing on several communities in Riau and West Kalimantan. The extent of their work and success to date is not known. However, JICA has shown a willingness to collaborate under joint workshop initiatives and may become a linkage partner to both share and receive knowledge transfer between projects.

6) Other Relevant GEF Financed initiatives

82. The SMPEI will be coordinated with other relevant GEF Financed initiatives as follows:

- a) **The RIMBA Project (GEF 5 – UNEP-WWF)** is expected to start implementation in 2016 and includes a component on community-based peatland management and rehabilitation in the Berbak National Park in Jambi Province as part of the establishment of an ecological corridor. There is no overlap between the target areas in these projects. Experiences and lessons learned will be shared.
- b) **Integrated management of peatland Landscapes in Indonesia (IMPLI)** (GEF6 –IFAD). This project has been conceptualized as a continuation or program support for peatland sustainable management in Indonesia to complement and scale-up the current SMPEI project. While SMPEI will focus on i) building capacities of relevant national agencies to obtain technical skills, ii) harmonizing and coordinating peatland-related national budgets, iii) enhancing fire prevention methodologies and its system, and iv) showcasing integrated peatland management through the Sungai Kampar-Sungai Indragiri PHU, IMPLI will target i) implementing national regulations based on the relevant agencies' capacities that are enhanced through SMPEI, ii) increasing national budget allocation for peatland management, iii) implementing integrated peatland management in northern Riau province (i.e. Giam Siak Kecil Peatland Landscape) and iv) establishing partnership frameworks for the protected peatland ecosystem areas/reserves through knowledge management and sharing.

In addition the project will coordinate with other ongoing/planned GEF-supported activities including:

- c) **The Strengthening Community Access Reform (SCAR)**, a pipeline project for GEF 6, is being developed by MOEF and World Bank. The SCAR is expected to focus on transfer of large areas of forest lands to community management throughout Indonesia and will benefit from the specialist experience on community-based peatland management in the current project.
- d) **The GEF6 financed Integrated Approach Pilot (IAP)** on Taking Deforestation out of the Commodity Supply Chain identifies palm oil as one of the commodities to be reckoned with. The IAP Program Framework (PFD) document identifies the existing stakeholder dialogue around commodity issues – ex. PISAGRO in Indonesia which is an industry-led initiative and Indonesia Palm Oil Platform (IPOP)- which is a government-led multi-stakeholder initiative- as an instrument to design and deliver assistance to smallholders while quality demand for the end products of palm oil is not high and the lowest prices have long been preferred. Although the current child project descriptions do not specify the exact nature of planned activities in Indonesia it is envisaged that it will relate to the access to finance and markets by the Indonesian Oil Palm industry. It is understood through child projects to be implemented in Indonesia, the IAP aims to i) support agricultural development in suitable production areas conserving forests and safeguarding the rights of forest-dependent communities; ii) increase commitments for and uptake of “reduced-deforestation commodities”; advance the policy tools for reduced deforestation commodities; raise awareness and promote reduced-deforestation commodities in demand markets; and iv) advance transparency and decision support tools to accelerate commitments. SMPEI will look at harmonization between the requirements in PP71 and the ISPO and in addition will work with existing oil palm plantations on peat in SKI-PHU to apply best management practices. While the IAP provides a larger scale effort for sustainable palm oil including peatlands, SMPEI will focus on the specific regulations and technical requirements for sustainable production on peatlands. Thus lessons learned from SMPEI can be fed into the IAP and knowledge products can be shared.

PART III: PROJECT IMPLEMENTATION

A. Approach

83. The approach of SMPEI project implementation is to support the newly established government structures for peatland management, and to establish multi-stakeholder partnerships, particularly through the engagement of private sector and communities to discharge their responsibilities with regard to on-the-ground activities.

94. The main stakeholders (government and non-government institutions engaged in the area of peatland management) and their envisaged roles are summarized in the table below:

The main stakeholders	Envisaged roles
Ministry of Environment and Forestry (MOEF)	Lead national Ministry for management and conservation of peatlands, GHG emission reduction and fire prevention and control; leading project implementation and coordination at national level as well as overseeing refinement of the national regulations on peatlands and their implementation. MOEF was established in October 2014 through the merger of the Ministry of Forestry and Ministry of the Environment. Its creation has led to significantly increased allocation of personnel to work on peatland management through the newly created Peatland Directorate. It has also led to an enhanced and integrated approach to fire management with balanced emphasis on fire prevention and control for land and forest fires (compared to the earlier focus mainly on fire control in conservation areas). MOEF will provide the overall leadership of the project and directly lead components 1 and 2.
Ministry of Agriculture, Ministry of Public Works, Ministry of Home Affairs	Supporting the project implementation and coordination, including responsibility for the documentation and promotion of best management practices Participating in the coordination of peatland related policies, strategies and national workplans and the endorsement of related key decisions through the National Steering Committee.
Peatland Restoration Agency (PRA)	New agency established on 6 January 2016 under the office of the president to coordinate the rewetting and rehabilitation of peatlands with a target of 2 million ha of rewetting by 2020. This agency will work in partnership with MOEF and provincial governments to lead blocking of drainage canals and rewetting of peatlands to reduce peatland fire risk. Initial priority provinces are Central Kalimantan and South Sumatra which was severely impacted by the El Niño linked fires in July-November 2015. Depending on the scale and capacity of the agency and its priorities it is likely to be a key partner in project implementation.
Riau Provincial government	Leading project implementation at the provincial level including facilitation of work at district level and support for implementing Provincial Masterplan on peatlands.
District governments of Indragiri Hilir, Indragiri Hulu and Pelalawan	Facilitating development and implementation of plans for integrated management of the targeted SKI-PHU at the district level and for guiding fire prevention and control at district, sub-district and village level.
Local communities including subgroups such as farmers, women and youth	Key participants in the implementation of the project activities at village and local levels. Project implementation in pilot sites
Private sector	Private sectors partners include forest plantation companies such as Sinar Mas Forestry/APP, and Riau Andalan Pulp and Paper (APRIL Group) which have extensive plantations in SKI-PHU and oil palm plantation companies such as Sime Darby Plantations. The companies will support the promotion of integrated management of peatland areas and establishment of multi-stakeholder partnerships for peatland management. They will also support fire prevention and assistance to local communities to implement zero-burning land preparation and adoption of good management practices for peat and water management.

CSOs	<p>Facilitating the engagement of local communities and development of fire/haze-free villages. Facilitating partnerships and links between community, private sector and local government.</p> <p>Scaling up actions at pilot sites.</p> <p>CSOs include Mitra Insani Foundation, Jikalahari (Riau Forest Protection Network). ARPAK (Aliansi Rakyat Pengelola Gambut) and community based organizations such as village fire prevention and control organizations.</p>
Roundtable on Sustainable Palm Oil (RSPO)	<p>Encouraging the active participation of the RSPO member companies in the project activities and providing tools and guidance for GHG emission reduction through the RSPO Emission Reduction Working Group.</p>
Research institutions and universities	<p>Input and technical support for the national and provincial level activities, Technical support and backstopping to the local agencies and assisting in monitoring, reporting and evaluation.</p> <p>Research institutions will include CIFOR that will implement Sub-component 3.2 as well as other research institutions that will be involved in Component 1 such as the Bogor Agricultural University, University of Riau, ICRAF, Tanjung Pura University, Palangkaraya University, and Forestry Research Agency.</p>
Development cooperation partners and international NGOs.	<p>Key development cooperation partners such as World Bank, ADB, FAO, UNDP, UNEP, GIZ, IUCN, and Wetlands International will be engaged during project implementation for policy discussions, development of GHG emission reduction methodologies and other policy and institutional reform processes.</p>

85. As there are several other projects and programmes related to peatlands (see section F linkages with other initiative), it is important for the project to interact with them and facilitate information flows among them. The project will link with many of them through the framework of the ASEAN Programme on Sustainable Management of Peatland Ecosystems 2014-2020 (APSMPE) which will facilitate linkages and exchange between different projects, programmes and stakeholders working on peatland in the ASEAN region. The national Project Steering Committee and Provincial Coordination Committee will also facilitate linkages with related projects and programmes. At international level links will be established with international organisations such as the International Mire Conservation Group (IMCG), Scientific and Technical Review Panel of the Ramsar Convention, IUCN, Wetlands International, ICRAF and CIFOR.

86. As described in Sub-component 3.2, the implementation of the IFAD country grant will be fully harmonized with the SMPEI. CIFOR, the executing agency of the IFAD country grant will work under the overall guidance of the SMPEI Project Director and in close collaboration with Project Management Officer, Provincial Project Management Office, Project District Unit and Component 3 coordinator. The Annual Work Programme and Budget (AWPB), and inception, supervision and evaluation workshops/missions will be jointly done by the SMPEI PMO and CIFOR. Separately CIFOR will be responsible for IFAD grant management and submit annual financial reports to IFAD, and PMO will be accountable to prepare documents required for GEF and IFAD requirements.

B. Knowledge management, sustainability and scaling-up

Knowledge management strategy

87. Under the leadership of Project Manager and in close collaboration with each Component Coordinator, the M&E and Knowledge Management Officer will be responsible for documenting emerging experiences, lessons and best practices and share them broadly among the government,

project beneficiaries, development partners, research institutes, ASEAN and public entities. The knowledge management strategy of the SMPEI also aims to create and operate an online platform of Indonesia peatland issues and progresses as in verified quantitative and qualitative information for the public, particularly for partner organizations and project beneficiaries. The following knowledge management activities will be conducted through the SMPEI:

- Promotion of PP71 and related sub regulations as well as sustainable peatland management and rehabilitation options to various stakeholders at national and provincial/district level: The contents of PP71/2014 are often not properly understood or misperceived. This activity will support generation of concise and comprehensible communication materials and socialization of PP71/2014 as well as sustainable peatland management and rehabilitation options to various stakeholders including the private sector, community members, other government agencies, CSOs, and research institutes. The tasks will involve: i) experts/sub contracts to prepare information, awareness and training materials (including videos, powerpoints, leaflets and manuals on PP71 and sub-regulations) and publication of materials, iii) organisation of training-of-trainers (TOT) workshops and seminars for different stakeholder groups at national and provincial levels, and iv) organise public and social media campaigns toward best management practices on peatlands
- *Document and share experiences and best practices in relation to sustainable peatland management* on the following topics:
 - Identification, delineation and assessment of peatland hydrological units
 - BMPs for integrated planning of land management and use in PHUs including agriculture, forestry, plantations, conservation, water management, infrastructure development, fire prevention and control.
 - BMPs for Oil palm and Industrial tree plantations including socializing new principles and criteria for sustainable oil palm, RSPO 2013 to small and large growers within the PHU
 - Develop best practice guidelines and provide technical support for community based rehabilitation of peat swamp forest
 - Collate, document and share experiences and lessons learned from current project.
- *Undertake training and Peer Learning on Best Management Practices (BMP) for Sustainable Peatland Management*: This activity will enhance the situation compared to the baseline by focusing on enhancing the capacity and level of engagement of a range of stakeholders (central, provincial and local government, research institutions, CSOs, communities, and the private sector) in the promotion and implementation of regulation PP71 and in the protection of designated peatland conservation zones. To enhance capacity especially for provincial and local agencies, local communities and private sector, the following BMP training will be prepared through:
 - Development of training modules for best practices
 - Establishment and documentation of BMP sites
 - Organisation of peer learning and technical visits
 - Organise Training of trainer (TOT) workshops
 - Targeted training sessions

Sustainability and Scaling-up

99. One of the main innovative aspects of the Project will be the focus on multi-stakeholder engagement in addressing sustainable peatland management in an integrated manner by the government, the private sector, and communities (see Working paper No.2). At the local level, the expertise and resources of the larger private sector plantation companies can help with sustainable management of adjacent areas. Agreements will be signed with the private sector that clearly stipulate respective roles and responsibilities of the Project and any private sector partner to enable a transparent and mutually-agreeable collaboration that ensures that appropriate environmental and social priorities are upheld. The agreements will include shared objectives, proposed activities, roles and responsibilities, timeframe, relationship management protocols, funding arrangement, metrics for monitoring and measuring partnership performance against objectives, rules for the public profile of the partnership, and a grievance mechanism.

99. The introduction of the peatland hydrological unit as the key unit for planning and management of peatlands is critical to ensure the long-term sustainability of the peatlands; the integrity of the units is essential to prevent fires and minimize drying and degradation. Using geo-referenced data will enable a more careful monitoring of the health of the peatland ecosystems and enable rapid response to address vulnerable areas. It is also expected that the Project will help communities to manage land, forest, and water resources in a more sustainable manner. The proposed Project will scale up the proven approaches and technologies, and pilot test promising practices from elsewhere.

100. In terms of sustainability the Project will support and link closely to the implementation of the National Peatland Regulations, National Peatland Strategy, and the National REDD+ Strategy. The experiences and lessons learned under the Project will be maintained and scaled up through the mechanisms established under the project and the National Regulations (PP71). The pipeline GEF 6 project on peatlands (envisaged to start in 2017) will provide specific resources for scaling up the experiences and transferring the approach developed in the SKI-PHU to the Giam Siak Kecil Peatland Hydrological Unit in Northern Riau. Other investments by the national government, private sector and other donors will transfer the experiences to other parts of Indonesia.

101. The Project will engender strong sustainability through increased community participation in sustainable peatland management practices. Partnerships established with certified plantation companies operating in the same districts can help communities obtain certification and facilitate improved management of natural resources. By supporting the management of the ASEAN Programme for Sustainable Management of Peatland Ecosystems (2014-2020), the Project will be provided with opportunities for the scaling up framework at a policy level.

102. The chronic issue of the recurring and worsening haze pollution driven by peatland fires can only be effectively tackled when the sustainable peatland management practices are scaled-up across Indonesia. The most challenging aspect in introducing sustainable peatland management is that the size of areas under fire each year is too huge to divert national strategy and budget away from post-disaster management towards the prevention of fire and peat degradation. However, the following incentives are being shown lately and the project's scaling up approach is evolved in this recognition:

- (a) ~~The newly established Directorate of Peat Degradation Control is mandated to lead peat management by inventorying peatlands in Indonesia, ensuring that clear plans are developed for sustainable management of each hydrological unit, rehabilitating degraded peatlands and monitoring peatland management in both conservation and utilization areas.~~
- (b) ~~The newly established Directorate General of Climate Change Control is leading work to mitigate greenhouse gas emissions from peat and change the previous strategy of fire control to an integrated fire management approach as promoted by this project. This will help ensure more investments are made in the prevention in the future.~~
- (c) ~~The Government of Indonesia is guiding all ministries to take the community-driven approaches in implementation of national policies and programmes.~~

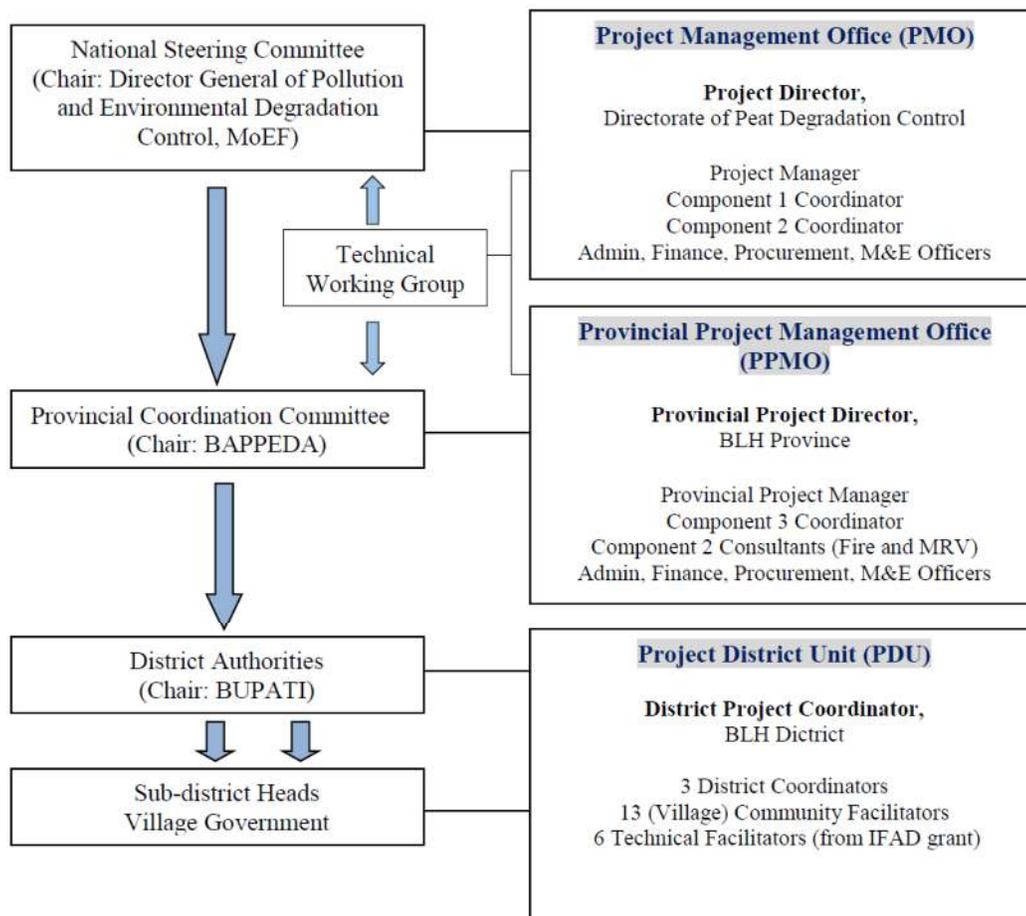
103. Scaling-up pathways: MoEF is looking for success stories in fire prevention, and lessons learned and success stories of small-scale peat fire reduction through fire prevention methods and best management practices promoted through the APFP are recognized as the important first step. GEF-5 was requested to continue to build success stories at district levels so that this could be scaled up at regional level through the GEF-6. The Project will conduct the ground work at the national level by supporting the government to complete key inventorying and planning work as the basis of scaling up for the national-level action. As well, at the provincial level, the project will establish a successful case of the PHU-based peatland management in partnership with the private sector and 13 villages in southern Riau. The GEF-6 project is expected to apply the GEF-5 practices in northern Riau aiming to make Riau closer to haze-free in targeted peatlands.

C. Project Management and Oversight

104. SMPEI The project will be implemented over a period of four years (2016 – 2019) under arrangements to be specified in the Grant Agreement to be entered into between IFAD and Indonesia. It will be implemented through a cross-institutional and sectoral partnership involving various institutions

of central, provincial and district government, private sector, and communities. The Ministry of Environment and Forestry (MoEF) will be the official Representative of the recipient of the GEF grant, i.e. the Republic of Indonesia as well as the Lead Project Agency, delegating responsibilities to the national institutions and local governments for project implementation. The Project Management Office (PMO) in MoEF, headed by a National Project Director, will manage the coordination and implementation of the project. For the overall project management structure, see Figure 2 below.

Figure 2 Project Organizational Structure



105. The positions and number of staff to be recruited for the implementation of SMPEI is as following:

Title	Number	Remarks
Project Manager	1	Full-time, Jakarta-based
Provincial Project Manager	1	Full-time, Riau-based
Component 1 Coordinator (Policy)	1	Full-time, Jakarta-based
Component 2 Coordinator (Fire and MRV)	1	Full-time, Jakarta/Riau-based
Component 3 Coordinator (Peatland Management)	1	Full-time, Riau-based
Finance Officer	2	1) Full-time, Jakarta-based 2) Full-time, Riau-based
Admin Support Officer	2	1) Full-time, Jakarta-based 2) Full-time, Riau-based
Procurement Officer	2	1) Part-time (Gov't staff), Jakarta-based 2) Part-time, Riau-based
M&E and KM Officer	2	1) Part-time (Gov't staff), Jakarta-based

		2) Part-time, Riau-based
District Coordinators	3	Full-time, District-based
Village Facilitators	13	Full-time, Village-based

106. Capacity assessment, a gap of knowledge or skills required for the respective role of PMO, PPMO and PDU staff for SMPEI implementation will be surveyed prior to the start-up workshop and subsequent capacity building activities will be provided through the start-up workshop and following training programmes as part of Output 1.2.

107. The implementation of the IFAD country grant (for Output 3.2) will be fully integrated into the Implementation of the GEF grant and the overall project management. The Annual Work Plan and Budgets for both the SMPEI and IFAD grant will be harmonised and approved by the National Steering Committee.

108. The overall guidance, advice and coordination will use the **National Steering Committee (NSC)** which will be created under output 1.1 by Ministerial decree in order to ensure transparent and equal participation of NSC members and chaired by the Director General of Pollution and Environmental Degradation Control, MoEF. As part of their role to act as a multi-stakeholder coordination group that discusses, advises and oversees the implementation of national programmes and actions for peatland management, NSC will oversee the overall execution of the project implementation and coordination through one annual planning meeting and one annual review meeting (total twice per year), supported by a technical working group chaired by the Director of Peat Degradation Control under output 1.1. The NSC planning meeting will provide technical input, guidance and approval of the project's annual work plan and budget developed by PMO, and the review meeting will focus on the project progress review and follow-up action guidance. The results of the meetings will be communicated to PCC through PMO.

109. Following the overall guidance of the NSC, the provincial-level project work will be guided by the **Provincial Coordination Committee (PCC)** which will be established by the Riau Governor's Decree under Output.1. The PCC will be chaired by the head of the provincial planning agency (BAPPEDA) and meet twice per year for one annual planning meeting and one annual performance review meeting. The technical working group established at the central government's level will also provide guidance to PCC. PCC will provide technical input, guidance as well as approval of the SMPEI Component 2 and 3's annual work plans and budgets developed by the PPD.

110. National level: The PMO led by a Project Director and Project Manager will be responsible for timely delivery and cost-effective implementation of all activities of the SMPEI. The PMO will provide overall supervision, implementation guidance, and financial and operational management support to the Provincial Project Management Office (PPMO) at the provincial level and delegate responsibilities to execute and report on provincial-level activities (particularly Component 2 and 3) to the PPMO. PMO will prepare the consolidated documents combining provincial-level documents prepared by PPMO with those for national level activities such as Annual Work Programme and Budget (AWPB), annual progress reports, withdrawal applications (WA), annual financial statements, audit reports and other reports/documents needed by IFAD and the government.

111. PMO will organize the training needs assessment and prepare a human resources development plan in PY1, recruit community facilitators in coordination with PPMO, manage the bulk procurement include the consultancy contracts, establish and supervise the M&E including GEF reporting, and evaluate the performance of the consultants and NGOs. PMO will be also responsible for effective inter-agency coordination during implementation, coordinate the IFAD supervision and implementation support missions, prepare and disseminate project knowledge management and media materials, assessment and compliance of the grievance redress mechanism. The staff of the PMO will be designated by a Ministerial decree before the start of the project. PMO will also be responsible for the execution of component 1.

112. Provincial level: In Riau province, PPMO headed by a Provincial Project Director (Vice Project Director) who will be the head of the Provincial Environment Agency, (BLH) will be established. PPMO will work under the guidance of PCC and the overall direction of NSC through PMO. PPMO will be responsible for i) consolidating the district annual work plan and budget and preparing the provincial AWPBs (P-AWPB) and submit the P-AWPB to the PMO in a timely manner; ii) supervise, monitor and

evaluate the district and provincial project activities and manage the M&E, iii) manage the recruitment of community facilitators with assistance from the PMO, iv) consolidate the district reports and prepare the provincial semi-annual and annual progress reports for submission to PMO in a timely manner; v) consolidate the district financial reports, records and accounts for provincial expenditures and prepare the quarterly financial reports for submission to PMO; vi) provide training needs assessment to PMO; vii) produce knowledge management products and media materials; viii) assist in organizing meetings and knowledge for sharing project experiences at the provincial level for scaling-up, ix) support IFAD implementation and supervision missions and x) coordination and knowledge exchange among district coordinators by holding meetings on a regular basis. PPMO will execute part of Component 2 in close collaboration with the overall executing agency of Component 2, Directorate-General of Climate Change and Component 3 in collaboration with PMO. PPMO will work with 3 District Coordinators (one per district) from the Project Implementation Unit for coordination and monitoring of the district-level work.

113. District Level: At the district level three Project District Units (PDU) will be established manned respectively by a District Coordinator, village community facilitators and technical facilitators. Three District Coordinators (one each per district) will work under the direct supervision of the Provincial Project Manager and in close collaboration with Component 2 and Component 3 Coordinators at PPMO. The District Coordinators will be responsible for the overall project management at the district level, including: i) refining the selection of the target communities based on the agreed criteria, ii) manage all project activities implemented at the village level, iii) receive village plans and activity proposals from community facilitators working on target villages and consolidate them as the district work plans and budgets for submission to PPMO for review and approval, iv) operate the M&E systems, and prepare semi-annual and annual progress reports for submission to the PPMO; (v) ensure that technical guidance and implementation support are provided to all target villages; (vi) coordinate all the activities of the service providers; (vii) organise the training of relevant in collaboration with the PPCO and carry out annual evaluation of community facilitators; (viii) assist in organising meetings of the PPMO and keep accurate records of the minutes of meetings; (ix) secure consultation process with the beneficiaries through village facilitators on IFAD's grievance redress mechanism.

D. Planning and M&E

114. The PMO will establish a Monitoring and Evaluation (M&E) system, satisfactory to IFAD, prior to the project implementation. The M&E system would be connected and inter-linked at all levels and would consider the effects/impacts of project investments on all project beneficiaries and key stakeholders. The M&E system would include financial and physical reporting, the government's reporting requirements, and IFAD's and GEF reporting requirements, and GEF tracking tools. It would also include progress and impact/outcome monitoring.

115. AWPB-based progress monitoring would be used as a starting point to monitor progress at activity level. Each implementing agency would have an overview of their specific planned activities in the AWPB and make quarterly submissions. Linked to the progress monitoring is the *delivery of outputs*. While project implementation would be geared towards delivering outputs, the extent to which outputs are delivered would be closely monitored; this would involve setting annual targets, quantitative assessment using indicators, and qualitative analysis. The logical framework contains a restricted number of indicators in harmonization with GEF focal area indicators. The indicators are defined in such a way that the data can be collected easily and does not require separate activities or special effort²³.

116. In terms of impact/outcome monitoring, the project team would assess through an annual project performance survey the extent to which project outcomes have been achieved using both quantitative and qualitative methods. The quantitative indicators are specified in the Logframe. Impact-level monitoring will be conducted three times including baseline survey during the project implementation periods. The project would also establish project's own knowledge exchange system based on an appropriate web or mobile application.

E. Risks and mitigation measures

117. Several risks were identified and corresponding mitigation measures suggested as shown below:

²³ Sometimes referred to as SMART indicators: Specific, Measurable, Achievable, Realistic and Time-limited.

Risk	Risk Level	Mitigation Measures
Weak enforcement of policies and regulations related to peatland management	Moderate	Awareness-raising on the impact of peatland degradation Awareness-raising of the new peatland regulations Enhancement of monitoring and enforcement measures through capacity building of responsible government units and clarifying the roles and responsibilities in the governance structure of multi-stakeholders
Lack of political will or poor governance	Low	Linking project activities closely with national policies and regulations and addressing issues prioritized by the country/province
Potentially slow implementation of multi-stakeholder integrated management strategies	High	Careful selection of project partners (this will include local government agencies with demonstrated commitment to addressing peatland issues) and through close monitoring and guidance of project activities.
Climate change risk, including intensification of the periodic El Niño droughts which are a key root cause of extensive peatland fires. There is a possibility that an El Niño drought will occur at some time during implementation of the Project; this could affect some project achievements.	Moderate	Fire prevention by sustainable peatland management and community stewardship, combined with better drought prediction and fire prevention measures. Focus on enhancing resilience of peatlands to future climate change scenarios. The project will work closely with the Agency for Meteorological, Climatological and Geophysics (BMKG) of Indonesia to detect any early warning signs of El Niño and use the information to adjust the planning of activities, especially in the fire-prone regions, to minimize disruption.
Reputational risk, including being drawn into politically and socially sensitive issues	Moderate	Focus on rehabilitation of abandoned peatlands and best management practices adopted in existing plantations. The project will not engage with illegal new plantations and inform the appropriate authorities. Conduct extensive risk assessment through the consultation of diverse stakeholder at the start-up. A written agreement outlining the areas of partnership will also be prepared among IFAD, the government of Indonesia and private sectors.
Increasing demand for industrial and biofuel sectors (including pulp and paper, timber, palm oil) in the global market	Moderate	Enforcement of peatland-related policies and regulations to ensure commodity produced through sustainable manner. Establish links with key players in the commodity sector to mainstream peatland protection and management requirements.
Poor level of engagement and support by local communities	Moderate	Active engagement with local communities, village facilitators and sub-district technical facilitators. Support for livelihood from sustainable peatland management. Facilitation support from government agencies through District Coordinators.

118. Environment/Climate Risk and SECAP review: The project objectives and outcomes sought are all aimed at positive influences on environmental and social settings. It should be noted that the unit of operation under the project is the hydrological unit, which includes the peat dome, and as such, is adopting a landscape approach for integrated peatland management. Considering that all of the project activities are designed to improve environmental and social outcomes a **category B rating** has been assigned. Under the SECAP guidelines a B category rating warrants further environmental analysis and consideration during the implementation stages of the project as necessary. In this regard, the village assessments and value chain analyses will pay particular attention to any potential negative impacts from project activities and will propose mitigation measures.

119. Indonesia is a Party to the Ramsar Convention on Wetlands of international Importance. The SPMEI project has been developed in line with the requirement of the Convention for the wise use of all wetlands within the country. The Convention defines wise use of wetlands as “the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development”. Wise use can thus be seen as the conservation and sustainable use of wetlands and all the services they provide, for the benefit of people and nature. Contracting

Parties commit to work towards the wise use of all the wetlands and water resources in their territory, through national plans, policies and legislation, management actions and public education. In 1990 the Contracting Parties adopted Guidelines for the implementation of the wise use concept. The Guidelines emphasized the importance of:

- adopting national wetland policies, either separately or as a component of wider initiatives such as national environmental action plans;
- developing programmes covering wetland inventory, monitoring, research, training, education and public awareness;
- developing integrated management plans at wetland sites.

120. The SMPEI project incorporates elements of all three of these requirements through the following: Component 1 of the project will strengthen the policy framework for the management of peatlands in the country and also support the enhancement of wetland inventory and monitoring as well as education and awareness; Component 2 develops or strengthens tools for better peatland management through fire monitoring etc.; and Component 3 of the project facilitates the integrated management of the Sungai Kampar Indragiri Peatland Hydrological Unit (SKI-PHU). The project design and management is thus in line with the requirements of wise use under the Ramsar Convention.

121. According to Indonesia Second National Communication under the UNFCCC, the extreme dry months in some coastal areas including South Sumatra has increased to 4 months over the period of 2000-2010 – and even peaked to 8 months in 2002, a level that is considered the longest dry season in five decades- while the over rainfall in most of Sumatra had an increase of 10-50 mm of rainfall during the period of 1980-2010 compared to 1961-1990. As to the sea level rise, Indonesia's sea level rise shows has increased from 0.8 mm/y to 1.6 mm/y since 1960 and then jumped to 7mm/yr in 1993. Between 1993 and 2008, the average rate of sea level rise ranged from 0.2 cm/year to 1 cm/year with an average of approximately 0.6 cm/year. The increase in seal level rise is a significant potential threat to Indonesia consisting of many islands and small islands. Considering the melting ice dynamics and thermal expansion of sea water, Indonesia could experience up to 175cm of sea level rise by 2100²⁴. Based on the IPCC-AR4 model, the average temperature rise in Indonesia is predominantly caused the GHG emission effects and may result in approximately 0.8-1 °C until 2020-2050 compared to the 20th century²⁵. Overall, El Nino Southern Oscillation (ENSO) and Indian Ocean Dipole Mode (IODM) phenomena can cause a big decrease in rainfall that leads to severe droughts in Indonesia. The level of climate change risks in Indonesia by region shows that Sumatra is very highly or highly vulnerable to flood, drought, forest fires and water availability.

122. The climate risks for this project are again linked to a fragile peatland environment vulnerable to subsidence and fire and as a coastal landscape that is closely linked to the influences of sea-level rise, inundation (as per the coconut plantations at the site) as well as coastal erosion, subsidence as per the city of Tembilahan (seen by the project team), and the chance of increased risk from storm damage penetrating further inland as the peatlands degrade, leading whole communities to be lowered in the landscape and more vulnerable to impact. The Climate Risk Category under the SECAP guidelines for this project is rated as **moderate**. The project activities being undertaken are all aimed at mitigating the issues and aspects identified above so the project is not exacerbating those risk, but rather the risk above have potential to influence the outcomes of the project, but the project activities of themselves are not increasing the negative impacts, rather mitigating these, therefore warranting a Low category rating.

123. At the district/sub-district level the project will work to enhance mechanisms (including established government mechanisms and proposed multi-stakeholder forums and joint planning) to facilitate cooperation between the district government, local community, private sector plantations and also central government peatland and conservation management agencies. During the project preparation period it was noted that there were some ongoing conflicts between some local communities and the private sector in general related to claims for compensation for development on community lands. These disputes were being moderated by the village administration. It is anticipated that the project through the establishment of multi-stakeholder forums and other mechanisms will reduce the likelihood of future conflicts. However in case any conflicts or disputes occur the project

²⁴ Bappenas, 2010. Indonesian Climate Change Sectoral Roadmap, edited by Bappenas, Republic of Indonesia.

²⁵ National action plan for climate change adaptation. Synthesis Report, Republic of Indonesia. November 2013. http://climateobserver.org/wp-content/uploads/2015/02/Indonesia-RAN-API_Synthesis_Report_2013.pdf

community facilitators based at village or sub district levels and the community coordinators based at the district level will provide a neutral contact point for concerns from local communities to be raised. If there are any drawbacks with this system – community members could bring unresolved concerns to the attention of the Provincial Project Management Office or the national Project Management Office, failing which they could be addressed to IFAD’s overall grievance system.

PART IV. PROJECT COSTS AND FINANCING

A. Project cost and incremental cost

124. Total costs of the SMPEI funded by GEF are estimated to be USD 4.766 million. Costs by output will be approximately as shown in the table below.

Table 3 Summary Costs by Component (Thousand USD)

Component 1: Capacity building and institutional strengthening for implementation of policies and regulations for sustainable peatland management		1,656
1.1	Develop policy, regulations and institutional mechanisms for sustainable peatland management	500
1.2	Capacity and knowledge management for sustainable peatland management strengthened	781
1.3	Develop Peatland Hydrological Unit (PHU) maps for management zoning in selected provinces	375
Component 2: Monitoring peatland degradation, fires and GHG emissions		555
2.1	National peatland fire prediction, monitoring and warning systems strengthened	280
2.2	Assessment of GHG emission reductions from targeted peatlands	275
Component 3 : Landscape level sustainable management of peatlands		2,155
3.1	Develop and implement an integrated sustainable management plan for Sungai Kampar - Indragiri Peatland Hydrological Unit (SKI PHU)	2,155
3.2	Community livelihood from sustainable peatland management enhanced (<i>financed by IFAD country grant</i>)	(495)
4. Management Costs		400
TOTAL GEF COST		4,766

125. The total SMPEI Project costs amount to USD 29.21 million consisting of (1) GEF grant of US\$ 4.766 million, (2) the government co-financing of US\$ 14.95 million, (3) private sector contribution of US\$ 9 million, and (4) IFAD country grant of US\$ 0.495 million.

B. Disbursement, procurement and audit

126. **Flow of Funds:** The Project will follow the *direct grant scheme or Hibah Langsung*. The project budget (GEF Grant) will be channelled from the Ministry of Environment and Forestry (with the Project Management Office or PMO assuming the key responsibility) and to each of participating national, provincial and district project agencies using the government budget transfer methods of either Dekonsentrasi (Deconcentration), or Tugas Pembantuan (Tasks for Assistance) to finance project activities.

127. The flow of funds to Community Groups would be as follows:

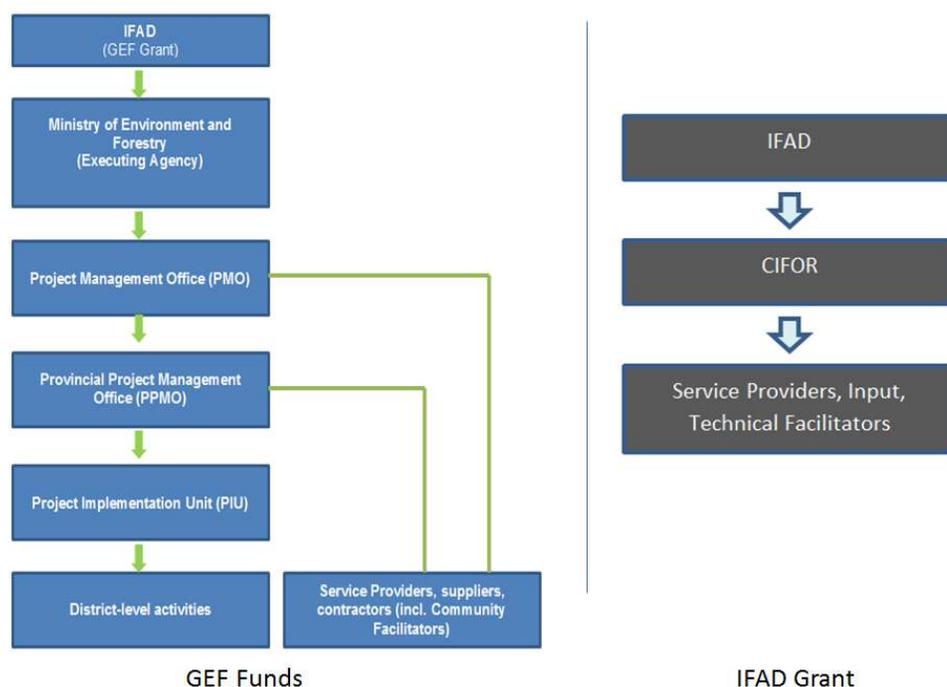
- The flow of funds to the communities or community groups will be made through the respective district project Implementing Units (PIUs), using similar procedures;
- Each group will submit proposal(s), consisting of the activities or investments, schedules and estimated costs, helped by the Community Facilitators. The proposals will be reviewed and verified by the district project implementing unit (PIU);
- After the proposals are agreed, the community group will sign an agreement with the Head of

the PIU (KPK = *Kuasa Pengguna Anggaran* or Budget Proxy Officer who is authorized to sign contracts);

- Based on the signed agreement, the KPK will send requests to KPPN (local government treasury office) to transfer funds to the group's bank account, usually in 3 tranches, depending on the progress;
- The community group committee will prepare progress reports to the PIU;
- The district PIUs will prepare financial reports to the national PMO for consolidation;
- Based on the financial reports from the national PMO, MOF/DG Budget will submit withdrawal applications (WA) to GEF/IFAD, and after the WA is approved by GEF/IFAD, GEF/IFAD will transfer funds for replenishment of the Special Account of Ministry of Environment and Forestry.

128. Figure 3 below shows the overall flow of funds from central to local entities.

Figure 3 Flow of Funds



129. The PMO will be responsible for the project financially and will manage project funds. All contractors and consultant invoices will be submitted to the Commitment Making Officer representing the Budget Holder (*Kuasa Pengguna Anggaran – KPA*) who will review and verify the invoices and relevant supporting documents, and submit them to the Verification Officer. During this process, the invoices and supporting documents will be reviewed and verified prior to issuing a payment request (*Surat Permintaan Membayar – SPM*) to the Treasury Office in the area. The Treasury Office will then issue a payment order (*Surat Perintah Pencairan Dana - SP2D*) to its operational bank, which will arrange for the remittance of funds from the designated account to respective contractors' or consultants' accounts.

130. **Financial Management and Disbursement:** The Project's financial managements arrangement will generally follow the government systems but with consideration of GEF/IFAD rules and regulations in relation to disbursement documentation, procurement, and audits. Government regulations have been incorporated into this section where applicable. Due to the possible inexperience of some of the project staff with implementing projects financed by International Financing Institutions, particularly at the district level, particular attention has been given to ensure special provisions for capacity building/training in finance and procurement both at headquarters and in the districts' Project Implementing Units (PIUs); this has been budgeted for in Component 4. The training will be provided by PMO staff who are experienced with the IFAD project implementation (i.e. APFP) and technical

support will be also provided by IFAD. To ease the preparation of GEF/IFAD financial reports and data gathering, it is also recommended that a standard format/software be used that is user friendly and able to quickly respond to queries on components, categories of expenditures, procurement process, status of expenditures at central and districts level and contract management.

131. Budgeting: The project budgeting procedure will follow the government budgeting system. The budget of the Project will be a part of the MoEF budget and included in the government budget document (DIPA). The budget for the provincial level will be included in the central budget (DIPA Pusat).

132. Additional payment validation measures. Although the payment process will follow government procedures, the following additional payment validation measures are being prescribed in the Financial Management Manual to mitigate fiduciary risks, including stronger accounting evidence, audit trails, and procedures to validate contracts and outputs. The following procedures will be carried out by the financial management staff:

- verification of completeness of the documentation supporting all SPPs (including ticket and boarding pass for travel, attendance list for meeting & trainings, signed time sheets, and third party invoices and warrant cards);
- assurances that all activities are supported by reports, IDs and/or photographs;
- confirmation made by third parties performing services to the project;
- random confirmation made to participants of workshops/trainings;
- random confirmation made to the beneficiaries, i.e. scholarship recipients;
- visits to location (if necessary); and
- other types of reviews (if necessary).

133. Accounting and Reporting. All financial transactions, covering PMO, PPMO and PIU expenditures, will be recorded in the government accounting system and included in government accountability reports. The PMO, PPMO and PIU staffing will include financial officers who will be trained to manage the accounting requirements of the Project (as part of the initial package of financial management training under Component 4). In addition to managing the overall accounting system, the financial officers will also be responsible for ensuring that all project personnel maintain required records (with receipts) of field-level expenditures. The PMO will prepare: (i) separate project financial reports suitable for project monitoring purposes, and (ii) aggregate financial reports, and it will submit them to GEF/IFAD every six months using an agreed format. The PMO shall prepare consolidated financial statements of the operations, resources and expenditures related to the project in respect of each Fiscal Year to be delivered to GEF/IFAD within two months of the end of such period.

134. Audit Arrangements. The PPMO and each PIU at district level is responsible for preparing project financial statements at the latest one month after the end of the considered fiscal year. These PPMO and PIU financial statements will then be consolidated by the PMO at latest two months after the end of fiscal year and sent to GEF/IFAD. The financial statements will be audited on an annual basis by the national auditing body (BPKP) and in accordance with agreed terms of reference be submitted to GEF/IFAD in a timely manner for GEF/IFAD no objection. The audit will review withdrawals from the Special Account at various levels, and provide an opinion on whether such expenditures fully comply with expenditures eligible for GEF/IFAD disbursements. The overall general opinion of the Auditor shall be supplemented by an opinion on:

- the use of Statement of Expenditures supporting the withdrawal applications and adequacy of the documentation referring to the said Statements of expenditures;
- the procurement process to be in line with the 18-month Procurement Implementation Plan as agreed by GEF/IFAD; and
- financing of subprojects presented by the communities or Village Groups (at least 20% of the Villages under implementation during the fiscal year under review will have to be audited).

135. The PMO will be responsible to disclose the audited financial statements, the annual audit report, and the accompanying Management Letter which should be submitted to GEF/IFAD in an English version at the latest six months after the end of the Government's fiscal year.

136. Financial Management Implementation Review. Risk-based implementation reviews of project financial management and capacity of project financial staff at central and district levels need to be conducted during the project for the purpose of determining where the financial management system of MoEF and PMO needs strengthening to produce timely, relevant, and reliable financial information on project activities. Project supervision missions carried out by GEF/IFAD on an annual basis, as well as the project's Mid-Term Review (MTR), will conduct these financial management reviews. The reviews will cover the project financial management system, project expenditures, accounting, disbursement, procurement, reporting, and the internal control framework. They will include the external audit report and will advise on follow-up actions to be taken in respect of findings to strengthening internal controls.

Procurement

137. Procurement under the Project will be based on the principles of: (i) economy and efficiency; (ii) enabling all eligible bidders an opportunity to compete in the provision of goods, works and consulting services; (iii) highlighting the importance of fairness, integrity, transparency, and good governance in the procurement process; and (iv) ensuring that competition is the basis for efficient public procurement.

138. Procurement of goods, works, and consultancy services financed by the GEF/IFAD financing shall be carried out in accordance with the provisions of the Grant Recipient's procurement regulations to the extent that such are consistent with the GEF/IFAD Procurement Guidelines dated September 2010 and its related Procurement Handbook. The Government of Indonesia has proposed to follow the national procurement regulation (*Perpres No. 54/2010* and as amended by *Perpres 70/2012* and *Perpres 04/2015*) for the project procurement.

139. Though the *Perpres No. 04/2015* has improved its procurement efficiency and transparency compared to the previous national public procurement regulations, there are still some gaps to be covered to be consistent with GEF/IFAD Procurement Guidelines. GEF/IFAD is therefore adopting a similar approach as other Development Partners. In this context, GEF/IFAD will review, during project implementation and in the context of each Annual Work Plan Budget (AWPB) and related 18-month procurement plan, the arrangements for procurement of goods, works and consulting services proposed by the grant recipient, to ensure their conformity with the GEF/IFAD guidelines and the proposed implementation and disbursement schedule.

140. GEF/IFAD Financed Procurement of Goods, Works, Consultancy Services, and Communities Procurement. The procurement for the Sustainable Management of Peatlands Ecosystems in Indonesia (SMPEI) will be executed both by the national PMO and district PIU offices, as well as by the communities through participating enterprise and infrastructure groups:

- District administrators situated within the district project implementation units (PIUs) will assume day-to-day responsibility for implementation of project activities, and they will be accountable for the performance of the project at the district and community levels. Districts will also be responsible for a proportion of project procurement, under provincial-level guidance and monitoring;
- In addition, a significant proportion of the procurement responsibilities, particularly under the community enterprise and infrastructure fund, is intended to be devolved to the communities and the groups that will implement the community level investment sub-projects; and
- Consistent with recent government initiatives, good governance and transparency will be dealt with explicitly and built into the system of implementation procedures, checks, and balances.

141. Procurement Activities. Procurement under the Project will include: (i) recruitment of consultant firm or individual consultants; (ii) purchase of vehicles, equipment and materials; (iii) recruitment of facilitators; and (iv) procurement by communities.

142. Procurement Capacity. The procurement capacity of the PMO and district project implementing units will be improved through training provided by the procurement consultant and the project management consultant under technical assistance for management of the project. Procurement practices will include systematic accountability measures and where possible public participation in the procurement process (e.g. public opening of contractor bids) to ensure transparency of transactions. A complaint-handling mechanism should be established at the central and district levels to ensure accountability and to improve the effectiveness of the project implementation.

143. 18-Month Procurement Plan. In accordance with the GEF/IFAD "Procurement Guidelines" approved by the Executive Board in September 2010 and the Grant Agreement, the PMO will be required to prepare a Procurement Plan for the initial 18 months of program implementation and annually thereafter until the Project Completion Date. The procurement plan shall specify, inter alia, the method of procurement for each contract to be financed, and thresholds, ceilings, and preferences to be utilized in the implementation of procurement under the Project. The Procurement Plan shall also specify any additional requirements as may be set out in the GEF/IFAD Procurement Guidelines with respect to certain methods of procurement. The procurement plan should be submitted to GEF/IFAD for review and no objection together with each of the AWPBs.

144. The implementing units at the district level will be required to prepare procurement plans which will be consolidated by the PMO in the form of a unified project procurement plan which is acceptable to GEF/IFAD.

145. Project Start-up Expenditures. To avoid any delays in the project's start-up, the Government of Indonesia will provide a commitment in the Grant Agreement for financing start-up activities. This financing will be used to cover expenditures of meeting and coordination at least six months before grant negotiations. As an additional risk mitigation measure, the Government of Indonesia will provide funds for operational expenditures to the PMO at the start of project implementation. This fund would be utilized in case of unforeseen time delays of subsequent transfers of funds.

146. Post-Review Process of Procurement Decisions. Contracts for amounts below the prior review threshold (tentatively set at USD 100,000) are subject to a post review (i.e. after the award). This review is normally carried out on a selective basis through an examination of contracts and the bid evaluation submitted by the Grant Recipient or, particularly in the case of small contracts eligible for disbursement against statements of expenditures (SOEs), through an examination of the relevant documents during a GEF/IFAD supervision mission. If, as part of the post-review process, any contracts are found to have been improperly awarded, the Grant Recipient is required to refund any amounts already withdrawn from the grant in relation to these contracts. The Grant Recipient's failure to procure goods and services as specified in the Grant Agreement is termed 'misprocurement' and may result to the cancellation of a portion of the grant. The award of any contract for goods and works with a value of USD 100,000 or more per contract will be subject to prior no objection from GEF/IFAD. The Terms of Reference and award of contracts for consulting services of core studies will be subject to GEF/IFAD Prior Review.

147. Procurement Documentation and Audit Provisions. Supporting documents for the procurement of goods and services, including suppliers' invoices, evidence of payment, analysis of bids, contracts, and receipts, will be retained in an organized manner by the PMO at national, PPMO, PIU and community levels for inspection during GEF/IFAD supervision missions, and examination by auditors (annually). Given the diversity of locations, the name and place of location will be determined by the PMO/PPMO/PIU.

148. GEF/IFAD Policy against Corruption. This policy provision will require bidders, suppliers, contractors, sub-contractors, beneficiaries, and consultants to: (i) maintain all documents and records related to activities performed for three years after completion of the contract; and (ii) require the delivery of any document necessary for the investigation of allegations of fraud or corruption (and the availability of employees or agents of the bidders, suppliers, contractors, sub-contractors, or consultants with knowledge of the activities financed by GEF/IFAD) to respond to questions from GEF/IFAD personnel or any properly designated auditor, investigator, agent, or consultant relating to review or audit of the document.

149. As provided in Appendix I, Paragraph 1 of IFAD's Procurement Guidelines, IFAD review of and no objection to the Recipient's procurement plans is mandatory and the required 18 month Procurement Plans to be submitted by the Borrower/Recipient must include as a minimum:

- A brief description of each procurement activity to be undertaken during the period and the name of the implementing agency responsible for the procurement;
- The estimated value of each procurement activity;
- The method of procurement to be adopted for each procurement activity; and
- The method of review IFAD will undertake for each procurement activity indicating either post review or prior review.

150. Any amendments to the Procurement Plan shall be subject to the Fund's no objection.

Review of Procurement Decisions by IFAD

151. For the purposes of IFAD's Procurement Guidelines, the following procurement decisions and items shall be subject to prior review by the Fund for the award of any contract for goods, works, and consultancy services estimated with costs greater than or equal to USD 100,000:

- (1) Procurement of goods and civil works:
 - (i) Prequalification documents and shortlist when prequalification is undertaken;
 - (ii) Bid Documents for goods and works;
 - (iii) Evaluation Reports and Recommendations for Award; and
 - (iv) Finalized contracts and contract amendments.

- (2) Procurement of consultancy services and other services:
 - (i) Prequalification documents and shortlist when prequalification is undertaken;
 - (ii) Request for Proposal (RFP);
 - (iii) Technical Evaluation Report;
 - (iv) Combined (technical and financial) evaluation report and the recommendation for award; and
 - (v) Finalized contracts and contract amendments.

152. All direct contracts for goods and civil works and single source selection for service providers above the prescribed procurement and selection method thresholds shall be undertaken in accordance with the provisions of IFAD Procurement Guidelines or as prescribed in the National Procurement Law for direct contracting and single source selection and will be subject to IFAD prior review.

153. The aforementioned thresholds may be modified by the Fund during the course of Project Implementation.

Governance

154. *Governance and transparency framework.* Project design includes several measures to promote transparency: (i) autonomous central PMU and state PPMO operating on the basis of good governance; (ii) mechanisms for regular internal audit at PMU and PPMO levels; (iii) annual independent audit; (iv) verification of fiduciary compliance during supervision; (v) a grievance redress mechanism at national, provincial and district levels. Finally, communities will be involved in decision-making, planning, implementation and monitoring, as documented in this design report.

Appendix 1: Letter of Endorsement from the GEF Focal Point

(see Attachment 1)

Appendix 2: Letters of commitments from co-financiers

(see Attachment 2)

Appendix 3: Project cost table

(See Attachment 3)

Appendix 4: Monitoring and evaluation plan

A. Planning

- A. Village Level:** The participatory planning process at village level will be carried out by the communities themselves and guided by a Community Facilitator, who will also provide training in the participatory processes prior to the commencement of the planning. Planning will be supported by Community Development Coordinator and the leaders of the community groups with participation of both men and women in the village.
- B.** Participatory village planning will start with the conduct of a simple participatory assessment exercise in the village with assistance from the Community Facilitator using simple tools. They will identify: mapping of resource potential and economic activities, existing opportunities and constraints facing the community, possible solutions, and activities that will be funded by the project, the local government, other donors, and cost-shared by the community groups themselves.
- C.** A four-year Village Plan will be prepared in each target village using a participatory planning process. The highest priority activities in the plan will be translated into activity proposals to be included in the Village Annual Work Plan and Budget (V-AWPB). The Village Plan will be updated annually when the new set of village proposals are prepared for the next year's funding by the project. The process of proposal preparation will be moderated by the Community Facilitators to ensure that the proposals are technically feasible and would fit in the design and financing scheme of the project.
- D. Provincial Level:** All village activity proposals will be submitted to the PPMO by the Community Group Leader in the target villages to be evaluated by Community Development Coordinator, and Fire and Peat Coordinator in the district. The proposals will be evaluated by the Provincial Coordination Committee (PCC) for funding by the project. Unqualified proposals will be sent back to the community groups for revision and improvement.
- E.** The PPMO in each participating district will consolidate the approved proposals from all the target villages/community groups in a district. Then the PPMO will integrate them with the provincial-level project activity proposals into the Provincial AWPB (P-AWPB) for submission to the PMO.
- F. National Level:** PMO will consolidate the P-AWPBs and integrate them with the national project activity proposals into the National/Project AWPB (N-AWPB) for funding by the project. The PMO submits the draft N-AWPB to the National Steering Committee (NSC) for final evaluation and coordination with other government and donor projects/programmes. Then the PMO will submit the N-AWPB to IFAD for review and 'no objection'. The approved N-AWPB will be used by PMO for preparing project budget and activities, and submitted to the Ministry of Finance.

B. Monitoring and Evaluation (M&E)

- G.** The PMO will establish a Monitoring and Evaluation (M&E) system, satisfactory to IFAD, within six months of project effectiveness. The M&E system will be connected and inter-linked at all levels and will consider the effects/impacts of project investments on all project beneficiaries and key stakeholders. The M&E system will include financial and physical reporting, the government's reporting requirements, and IFAD's and GEF reporting requirements, including GEF tracking tools. It will include a limited number of key indicators – derived from the logical framework – that the main stakeholders require for subsequent review of information obtained to improve the activities of the project, and a dissemination plan showing how lessons learned will be shared among stakeholders.

- H. The project's M&E activities will include the following: (i) annual participatory monitoring and evaluation by the beneficiaries; (ii) routine reporting by the PMO to the government and IFAD; and (iii) surveys, impact evaluations and reviews.
- I. **Participatory Monitoring and Evaluation.** The community groups will monitor all project activities and training through monthly meetings of community groups. The community groups will provide biannual reports including physical progress and financial statement to be provided to the PIU following an agreed and simple project format. The community groups, with assistance from Community Facilitators, will conduct periodic M&E of community activities. Members of community groups responsible in conducting monitoring will receive training in participatory M&E methods and tools and will be provided with formats for data collection and reporting. Using the agreed participatory M&E formats, the community groups will collect information on the progress of activity implementation, problems met, and follow-up activity. The Community Facilitators will consolidate monitoring reports from the community groups and submit to the PIU.
- J. The PMO would establish a Monitoring and Evaluation (M&E) system, satisfactory to IFAD, prior to the project implementation. The M&E system would be connected and inter-linked at all levels and would consider the effects/impacts of project investments on all project beneficiaries and key stakeholders. The M&E system would include financial and physical reporting, the government's reporting requirements, and IFAD's and GEF reporting requirements, GEF tracking tools. It would also include progress and impact/outcome monitoring.
- K. AWPB-based progress monitoring would be used as a starting point to monitor progress at activity level. Each implementing agency would have an overview of their specific planned activities in the AWPB and make quarterly submissions. Linked to the progress monitoring is the delivery of outputs. While project implementation would be geared towards delivering outputs, the extent to which outputs are delivered would be closely monitored; this would involve setting annual targets, quantitative assessment using indicators, and qualitative analysis. The logical framework contains a restricted number of indicators in harmonization with GEF focal area indicators. The indicators are defined in such a way that the data can be collected easily and does not require separate activities or special effort.
- L. In terms of impact/outcome monitoring, the project team would assess at the outcome and impact levels, using both quantitative and qualitative methods. The quantitative indicators are specified in the Logframe. Outcome-level evaluation will be conducted annually through a survey, and impact-level evaluation will be operated three times during the project implementation including baseline survey. The project would also establish project's own knowledge exchange system based on an appropriate web or mobile application.

C. Project Reporting, Surveys and Reviews

- M. All agencies implementing projects funded by the government and or donors are required to submit monthly and quarterly reports to the government. However, the formats of the reports required by the government and donors are not similar, creating difficulties in preparing project reports to the project implementing units. To minimize these difficulties, the two reporting formats and the project databases need be synchronised as much as possible, with the government reporting formats given priority whenever possible. This will reduce the time needed to assemble and tabulate information and avoid duplication of effort. The project reports will cover the status of project expenditures, by project component and category of expenditure, and include comparisons with the AWPB and appraisal targets. The financial and physical information will also be reconciled on cumulative basis.
- N. **District/Village Reporting.** PPMO will develop and maintain a village project database to include information about all project activities in the target villages in the district. Other project databases will be developed, such as a training database covering the training carried out, topics, participants, schedule, evaluation, etc. The databases will be updated quarterly and the updated data submitted to the PMO. The provincial M&E Team will consolidate and analyse the village and district data when preparing their progress reports in compliance with the

Government and IFAD reporting requirements. The M&E officer of PPMO will submit the progress reports to the PPMO, following the agreed reporting schedule.

- O. Provincial Reporting.** The provincial progress reports consist of all provincial project activities. They will be submitted to the PMO which will maintain the master project database. The province will prepare provincial progress reports that evaluate the progress of project activities at provincial and district level, identify any major issues, and include all activities implemented by any collaborating agencies or other partner institutions. The reports will follow the agreed reporting formats in compliance with Government and IFAD reporting requirements.
- P. National Reporting.** The PMO will consolidate the provincial reports and district reports include national level activities and provide an overall assessment of the project and report to the government and IFAD in line with the agreed reporting formats and schedule. The PMO will submit the six-monthly progress reports by 31st July and the annual progress reports by 31st January each year. The reports will be analytical and follow the prescribed formats which will be consistent with formats of the monthly and quarterly reports required by the government. The data will include an analysis of the appropriate indicators from the logical framework, the RIMS indicators, and the village database. The PMO will submit semi-annual reports and annual reports to IFAD 45 days after the end of each semester and each fiscal year.
- Q.** Financial reports will be prepared every three months. The PMO will prepare consolidated financial statements of the operations, resources and expenditures related to the project in respect of each Fiscal Year for submission to IFAD within three months of the year end.
- R.** The overall coordination and management of the M&E system is the responsibility of the M&E team under the PMO which will also provide guidance to the provincial and district M&E Teams to ensure that the M&E functions effectively and remains operational. The M&E Officers from all levels will meet quarterly during the project Coordination and Consolidation Meetings to report on the progress of their work, including constraints and possible solutions.
- S. Baseline Survey.** The PMO will carry out a baseline survey in PY1, with assistance from an external agency or contracted qualified consulting firm. The baseline will include all indicators in the logframe. The outputs of the baseline survey will be inter alia village benchmark profiles.
- T.** Data from the baseline survey will also include all relevant RIMS indicators, including the anchor indicators, disaggregated by gender and ethnic groups. The results and methodology used in the baseline study will provide important reference points for the mid-term impact survey and the project completion impact survey.
- U. Annual Results, Impact and Monitoring Surveys.** Beneficiary surveys will be implemented annually under supervision of the PMO. The PMO will prepare an annual RIMS report for IFAD using the agreed project indicators at output and outcome levels. The measurement of the impact level indicators (pertaining to the MDGs) will form part of the baseline, mid-term and project completion impact surveys and undertaken by the PMO, with the assistance from an external agency or a contracted consulting firm.
- V. Mid-term Review (MTR) and External Independent Evaluation.** IFAD and the government will carry out a MTR in PY 3. The MTR will review the project's achievements, outputs, outcomes, impacts, and constraints in implementation. The MTR will assess the following:(i) status of development and performance of the project assisted groups, federations etc.; (ii) project achievements, outputs, outcomes, and initial impact; (iii) performance of Community Facilitators, and service providers, including the TA; (iv) performance of the PMO, province, and PIU staff; (v) lessons learned from the project and its contribution to poverty reduction and development of marine and fishery in participating districts/province; and (vi) recommendations for further improvement and adjustments. To complement the MTR report, the project will conduct an independent external evaluation in project year 4 by hiring a consulting firm which will provide overview on the progress and achievement of the project implementation, and recommendations on improvement of the project implementation.

- ¶. **Project Completion Review (PCR) and Impact Study.** The PMO with assistance from a contracted consulting firm will conduct a Project Completion Review at the end of PY 5. This review will record the final achievements of the project based on its objective, outcomes and outputs as compared with the original project design. The PCR will include the findings from the final impact survey conducted in PY 5 and lessons learned. The MMAF and IFAD will agree on the contents of the PCR Report. The draft report will be discussed by the government and IFAD and the final PCR Report will be submitted to IFAD before the Closing Date of the project

Appendix 5: SECAP

A Major landscape characteristics (natural resources, social and climate)

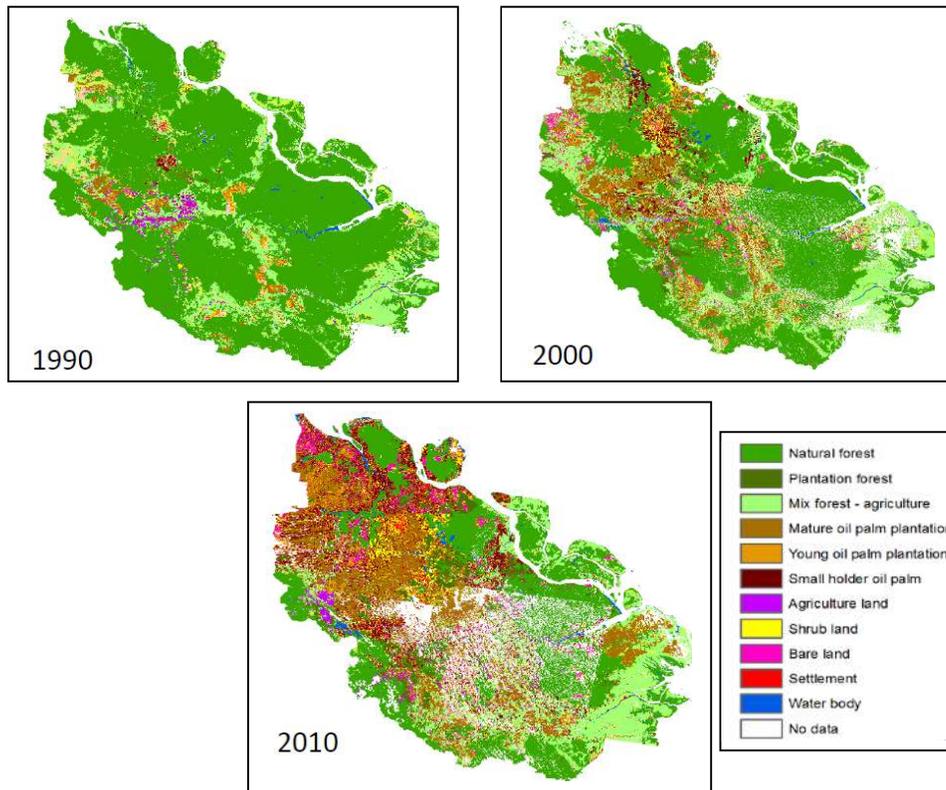
Peatland and Population

1. Riau is comprised of 8.7 million ha, of which 4 million ha is peatlands. It hosts a population of over 6 million people, many of which are living within peatland environments that are vulnerable to degradation if hydrology, land-use change, and fire impacts are of a scale that cause subsidence.

2. The project site, Sungai Kampar - Sungai Indragiri Peatland Hydrological Unit (SKI PHU), is a peatland hydrological unit in which the villages and communities selected for the project are all living on and within the peatland location and are subject to peat subsidence and degradation. The site is one of the few remaining central peat domes within Riau that is still intact. The SKI PHU is approximately 850,000 ha, distributed across three districts, representing nearly 10% of Riau. The project area is part of three administrative districts including Indragiri Hilir (approximately 50 percent of the SKI PHU); Indragiri Hulu (30 percent); and Pelalawan (20 percent).

Forest Change

3. Forest loss on mineral soil is known to be able to be replanted and recovered over time (history in other countries has shown this in tropical forests). However, on peatlands, the recovery of native forests has not been demonstrated, and it is unknown if they can be replanted and rehabilitated if degraded. Forest loss on peatlands may be a one-way path and lead to full loss and large-scale environmental damage and degradation that strongly impact the biodiversity and livelihoods of those living there. The forest loss and peatland land-use change within Riau is extensive and is shown on the maps below across a 20 year period.



Adapted from S Budidarson, 2014.

Communities

4. Thirteen target villages²⁶ have been selected to participate in the project based on the following selection method: (i) location inside of the SKI PHU; (ii) proximity to the remaining intact peat swamp forest; (iii) peat depth over one meter; (iv) severity of peatland management issues such as drainage, illegal logging, fires, unstable community livelihood; (v) expressed interest of the community to participate in project; and (vii) poverty level.

Private Sector

5. A significant portion of the SKI PHU is under the management of the private sector, including 13 industrial tree plantation companies, more than 10 oil palm plantation companies, and one large coconut plantation company. A significant portion of the community lands also have oil palm and coconuts. The coconut plantation is facing serious problems due to salt water intrusion and pests. A number of the oil palm plantations are impacted by subsidence and fire, and some of the industrial tree plantations are facing water management challenges.

Government Land Use Management

6. There is a dedicated reserve called the Kerumutan Nature Reserve. With its 350,000 ha it occupies a central position in the remaining intact forest. It has a staff of 4 people to oversee the conservation of the reserve, and it is at risk of being eroded at the edges. In a very short time it could be decimated from encroachment and illegal logging if concerted intervention did not take place. An example of this is shown on the maps overleaf of the Tesso Nilo National Park (a 100,000 ha reserve in the Jambi Province to the south of Riau, which is now eroded to less than 20,000ha over a ten year period and will continue to be encroached unless concerted intervention takes place). The example of Tesso Nilo and the forest change map of Riau show the magnitude and rate of forest change that can occur in this region.

Climate

7. Rainfall: Most of Sumatra Island had an increase of 10-50mm of rainfall during the period of 1980-2010 compared to 1961-1990. In most parts of Indonesia, an increased chance of daily extreme rainfall was shown for the period of 1998-2008. In some part of coastal Indonesian (South Sumatra, Java, Kalimantan, Brantas Catchment areas), the extreme dry months increased to 4 months over the 10 years – peaked to 8 months in 2002, a level that is considered as the longest dry season in five decades.

8. Sea level rise: According to the Simple Ocean Data Assimilation (SODA) data, Indonesia's sea level rise shows has increased from 0.8 mm/y to 1.6 mm/y since 1960 and then jumped to 7mm/7 in 1993. Between 1993 and 2008, the average rate of sea level rise ranged from 0.2 cm/year to 1 cm/year with an average of approximately 0.6 cm/year. The increase in sea level rise is a significant potential threat to Indonesia consisting of many islands and small islands. Considering the melting ice dynamics and thermal expansion of sea water, Indonesia could experience up to 175cm of sea level rise by 2100²⁷.

9. The level of climate change risks in Indonesia by region shows that Sumatra is very highly or highly vulnerable to flood, drought, forest fires and water availability.

10. Temperature increase: Based on the IPCC-AR4 model, the average temperature rise in Indonesia is predominantly caused the GHG emission effects and may result in approximately 0.8-1 °C until 2020-2050 compared to the 20th century²⁸. General circulation models projected warmer global temperature by 1.8 °C for low greenhouse gas emission SRES B1 scenario and by 4.0 °C for high

²⁶ Teluk Meranti, Pulau Muda, Kerumutan, Mak Teduh (Pelalawan District); Redang, Sialang Dua Dahan, Tanjung Sari, Pulau Jumaat, (Indrigiri Hulu District); and Harapan Jaya, Bayas Jaya, Simpang Gaung, Rambaian, Teluk Kabung (Indrigiri Hilir District).

²⁷ Bappenas, 2010b. Indonesian Climate Change Sectoral Roadmap, edited by Bappenas, Republic of Indonesia.

²⁸ National action plan for climate change adaptation. Synthesis Report, Republic of Indonesia. November 2013. http://climateobserver.org/wp-content/uploads/2015/02/Indonesia-RAN-API_Synthesis_Report_2013.pdf

emission SRES A1FI scenario at the end of the century (2090–2099) compared to that in 1980–1999²⁹. Accordingly, CIFOR’s study on tropical forest susceptibility to and risk of fire under changing climate concludes that the southern part of Indonesia including southern Sumatra is likely to be drier whereas the northern part of the country including central and northern Sumatra is likely to become wetter. Overall, El Nino Southern Oscillation (ENSO) and Indian Ocean Dipole Mode (IODM) phenomena can cause a big decrease in rainfall that leads to severe droughts in Indonesia.

11. Riau has a tropical climate with relatively constant temperatures with an average high around 31 degrees Celsius and average low of 23 degrees Celsius. There are two distinct dry periods: the first is a short period in January and February and the second a longer period from May to September. Traditionally, fires were restricted to the longer dry period during El Niño years; but this has recently changed, and burning is now becoming so sophisticated in Riau that it can occur in the short dry period of January and February and even during a La Nina season.

Climate data for Pekanbaru

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average high °C	30	31	31	31	32	32	31	31	31	31	31	30	31
Average low °C	23	23	23	23	24	23	23	23	23	23	23	23	23
Precipitation mm	180	210	220	250	200	160	120	170	210	240	300	270	2,580

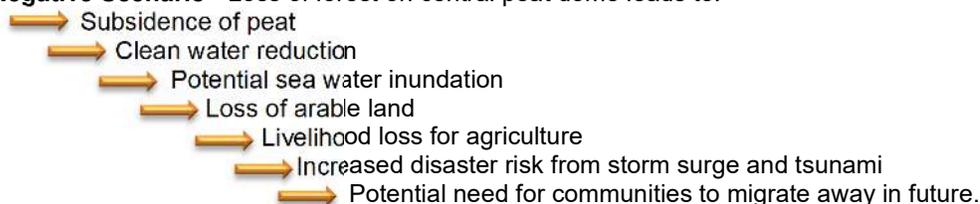
B Issues and Challenges at the SKI PHU

12. There are currently a number of conflicts and challenges among some of the stakeholder groups and a lack of coordinated management across the SKI PHU. These issues and more at SKI PHU are extensive, and mostly revolve around land-use conflict and land-use change within the peatland. They include: (a) the lack of unified management of the peatland hydrology, (b) the drainage of peatland and the use of fire for land clearing, (c) the degradation of the peat via oxidation and fire, (d) encroachment of the Kerumutan Wildlife Reserve and other conservation areas via land grabbing by both locals and external parties, (e) illegal logging along the boundaries and up the various rivers cutting through the peatland, (f) livelihood sustainability for the communities living on and within the peatland environment, and (g) the future disaster management scenarios that could result from lowering of the peat and increased sea level rise and storm surges.

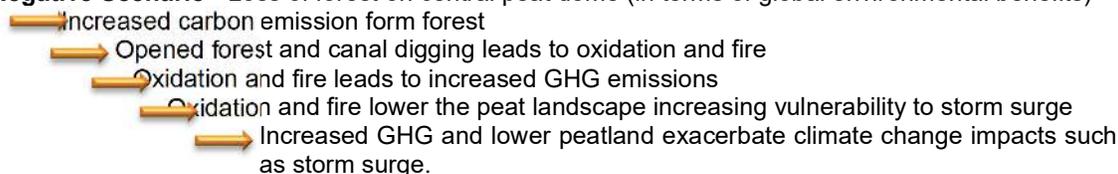
13. The interconnected nature of all these issues is nearly impossible to separate them into distinct and definitive areas of a project, and a failure to tackle all simultaneously is likely to result in limited success for the project as a whole. A multi-stakeholder and multi-pronged project approach is needed to manage the breadth of inter-related issues.

14. The short linked scenarios below indicate the connectedness of the different project aspects

Negative Scenario - Loss of forest on central peat dome leads to:



Negative Scenario - Loss of forest on central peat dome (in terms of global environmental benefits)



²⁹ G. A Meehl, et al. Global Climate Projections. Climate Change 2007 : The Physical Science Basis. Contribution of working group I to the 4th Assessment Report of the IPCC, Cambridge University Press, 2007, New York and Cambridge.

Negative Scenario - Future livelihood

- Forest loss and peat subsidence leads to inundation
- Inundated land cannot readily be inhabited or farmed
- Likely need for trans-locating towns and communities away from inundated areas
- Where to and how many and increased social pressures on other parts of the country.
- Changes to fisheries – positive or negative are unknown (fish nursery in mangrove, changes to river system fresh vs brackish, river breeding locations)

Positive Scenario - Explore means and methods within communities and companies to:

- Prevent encroachment on peat dome and stop encroachment and illegal logging
- Reduce / prevent illegal logging of peat dome and development of canals
- Reduce subsidence
- Reduce GHG emission (subsidence and fire)
- Find sustainable livelihood practices (on peat) and without need for fire thereby increase sustainability of the environment.

C Detailed social, environmental, and climate change impacts and risks

15. The following sections use the SECAP assessment approach to describe the positive and negative risk associated with social and environmental aspects of the project and consider the likelihood of climate change risks to the project outcomes.

Project Outcome 1: Capacity, institutional framework and knowledge enhanced for implementation of National Peatland Regulation (PP71), and National/ASEAN Peatland Management Strategy

Output	Environmental/Social Impact (description and magnitude)		Measures included to mitigate negative impacts in the Project Design, and build on positive impacts of Project Design
	Positive impacts	Negative Impact	
Output 1.1: Policy, regulations and institutions for sustainable peatland management enhanced Output 1.2: Capacity and knowledge management for sustainable peatland management strengthened	<ul style="list-style-type: none"> • Delivery of these outputs will enhance Government, private and community sectors to improve peatland sustainability processes to be developed and followed. 	<ul style="list-style-type: none"> • Poorly conceived processes and systems can lead to increases in forest and peatland loss (e.g. perverse incentives, patronage politics, and individual gain over common good of the people). 	<ul style="list-style-type: none"> • Patronage politics pervades the business / policy arena, and separation of governance for the good of the people over private gain is often difficult and fraught with challenges. The project team to actively work to influence and guide policy and regulations to avoid perverse incentives, and test for individual/company gain over and above the “common good of the people”.
Output 1.3: Peatland Hydrological Unit (PHU) maps for management zoning in selected provinces developed.	<ul style="list-style-type: none"> • Hydrological unit mapping can increase awareness and knowledge of interlinked system and open stakeholder understanding 	<ul style="list-style-type: none"> • Delays in mapping may be used as excuses to “do nothing” or continue development under BAU. 	<ul style="list-style-type: none"> • Detailed mapping of hydrological units does not preclude positive actions from occurring today. Adequate maps exist to begin substantive activities, and further mapping will enhance and build on those efforts.

Climate Risk (description and magnitude)		Measures included to mitigate negative impacts in the Project Design, and build on positive impacts of Project Design
Positive impact	Negative Impact	

<ul style="list-style-type: none"> • The impacts of climate change on vulnerable coastal and peatland environments in Indonesia is poorly recognized and if not countered will be a future national and international environmental, social, and economic disaster. • Creating the right policy environment, national and international support will work to counter the magnitude of this future disaster. • Magnitude Medium 	<ul style="list-style-type: none"> • If the project fails to channel the clarity of messages to the right political forces (both elected and informal political forces), the continuance of peatland degradation will occur largely unabated, leading to a very rapid decline of agriculture lands, social dislocation with communities being forced to migrate to higher ground, and economic losses for companies and the government alike. 	<ul style="list-style-type: none"> • This project element does not entail activities that will be directly climate change impacted. However, the design of policy, regulatory or BMP documentation will influence climate change thinking, processes and the government, private, community perspectives on impacts and change needed. For this reason alone the magnitude of Climate Risk influence on this project element is tagged moderate (as a result of the positive or negative influence this could have at the national level of knowledge and understanding).
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Outcome 2: Integrated Fire Management (IFM) approach with nested Community-Based Fire Management (CBFiM)

Output	Environmental/Social Impact (description and magnitude)		Measures included to mitigate negative impacts in the Project Design, and build on positive impacts of Project Design
	Positive impact	Negative Impact	
Output 2.1: National Peatland Fire Prediction, Monitoring, and Warning Systems strengthened and their usage enhanced	<ul style="list-style-type: none"> • By re-communicating early warning, getting FDRS and hotspot data to the people most in need of this data can have positive influence on preventative and suppression measures 	<ul style="list-style-type: none"> • Most fires are intentionally lit for land development purposes, and their early suppression is not desired by those wanting the fire. • Increased knowledge on FDRS changes across the landscape may cause fire lighters to have better insight to locations to target for fire ignitions. 	<ul style="list-style-type: none"> • Establishing the foundation of the Fire Prevention and Integrated Fire Management (IFM) processes at the sub-district level and the Community Based Fire Management (CBFiM) processes at the Village level will be an important first step to put the communication messages into the right context and develop suitable and working Standard Operating Procedures (SOPs) for teams to appropriately respond. • In effect the creation of the right processes as per above will work to counter the misuse of fire communication messages and allow prevent measures to overcome illegal activities using fire.
Output 2.2: Peatland fire reduced through Integrated Fire Management (IFM) and Community Based Fire Management (CBFiM) in	<ul style="list-style-type: none"> • Building a Fire Prevention System and providing key messages in the field will be a first step toward an Integrated Fire Management (IFM) and Community Based Fire Management (CBFiM) approach 	<ul style="list-style-type: none"> • Fire Prevention may be seen as a barrier to economic development and some backlash may occur. 	<ul style="list-style-type: none"> • The right balance of IFM leads to multiple benefits on social, environmental and economic fronts. Building this as a well-balanced and well-conceived system will enhance positive and counter negative aspects.

targeted sub-districts in Riau province	which carries far-reaching positive benefits on social, environmental and economic balancing.		
Output 2.3: Assessment of potential GHG emission reductions from targeted peatlands	<ul style="list-style-type: none"> Increased knowledge and technical understanding of peatland GHG emission can improve Governmental decision making and National projections to the IPCC 	<ul style="list-style-type: none"> There is a possibility that the emissions from peatlands are underestimated and some political appointees may want these details suppressed from national and International publications 	<ul style="list-style-type: none"> A well-conceived and technically astute peatland GHG monitoring and measurement system for Indonesia will be of national benefit in the longer run. The project team will need to monitor the <i>status quo</i> and determine if any political back channel issues arise as part of this technical development and creation of improved analytics.

Climate Risk (description and magnitude)		Measures included to mitigate negative impacts in the Project Design, and build on positive impacts of Project Design
Positive impact	Negative Impact	
<ul style="list-style-type: none"> The project is focused on a very fragile peatland environment subject to rapid decline from human and climate change related actions. If this project can positively change local perceptions and field actions toward limiting peatland degradation and loss of forest cover, a significant change in fire susceptibility and occurrence will result in positive impacts toward GHG reduction, smoke haze reduction, and longer term landscape sustainability 	<ul style="list-style-type: none"> Increases in fire activity, forest cover loss and peatland degradation will signal a project failure, and exacerbation of climate change impacts across this site and more widely in Riau and Sumatra will pervade. All facets of the fire occurrence and forest cover loss activities should be viewed in a wider landscape perspective, including things such as El Nino and La Nina seasons and changes to national forest policies and enforcement practices. 	<ul style="list-style-type: none"> This project element entails activities that will be climate change impacted – from both a positive and negative viewpoint. IFM and CBFiM are both fire management practices and systems that entail a “balance” between competing tensions, be they prevention vs suppression, or economic and social. Developing and using these processes will enhance the positive and mitigate the negative implications. . The project will reduce the potential increased fire risk associated with climate change.

Outcome 3: Integrated sustainable management of Sungai Kampar Indragiri Peatland Hydrological Unit (SKI-PHU)

	Environmental/Social Impact (description and magnitude)		Measures included to mitigate negative impacts in the Project Design, and build on positive impacts of Project Design
	Positive impact	Negative Impact	
Output 3.1: Sustainable peatland management partnership between private sector, government, and communities for the Sungai Kampar - Indragiri Peatland Hydrological Unit (SKI PHU).	<ul style="list-style-type: none"> Developing improvements in peatland sustainability will reduce the degradation of a fragile ecosystem. Building an understanding of the linked hydrological system will enhance the capacity of all stakeholders to positively create 	<ul style="list-style-type: none"> Caution must be accounted for within a linked hydrological system such that all activities on one parcel of land can ultimately affect the hydrology of surrounding parcels of land. There is a need to test new hydrological separation techniques for rehabilitation, some 	<ul style="list-style-type: none"> The linked hydrological nature of peatlands is only now coming to the fore in Indonesia, and substantive strides in understanding will have positive benefit. This needs to be documented and understood by all stakeholders. Building the techniques for linked hydrology understanding as well as rehabilitation processes for canals and vegetation

	change to improve the linked hydrology.	<p>of which may fail and have the potential to exacerbate change. These negative tests must be rehabilitated as part of the project to stop their future influence if found unresponsive.</p> <ul style="list-style-type: none"> • Company and concession lands that are newly opened in the project area can lead to rapid settlement migration along roads and access points leading to further encroachment of surrounding landscapes 	<p>cover will have positive influences.</p> <ul style="list-style-type: none"> • The multi-stakeholder approach will assist to build on positive and reduce negative influences to the outcomes sought here. • Private, Government and Community leaders in partnership need to consider appropriate settlement locations that won't exacerbate encroachment, and will sustain communities and development. Some engagement with public land planning and spatial planning controls will be valuable manage this risk.
Output 3.2: Community livelihood from sustainable peatland management enhanced	<ul style="list-style-type: none"> • Community livelihood sustainability practices within the peatland environment will have positive social and environmental consequences. These will be designed using extensive consultative processes and leading technology understanding. • By creating sustainable livelihood activities that can co-benefit families and communities, the pressure for land expansion and development of peatlands is reduced. 	<ul style="list-style-type: none"> • The inability to engage with and show positive change for livelihoods will disenfranchise communities from participation and lead to a failure of this program element. • There is a chance that the project will be perceived as slowing livelihood development by slowing land-use change in peatlands. • If sustainable livelihood activities are donor-dependent to continue, there will be minimal sustainability of these activities. 	<ul style="list-style-type: none"> • Substantive and strongly aligned communications with communities will be essential to develop workable solutions to challenging problems that can link livelihood development, sustainability and the communities' futures to the project activities. This facet of work will be underpinned by well trained and experienced people who have a track record of these achievements. • Integrating these project elements with the IFM and CBFIM activities will concurrently link positive and integrative outcomes. • Output 3.2 provides means to mitigate possible implications on livelihoods induced by positive land use change in peatlands. • This project element will hinge upon the consideration and development of sustainable livelihood activities that can be self-sustaining. This is a key input consideration for these activities.

Climate Risk (description and magnitude)		Measures included to mitigate negative impacts in the Project Design, and build on positive impacts of Project Design
Positive impact	Negative Impact	

<ul style="list-style-type: none"> The project is working within 13 communities and different private sector plantations living and working within a single linked peatland hydrological unit. These communities do not yet appreciate that all their collective activities influence their longer-term ability to live and sustain their lives within this peatland location or the climate related risks. Building a set of messages that show these linkages and how they can positively work to influence both their own sustainability but also that of the core of the peat dome will increase their longer-term economic and social sustainability as well as resilience to the impacts of future climate change.. 	<ul style="list-style-type: none"> A failure to improve social resilience and environmental sustainability will lead to future community migration away from these landscapes and their homes as a result of inundation, failing agriculture, and loss of economic benefits derived from the degraded land. 	<ul style="list-style-type: none"> The development of an integrated peatland hydrological unit and plan at its very heart is aimed at increasing the positive elements noted and reducing the negative elements known. Consultative processes, technical experts, and community communications specialists will be brought together to build out and design these work elements.
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Outcome 4: Project effectively managed, monitored and evaluated

	Environmental/Social Impact (description and magnitude)		Measures included to mitigate negative impacts in the Project Design, and build on positive impacts of Project Design
	Positive impact	Negative Impact	
Output 4.1: Project governance and mechanism overseen and guided, and effectively coordinated, monitored and evaluated	<ul style="list-style-type: none"> When considering the administrative elements of this project including the Steering Committee, PMU, and the monitoring and evaluation processes, these can all be built and designed to have substantive positive influence over the project outcomes and will be sought to do so. 	<ul style="list-style-type: none"> The selection and participation of the Steering Committee and stakeholders brings with it the risk of political gamesmanship and patronage politics with individuals seeking personal gain. 	<ul style="list-style-type: none"> The transparency arrangements, external oversight and recognition of the challenges faced when working in a tensioned landscape environment are all part of the due consideration as part of the teaming and design elements. These considerations will mitigate the risks identified.

Climate Risk (description and magnitude)		Measures included to mitigate negative impacts in the Project Design, and build on positive impacts of Project Design
Positive impact	Negative Impact	
<ul style="list-style-type: none"> The Governmental partners and team members participating across the project can positively influence the overall understanding of the wider stakeholder set toward climate change impacts and mitigation within the peatland environment, and this will be sought from partners. 	<ul style="list-style-type: none"> Partners that are wedded to the <i>status quo</i> can negatively influence the project activities and success of the outcomes. 	<ul style="list-style-type: none"> The external review audits and Steering Committee members will be selected with a view to bringing unbiased perspectives and an open mind to the needs and challenges of this project.

D Environmental and social category

16. The project objectives and outcomes sought are all aimed at positive influences on

environmental and social settings. Simultaneously, it is recognised that the entire location of the work, including all the community engagement locations, is on and within a single linked hydrological unit, or peat dome, and the entire landscape is a peatland landscape.

17. On balance and in consideration of the project activities focus on mitigating negative impacts and not presenting risk to contribute to negative impacts the risks reflect a **B rating category**. Under the SECAP guidelines a B category rating warrants further environmental analysis and consideration during the implementation stages of the project as necessary.

18. In considering the overall project risk category as well as the aims and objectives of reducing degradation, it is recommended that at project commencement a series of testing principles be designed as questions that can be answered, for each project activity, to determine in detail, whether there are unknown environmental or social risks and the quantification of those risks at that time, as well to develop a monitoring mechanism to determine any potential negative or positive impacts.

Summary of Outcomes	Risk Category
1 – Institutional, policy and regulatory setting	C
2 – GHG emissions and integrated fire management setting	B
3 – Integrated landscape and community planning setting	B
4 – Project Management	C

E Climate risk category

19. The climate risks for this project are again linked to a fragile peatland environment as a coastal landscape that is closely linked to the influences of sea-level rise, inundation (as per the coconut plantations at the site) as well as coastal erosion, subsidence as per the city of Tembilahan (seen by the project team), and the chance of increased risk from tsunami damage penetrating further inland as the peatlands erode, leading whole communities to be lowered in the landscape and more vulnerable to impact.

20. The Climate Risk Category (under the SECAP guidelines) for this project is rated as **Moderate category**. The project activities being undertaken are all aimed at mitigating the climate related issues and aspects identified above so the project is not exacerbating those risks, but rather the risks above have potential to influence the outcomes of the project, but the project activities of themselves are not increasing the negative impacts, rather mitigating these, therefore warranting a Moderate category rating.

21. In considering the project activities, it is recommended that during the project implementation stages a series of climate change risk assessments are undertaken for any additional project activities currently not identified to determine the likely impact of climate change and make adjustments to increase resilience to climate change impacts on the project activity itself.

Outcomes	Environmental and Social Risk Category
1 – Institutional, policy and regulatory setting	Low
2 – GHG emissions and integrated fire management setting	Low
3 – Integrated landscape and community planning setting	Low
4 – Project Management	Low

F Further information required to complete screening, if any

22. The field-based activities, community livelihood systems, and agriculture systems that could be used to enhance livelihoods as well as the facets of IFM and CBFiM are yet to be detailed. Each of these design features requires a multi-stakeholder approach, and current consultations with the stakeholder groups on the ground have only occurred in a preliminary manner at this stage. As the project moves into implementation, these consultations will become increasingly detailed.

23. At the implementation stage an additional set of sustainability and climate risk analytics should take place to confirm that the activities are positive enhancements and do not bear negative impacts.

This work will be facilitated by the project team especially the Technical Facilitators to be based at sub district level under Output 3.2.

24. The capture, documentation, and dissemination of the positive effects of project outcomes can be used to leverage these lessons learned to other peatland areas across Sumatra and Indonesia more widely.

G Recommended features of project design and implementation

25. The project by its very nature is focused on the conservation and protection of the peatland environment and the socio-economic development of communities within the project sphere, thus enhancing environmental and socio-economic impacts of the baseline practice to the extent it is possible.

26. Enhancing the positive elements of the project and avoiding pitfalls will be a central driver to all project management decisions. Facets of the project design which will supplement and augment these ideas are:

- a) The use of a multi-stakeholder approach at the design and delivery stages, including the creation of multi-benefit approaches, incentives for good practice, participatory approaches and clear mitigation measures.
- b) Clarity of commitment by Government and private stakeholders.
- c) A strong sense of the community needs through past projects and research within and surrounding the site, as well as sound analysis of alternatives and creation of novel approaches to challenging situations.
- d) A focus on communications within the project development as well as outward into the wider national realm to share lessons learned, as well as building institutional capacity for managing elements within the GEF framework of results and impacts.
- e) The use of holistic and recognised integrated approaches to both peatland management and fire management, as well as linkages and partnerships with other projects and research studies that are occurring across the peatlands and locally within Riau, including projects with the World Bank, ASEAN, EU, GIZ, USAID, JICA and the local Indonesian research agencies such as FORDA and their linked university partners.

27. The project will be externally reviewed from time to time by third party teams selected by IFAD. This will increase the project transparency and give strength or voice to contrary opinion throughout the project implementation.

Appendix 6: Sustainable Management of Peatland Ecosystem in Indonesia (SMPEI) Project Gantt-chart

Activities	Baseline Q4-2015	Y1 2016	Y2 2017	Y3 2018	Y4 2019
OVERALL GOAL: SUSTAINABLE PEATLAND MANAGEMENT ENHANCED AND GHG EMISSIONS FROM PEATLANDS REDUCED IN INDONESIA					
OBJECTIVE: LANDSCAPE-BASED SUSTAINABLE PEATLAND MANAGEMENT PROMOTED, AND PEAT FIRE AND GHG EMISSIONS REDUCED					
COMPONENT 1: CAPACITY BUILDING AND INSTITUTIONAL STRENGTHENING FOR IMPLEMENTATION OF POLICIES AND REGULATIONS FOR SUSTAINABLE PEATLAND MANAGEMENT					
OUTCOME 1: CAPACITY, INSTITUTIONAL ARRANGEMENTS AND KNOWLEDGE ENHANCED FOR IMPLEMENTATION OF NATIONAL PEATLAND REGULATION (PP71) AND ASSOCIATED REGULATIONS/STRATEGIES					
Sub-component 1.1: Strengthen policy, regulations and institutional mechanisms for sustainable peatland management					
1.1.1 Support the development of Ministerial Regulations for the implementation of RPMPE					
1.1.2 Support the establishment of institutional mechanisms to oversee the implementation of the RPMPE					
1.1.3 Review and revise National Strategy on Peatlands and other sectoral regulations as appropriate taking into consideration PP71					
1.1.4 Planning and reporting on implementation of National Strategy on Peatlands, PP71, APMS and APSMPE					
1.1.5 Strategic studies to guide sustainable peatland management					
Sub-component 1.2: Strengthen capacity and knowledge management for sustainable peatland management					
1.2.1 Develop capacity development programme to support implementation of PP71 and associated regulations as well as for landscape-scale peatland use planning, management and rehabilitation as well as fire prevention					
1.2.2 Capacity development for core staff of Peatland Directorate, other related units in MoEF, relevant key stakeholders and Riau Government					
1.2.3 Promote PP71 and related sub regulations as well as sustainable peatland management and rehabilitation options to various stakeholders at national and provincial/district level					
1.2.4 Support capacity for related agencies to effectively participate in the ASEAN processes related to peatlands including APMS, AATHP and APSMPE, ASEAN Task Force on Peatlands and TWG/MSG on Haze					
1.2.5 Document and share experiences and best practices in relation to sustainable peatland management					
1.2.6 Undertake training and peer learning on BMP for SPM					
1.2.7 Provide strategic technical advice to support the implementation of the SMPEI project at different levels and linkages to other national and regional initiatives					
Sub-component 1.3: Develop Peatland Hydrological Unit (PHU) maps for management zoning in selected provinces					
1.3.1 Develop a demonstration PHU Map and functional classification of the targeted Kampar-Indragiri PHU and Pulau Bengkalis in Riau at a scale of 1:50,000 using existing MoEF methodologies					
1.3.2 Undertake aerial survey of peatlands along coast of western Sumatra using LIDAR to determine location and nature of peat domes					

	Baseline	Y1	Y2	Y3	Y4
Activities	Q4-2015	2016	2017	2018	2019
1.3.3 Organise workshop(s) and undertake study to share experience and lessons learned from activities 1.3.1 and 1.3.2 review and refine approaches and develop cost-effective methodologies for scaling up assessments of PHUs combining remote sensing and field assessments to determine extent, characteristics and functional use zones of PHUs and support process to develop National Peatland Hydrological Unit maps and National Peatland Characteristics assessments by 2018					
1.3.4 Undertake mapping and assessments of at least one other PHU based on revised methodology					
1.3.5 Develop and test efficient and cost effective methodologies for measurement, monitoring and reporting of water levels and other characteristics of peatlands as required under PP71					
COMPONENT 2: MONITORING PEATLAND DEGRADATION, FIRES AND GHG EMISSIONS					
OUTCOME 2: USE OF KEY TOOLS AND SYSTEMS FOR FIRE PREVENTION ENHANCED AT THE NATIONAL LEVEL AND GHG EMISSION REDUCTION ASSOCIATED WITH PROJECT ACTIVITIES MONITORED					
Sub-component 2.1. Strengthen national peatland fire prediction, monitoring and warning systems					
2.1.1 Strengthen operation of FDRS and Hotspot monitoring as well as institutional arrangements for dissemination and use of FDRS warning and Hotspot monitoring					
2.1.2 Strengthen mechanisms for the effective dissemination and use of peatland fire prediction, monitoring and warning systems					
2.1.3 Develop specific guidance and training materials on Integrated Fire Management					
2.1.4 Develop and support implementation of district/sub-district fire prevention strategies					
2.1.5 Develop and test incentive mechanisms to be deployed at targeted sub-district and village levels to effectively prevent fires					
Sub-component 2.2. Assessment of GHG emission reductions from targeted peatlands					
2.3.1 Support work to refine appropriate MRV methodologies for peatlands suitable for use in the targeted pilot site and also implementation of RPMPE					
2.3.2 Undertake baseline and post project assessment of pilot site(s) to determine current/BAU projected emissions and impact of project enhancements					
COMPONENT 3: Landscape level sustainable management of peatlands					
OUTCOME 3: Sungai Kampar - Indragiri Peatland Hydrological Unit (SKI PHU) managed in an integrated, sustainable manner in partnership with private sector and communities					
Sub-component 3.1. Develop and implement an integrated sustainable management plan for Sungai Kampar - Indragiri Peatland Hydrological Unit (SKI PHU)					
3.1.1 Participate in development and promotion of an Integrated Protection and Management Plan for PHU					
3.1.2 Implement Integrated Fire Management Plan					
3.1.3 Implement Forest Protection and rehabilitation measures for PHU					
3.1.4 Implement BMP including PP71 requirements by oil palm, fibre and coconut plantations within PHU					
3.1.5 Develop and implement peatland environmental monitoring system for pilot site					

	Baseline	Y1	Y2	Y3	Y4
Activities	Q4-2015	2016	2017	2018	2019
Sub-component 3.2: Community livelihood from sustainable peatland management enhanced					
3.2.1 Undertake socio-economic and peatland management assessment of the targeted villages					
3.2.2 Document the community development support provided by the plantation companies and other sources in the targeted communities and establish dialogue to identify options to enhance strategic value of support and linkage to sustainable peatland management and fire prevention					
3.2.3 Support community organization through establishment of working or interest groups with assistance of community facilitators for different livelihood or peatland management activities					
3.2.4 Support specific livelihood or peat management activities through provision of grants/micro-credit to working groups to support activities linked to peatland/natural resource management					

Appendix 7: GHG emission reduction benefit assessment

The GHG emission reduction for SMPEI has been calculated through application of the IPCC 2013 Supplement to the 2006 Guidelines for National Greenhouse Gas Inventories: Wetlands (the Wetlands Supplement). The Wetlands Supplement was developed upon the request of UNFCCC to undertake further methodological work on wetlands, focusing on the rewetting and restoration of peatland.

The selection of GHG emission assessment methodology for SMPEI followed the latest GEF Guidelines for GHG emissions accounting and reporting (May 2015). As a project that develops policy, regulatory frameworks and financial mechanism on land-use planning and capacity building and that influences agroforestry areas (incl. peatlands), SMPEI incorporated the Wetlands Supplement for CO₂ and non-CO₂ emissions from fires on drained inland organic soils. In addition for the calculation of emission reductions related to enhanced water management in peatlands – the project has adopted the methodology approved by the Emission Reduction Working Group of the Round Table on Sustainable Palm Oil (RSPO) (RSPO 2014) which addresses the differential emissions from drainage according to the average water table.

The following assumptions were applied to the GHG emissions reduction assessment of the SMPEI:

- The methodology is based on the Wetlands Supplement
- All GHG emissions are converted to tonnes of CO₂e for the project
- The CO₂e reductions reported are cumulative reductions, estimated for the project period only and not the lifetimes of the investments
- There is no discounting for future GHG emission reductions

Given the characteristics of the soil type in the project areas of SMPEI (i.e. soil organic/wet, non-flooded land, not constructed for wastewater treatment, non-coastal land), the assessment refers to Drained Inland Organic Soils (Chapter 2) and Rewetted Organic Soils (Chapter 3) of the Wetlands Supplement. The land-use categories applied are thus organic wet soil and organic drained soil.

The challenge of estimating more accurate GHG emissions in Indonesia peatlands is that there has been no harmonized map indicating peatland soil types, function and current practice. The Ministry of Environment and Forestry aim to inventory and map peatlands and this is part of the SMPEI activities. The ex-ante assessment thus assumes the size of peatlands and its function/characteristics in a broad sense and the accuracy will be improved upon the completion of peatland mapping.

- Total peatlands in the Sungai Kampar - Sungai Indragiri Peatland Hydrological Unit (SKI PHU): 850,000 hectares (10% of Riau)
- Kerumutan Nature Reserve (NR), inclusive of other forests on the Kerumutan Peat dome: 350,000 ha
- Assumed small- and large-scale plantation in SKI PHU: 400,000 ha
- Assumed mix cropland + shrub in SKI PHU: 5000 ha (5% of neither NR nor plantation) with degradation of -1.5%/y over 4 years
- Degraded peat in Riau: 1,276,541 ha
- Assumed degraded peat in SKI PHU: 127,654 ha (10%)
- Average shrub cover in Riau: 1%
- Average total mix cropland + shrub (small-scale agriculture) in Riau: 26%
- Average forest cover including logged areas in Riau: 66%
- Land cover trends between 1985-2006 in Southeast Asia: 47% deforested (17% intensive drainage for large-scale agriculture, 67% for small-scale agriculture for mixed cropland and shrubland, and 16% cleared or burnt)
- BAU deforestation rate in remaining forest in SKI PHU assumed for 4 years: 5.7%

- Average Forest change range between 1985-2000 in Riau: -1.4%/y30
- Organic soil fuel consumption values for tropical wildfire on drained peat: 353 tonne dry matter/ha
- Emission Factors for organic soil fire in the tropical zone: CO₂ 0.464 tCO₂/t dry matter

1. **Estimated avoided CO₂e emissions and removals from drained inland organic soils + Rewetted organic soils**

Project will influence large plantation companies to reduce their carbon emissions with a total of assumed 400,000 ha involved which 300,000 ha for Acacia plantations and 100,000 ha for oil palm plantations.

BAU

In the BAU scenario it is expected that Acacia will be maintained at an average water level of 100cm below the surface and oil palm at 75cm below the surface. The emissions over 4 years would be as follows

Acacia: $300,000 \text{ ha} \times 0.91 \text{ tCO}_2/\text{ha/cm drainage} \times 100\text{cm drainage} \times 4 \text{ years} = 109,200,000 \text{ tCO}_2$

Oil palm: $100,000 \text{ ha} \times 0.91 \text{ tCO}_2/\text{ha/cm drainage} \times 75\text{cm drainage} \times 4 \text{ years} = 27,300,000 \text{ tCO}_2$

With project

A. Lower Estimate of 20%

It is assumed that better water management will be successfully introduced in approximately 20% of the acacia and oil palm and that this will progressively happen over the four years (calculated as 2 years with BAU water level and 2 years as with project water table). Better water management will be a water level of 60cm in Acacia and 50cm in oil palm.

Acacia:

3,000 ha would be taken out of production and rewetted with zero emission

$57,000 \text{ ha} \times 0.91 \text{ tCO}_2/\text{ha/cm drainage} \times 60\text{cm drainage} \times 2 \text{ years} = 6,224,400 \text{ tCO}_2$

$57,000 \text{ ha} \times 0.91 \text{ tCO}_2/\text{ha/cm drainage} \times 100\text{cm drainage} \times 2 \text{ years} = 10,374,000 \text{ tCO}_2$

$240,000 \text{ ha} \times 0.91 \text{ tCO}_2/\text{ha/cm drainage} \times 100\text{cm drainage} \times 4 \text{ years} = 87,360,000 \text{ tCO}_2$

Total 103,958,400 tCO₂

Total accumulative CO₂ emission with project from 300,000 ha of Acacia plantations is 103,958,400 tCO₂. Thus, total emission reduction from BAU Acacia plantations with 20% is 5,241,600 tCO₂ in four years.

Oil palm:

$20,000 \text{ ha} \times 0.91 \text{ tCO}_2/\text{ha/cm drainage} \times 50\text{cm drainage} \times 2 \text{ years} = 1,820,000 \text{ tCO}_2$

$20,000 \text{ ha} \times 0.91 \text{ tCO}_2/\text{ha/cm drainage} \times 75\text{cm drainage} \times 2 \text{ years} = 2,730,000 \text{ tCO}_2$

$80,000 \text{ ha} \times 0.91 \text{ tCO}_2/\text{ha/cm drainage} \times 75\text{cm drainage} \times 4 \text{ years} = 21,840,000 \text{ tCO}_2$

Total 26,390,000 tCO₂

Total accumulative CO₂ emission with project from 100,000 ha of oil palm plantations is 26,390,000 tCO₂ if only 20% of the plantations comply with the enhanced water management. Thus, total emission reduction compared to BAU from the oil palm plantations is 910,000 tCO₂ in four years.

Total reduction of accumulative carbon emission with project of lower estimate of 20% is 6,151,600 tCO₂ (value a) in four years.

B. Higher Estimate of 30-33%

³⁰ [A. Hooijer et al. Current and future Co2 emissions from drained peatlands in Southeast Asia. Biogeosciences, 7, 2010. http://www.biogeosciences.net/7/1505/2010/bg-7-1505-2010.pdf](http://www.biogeosciences.net/7/1505/2010/bg-7-1505-2010.pdf)

It is assumed that better water management will be successfully introduced in approximately 30% of the acacia and oil palm and that this will progressively happen over the four years (calculated as 2 years with BAU water level and 2 years as with project water table). Better water management will be a water level of 60cm in Acacia and 50cm in oil palm.

Acacia:

3,000 ha would be taken out of production and rewetted with zero emission
97,000 ha * 0.91 tCO₂/ha/cm drainage * 60cm drainage * 2 years = 10,592,000 tCO₂
97,000 ha * 0.91 tCO₂/ha/cm drainage * 100cm drainage * 2 years = 17,654,000 tCO₂
200,000 ha * 0.91 tCO₂/ha/cm drainage * 100cm drainage * 4 years = 72,800,000 tCO₂
Total 101,046,000 tCO₂

Total accumulative CO₂ emission with project from 300,000 ha of Acacia plantations is 101,046,000 tCO₂. Thus, total emission reduction from BAU Acacia plantations is 8,154,000 tCO₂ in four years.

Oil palm

30,000 ha * 0.91 tCO₂/ha/cm drainage * 50cm drainage * 2 years = 2,730,000 tCO₂
30,000 ha * 0.91 tCO₂/ha/cm drainage * 75cm drainage * 2 years = 4,095,000 tCO₂
70,000 ha * 0.91 tCO₂/ha/cm drainage * 75cm drainage * 4 years = 19,110,000 tCO₂
Total 25,935,000 tCO₂

Total accumulative CO₂ emission with project from 100,000 ha of oil palm plantations is 25,750,000 tCO₂ if only 30% of the plantations comply with the enhanced water management. Thus, total emission reduction compared to BAU from the oil palm plantations is 1,365,000 tCO₂ in four years.

Total reduction of accumulative carbon emission with project of higher estimate of 30-33% is 9,519,000 tCO₂ (value a) in four years.

2. Estimated avoided CO₂ and non-CO₂ emissions from fires on drained inland organic soils using the Wetlands Supplement

As mentioned in the Wetlands Supplement, the uncertainties in the assessment of fires on organic soils are much higher because organic soils can burn over long time reading different depths. As well, the type and density of the soil organic material combined with the combustion efficiency will determine the nature of gases and other compounds emitted.

The following equation used to calculate avoided CO₂ and non-CO₂ emissions from fires on drained inland organic soils:

$$\text{Amount of CO}_2 \text{ emissions in tonnes} = \text{Total area burned annually (ha)} * \text{Soil fuel consumption value (t dry.matter/ha)} * \text{Emission factor for each gas (tCO}_2\text{/t dry matter)}$$

The values applied for mass of fuel available for combustion and emission factor are 353 td.m/ha of dry matter and 0.464 tCO₂/t dry matter burned.

The baseline data of fire affected areas between 2014-2015 will be assessed in preparation of the start-up. As an ex-ante,

A. Lower Estimate of 2,500 ha

It is assumed that the project will reduce the area of peatlands that will burn by 2,500 ha during the project period.

Avoided CO2 emissions = 2,500 ha * 353 t d.m/ha * 0.464 tCO₂/t d.m = 409,480 tCO₂

Total reduction of accumulative carbon emission by avoided fire/burning from peatlands with project (with lower estimate of 2,500 ha) is 409,480 tCO₂ (value b).

B. Higher Estimate of 5,000 ha

It is assumed that the project will reduce the area of peatlands that will burn by 5,000 ha during the project period.

Avoided CO2 emissions = 5,000 ha * 353 t d.m/ha * 0.464 tCO₂/t d.m = 818,960 tCO₂

Total reduction of accumulative carbon emission by avoided fire/burning from peatlands with project (with higher estimate of 5,000 ha) is **818,960 tCO₂** (value b).

3. Estimated avoided CO2 and non-CO2 emissions from deforestation

BAU

20,000 ha of peatland forests assumed to be cleared where 10,000 ha to be cleared and burnt but another 10,000 ha cleared but not burnt in four years. For this section only the emission from the Above Ground Biomass (AGB) is calculated as the emissions from the burning is covered in Point 2 above. It is assumed that the land to be cleared has an AGB of 100tC/ha.

20,000 ha * 100 tC/ha * 3.67 (C-CO₂ conversion factor) = 7,340,000 tCO₂

Total accumulative carbon emission estimated as 7,340,000 tCO₂ in four years.

With project

Lower estimate of 5,000

It is assumed that the deforestation rate is halved through the action of the project so that in the project situation 5,000 ha of peatland forests are assumed to be cleared (with half being burnt – representing the reduction of 2,500 ha of burning as mentioned in point 2 above)

5,000 ha * 100 tC/ha * 3.67 (C-CO₂ conversion factor) = 1,835,000 tCO₂

Total reduction of accumulative carbon emission by avoided deforestation of peatlands with the project is thus **1,835,000 tCO₂** (value c).

Higher estimate and 10,000

It is assumed that the deforestation rate is halved through the action of the project so that in the with project situation 10,000 ha of peatland forests are assumed to be cleared (with half being burnt – representing the reduction of 5000ha of burning as mentioned in point 2 above)

10,000 ha * 100 tC/ha * 3.67 (C-CO₂ conversion factor) = 3,670,000 tCO₂

Total reduction of accumulative carbon emission by avoided deforestation of peatlands with the project is thus **3,670,000 tCO₂** (value c).

Projected GHG emission reduction benefit benefit from SMPEI with lower and higher estimates is in table below (value a + value b + value c):

Estimated avoided emissions from	Lower Estimate (tCO ₂)	Higher Estimate (tCO ₂)
1. Drained/rewettered soil (Value a)	6,151,600	9,519,000
2. Reduced Fire (Value b)	409,480	818,960
3. Avoided Deforestation (Value c)	1,835,000	3,670,000

Total	8,396,080	14,007,960
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For purpose of Tracking Tool, the lower estimate of 8,396,080 tCO₂ of direct emission reductions during the project period is taken.

Appendix 8: Feasibility analysis for alternative livelihood development

A set of financial models have been developed to assess the viability of alternative on- and off-farm income generating activities. This analysis provides preliminary insight on the magnitude of economic benefits to be generated from alternative income generation activities in comparison with cropping as currently practiced.

The analysis is based on cropping on 1 hectare of land and focuses on the following: (1) currently cultivated annual crops such as rice, maize, and cassava; (2) an alternative crop (chilli); and (3) green employment for undertaking canal blocking to increase water levels. Chili and vegetables that provide a high return can be cultivated in a peat-friendly manner on already cleared land as opposed to slash and burn farming practices. In comparison to the highest return from maize cultivation generating IDR 5 500 250 (at current exchange rates US\$395), the alternative chilli crop provides a return of IDR 6 420 000 (US\$462). With regard to green employment opportunities such as canal blocking, the wage rate is higher considering the semi-skilled nature of the work as opposed to farm labour. It is estimated that for undertaking canal blocking for the PHU a total of 288 000 person days at cost of IDR 50 000 per labour day (semi-skilled) amounts to a total of approximately IDR 14.4 billion (US\$1,034,762). In this regard, the initial analysis indicates that alternative crops and green employment opportunities provide good incentives for facilitating a shift away from practices that contribute to peatland destruction.

It is recommended that resources should be allocated for targeted economic analyses to be undertaken at project start-up with a focus on site specificity and household preferences so as to avoid promotion of inappropriate crop or livelihood options that contribute to peatland degradation and that are not economically viable. The significant difference between locations and communities in terms of peatland structure and depth, local capabilities, distance to markets, transport costs etc, are key criteria that need to be considered for facilitating a successful shift to peat-friendly livelihoods. In consideration of the site-specific nature of the alternative income generating activities, for each of the target villages, it is recommended that a "village profile" be developed including an analysis of potential peat-friendly income generating activities. The analysis could focus on on-farm peat-friendly crops and agricultural systems, poultry and livestock, and off-farm activities such as non-timber forest product (NTFP) collection such as gum from Jelutong (*Dyera costulata*), wild honey, mushrooms, reeds, rattan and fruits, to name a few. Also, further analysis should be undertaken to map out green employment opportunities that require semi-skilled labour such as for ground-truthing remote sensed data, canal blocking, tree seedling nursery establishment, forest rehabilitation, basket weaving, broom manufacture, and sewing etc.

The following tables provide details of the analysis.

Table 4 Baseline financial analysis of 3 crops currently being cultivated – without project intervention

YIELDS AND INPUTS		Rice 1/	Maize	Cassava
Items	Unit			
A. PHYSICAL				
I. Outputs				
Yield	kg	500	900	4 000
By-product 1	kg	150	450	0
II. Inputs				
Materials/services				
Seedling	kg	35	15	20

Fertilizer				
Urea	kg	0	50	0
Land preparation				
Animal supported work d/	animal-day	1	1	1
Sacks	unit	13	27	80
Labour				
<u>Hired labour</u>	<u>person-day</u>	<u>12</u>	<u>9</u>	<u>11</u>
<u>Family labour</u>	<u>person-day</u>	<u>42</u>	<u>39</u>	<u>35</u>
+ Details on labour needs				
Field preparation	person-day	10	6	6
Nursery preparation	person-day	0	0	0
Planting/transplanting	person-day	10	15	10
Weeding	person-day	15	10	10
Fertilizing	person-day	0	2	0
Spraying	person-day	0	0	0
Irrigation/water O&M	person-day	0	0	0
Harvesting/threshing	person-day	15	15	20
Drying	person-day	4	0	0
TOTAL LABOUR	person-day	54	48	46

Table 5 Baseline financial analysis input costs - without project intervention

YIELDS AND INPUTS		Rice 1/	Maize	Cassava
Items	Unit			
B FINANCIAL BUDGET				
I. Outputs				
Yield	IDR	4 000 000	5 850 000	5 200 000
By-product 1	IDR	150 000	87 750	0
II. Inputs				
Materials/services				
Seedling	IDR	280 000	90 000	28 000
Fertilizer				
Urea	IDR	0	80 000	0
Animal supported work d/	IDR	265 000	132 500	132 500
Sacks	IDR	65 000	135 000	400 000
Labour				
<u>Hired labour</u>	<u>IDR</u>	<u>360 000</u>	<u>279 000</u>	<u>324 000</u>
<u>Family labour</u>	<u>IDR</u>	<u>1 260 000</u>	<u>1 161 000</u>	<u>1 056 000</u>

(Exchange rate: 1 USD = IDR 11,529)

Table 6 Baseline financial analysis – Summary of economic returns without project intervention

YIELDS AND INPUTS		Rice 1/	Maize	Cassava
III. Analysis				
Total output value	IDR	4 150 000	5 937 750	5 200 000
Labour costs/output	%	39%	24%	27%
Family labour costs/output	%	30%	20%	20%
Materials/output	%	15%	7%	11%
Input costs	IDR	610 000	437 500	560 500
Gross margin	IDR	3 540 000	5 500 250	4 639 500
Gross margin	USD	307	477	402
Gross margin (incl. hired labour)	IDR	3 180 000	5 221 250	4 315 500
Gross margin (incl. hired labour)	USD	276	453	374
Net margin	IDR	1 920 000	4 060 250	3 259 500
Return to labour	IDR/p-d	65 556	114 589	100 859
Return to labour	USD/p-d	6	10	9
Return to family labour	IDR/p-d	75 714	134 916	122 599
Return to family labour	USD/p-d	7	12	11

(Exchange rate: 1 USD = IDR 11,529)

Table 7 Financial analysis of an alternative peat-friendly crop – Summary of economic return with project intervention

YIELDS AND INPUTS			
ITEMS	UNIT	PRICE IDR	Typical Year
Main production Land Size .1 ha			
Chili (Proxy Crop)	kg	50 000	175
Investment inputs			
Seeds	g	10 000	10
Fertilizer:			
Urea	kg	2 300	0
Phonska_NPK	kg	2 500	0
Compound	Package	300 000	0
Pesticides			
Insecticides	l	90 000	0.0
Herbicides	l	50 000	0.0
Mechanization/Equipment			
Tools/Equipment/maintenance	lumpsum	1 500 000	0.5
Micro-irrigation system (amortization/maintenance)	no.	4 000 000	0.1
Operating inputs			
Land tax	fee/year	2 500	1
Plastic Bags_15 kg of chili each	no.	1 500	12
Labour			
Land preparation/hoeing	pers. day	30 000	8
Planting	pers. day	30 000	4

Weeding	pers. day	30 000	8
Fertilizer application	pers. day	30 000	1
Harvesting and threshing	pers. day	30 000	5
Transportation	pers. day	30 000	0.5
Sub-total labour days			26
Hired Labour	pers. day		5
Family labour	pers. day		21
FINANCIAL BUDGET			Typical Year
ITEMS			1
Main production Land Size .1 ha			
Chili (Proxy Crop)			8 750 000
Total revenue			8 750 000
Investment input costs			
Seeds			100 000
Fertilizer:			
Urea			0
Phonska_NPK			0
Compound			0
Pesticides			
Insecticides			0
Herbicides			0
Mechanization/Equipment			
Tools/Equipment/maintenance			750 000
Micro-irrigation system (amortization/maintenance)			400 000
Sub-total investment costs			1 250 000
Operating input costs			
Land tax			5 000
Plastic Bags_15 kg of chili each			17 500
Sub-total operating costs			285 000
Labour costs			
Hired labour costs			159 000
Family labour costs			636 000
Sub-total labour costs			795 000
Total production costs			2 330 000
Income (after labour costs)			6 420 000
Income (before labour costs)			7 056 000

Table 7 Green employment - canal blocking with project intervention

Labour for small-scale block	Unit
Labour days	30 day-block
Required labour	5 person-block

SMPEI-led block construction	125	block
Private sector funded block	750	block
<i>total blocks</i>	875	block
labour days for small-scale blocks	26250	day

Labour for large-scale block		Unit
Labour days	300	day-block
Required labour	10	person-block
SMPEI-led block construction	125	block
Private sector funded block	750	block
<i>total blocks</i>	875	block
labour days for large-scale blocks	262500	day

Total		Unit
Average days for all blocks	288750	day
Wage	50000	IDR
Total labour cost	14 437 500 000	IDR

Appendix 9: IFAD Country Small Grant Design Document (Output 3.2)

Project Description

The proposed grant, titled *Haze Free Sustainable Livelihoods Project* (HFSLP), has been developed as an integral component of the IFAD/GEF Sustainable Management of Peatland Ecosystems in Indonesia (SMPEI) project. SMPEI, which is the Umbrella project of the HFSLP, has three Components: (1) capacity building and institutional development for sustainable peatland management ("Component 1"); (2) reduction of peat fire and degradation to reduce GHG emissions from peatlands ("Component 2"); and (3) sustainable peatland management based on the Peatland Hydrological Unit (PHU) (following the latest government's regulation to manage all peatlands based on the PHU mapping) ("Component 3"). The proposed approach for integrate peatland management follows a three-pronged strategy: i) maintaining relatively undisturbed peatlands in their natural state; ii) restoring and rewetting already drained peatlands; and iii) changing existing resource management to incentivize more sustainable and profitable mixes of on- and off-farm activities.

SMPEI's Component 3 has two activities: (i) developing and implementing integrated sustainable management plan (ISMP) for the SKI PHU and (ii) enhancing livelihoods of peatland-dependent communities from sustainable peatland management. The second activity is fully funded by the IFAD country grant and constitutes the baseline funds for the GEF incremental financing. Under this activity CIFOR's expertise and experience is required for creating peatland-friendly sustainable income generating opportunities. The achievement of the SMPEI project's target of 30% improvement of income of peatland-dependent communities in target villages will be directly supported by the HFSLP project. HFSLP was designed as part of the SMPEI during the same design period and the start-up workshop for both the SMPEI and the HFSLP will be co-organized. The duration of the SMPEI as an Umbrella project is 4 years over the period of 2016-2019 and the HFSLP will be implemented for 3 years between 2016-2018.

The HFSLP will promote several models of on-farm and off-farm livelihood development that integrate peatland ecosystems and local market opportunities, while being aware of the differing needs and capabilities of households, including those that are economically marginalized or disadvantaged, such as recent immigrants, female-headed households, and youth.

By the end of the project, the HFSLP will ensure that at least 1000 farmer households benefit from enhanced income from sustainable peatland management across 13 villages. In addition to these households, many more farmer households will benefit from increased knowledge to engage in sustainable use methods, and increased capacity to access and adopt improved practices for the development of sustainable livelihoods. The HFSLP will directly link to broader and longer-term efforts in sustainable development and income enhancement for many more households (up to the 20,000 beneficiaries targeted by the SMPEI) will be realized post-project, especially in the case of initiatives such as forest restoration and tree planting.

Under the guidance of the Ministry of Environment and Forestry (MOEF), the land use planning for issuing licences for industrial forest plantations, allocates approximately 5% of land for community livelihood plantations. The HFSLP will facilitate a participatory community development approach that links livelihood improvement activities directly with fire prevention, and peatland conservation and rehabilitation efforts.

Agreements to be entered into between the SMPEI project and private companies will specify the following areas of collaboration: i) landscape assessment and conservation planning; ii) rehabilitation of forest under the concession; iii) enhanced water management of the selected areas under the concession; iv) fire prevention incentives; and v) better utilization of community development funds and community livelihood plantations. Under these agreements with private companies, the HFSLP will

directly contribute to better mobilization, design and implementation of community development funds from private companies, the government and potential other climate funding opportunities. While the actual implementation and use of these funds may not be underway during the period of the HFSLP, project activities will be oriented to building necessary capacity and will feed directly to implementation. HFSLP will link as well as to appropriate capacity building and management of community livelihood plantations and to fire prevention incentive schemes where possible. It is expected that corporate actors will also provide credit, marketing, and technical assistance. Such efforts are compatible with emerging and existing government policies that promote community-company partnerships.

The HFSLP will target 13 villages of the SMPEI project. Overall implementation coordination will be done by the Project Management Office (PMO) and Provincial Project Management Office (PPMO) of the SMPEI project.

1.1 Goal

To enhance the livelihoods of communities through sustainable peatland management in the Sungai Kampar Indragiri Peatland Hydrological Unit (SKI PHU)

1.2 Objectives

The HFSLP objectives are the following:

- To support communities in identifying and accessing livelihood activities that meet local development needs, comply with available government programs and policies, and integrate private companies' land use management plans such as community livelihood plantation.
- To provide technical services and knowledge management of livelihood options facilitating community group formation on livelihood activities
- To enable community groups working on livelihood activities to actively participate in the multi-stakeholder partnership among the local government, private sector and communities

1.3 Outputs and Activities

The outputs of this project will include:

- a. Review paper discussing options and potential development strategies to engage communities in peatland conservation and restoration programs through on-farm and off farm practices.
- b. Baseline data on villages and communities, including household livelihood portfolios and patterns of expenditure and investment for the 13 target villages .
- c. Models and demonstration plots/activities showing on-farm and off-farm community options that synergize with peatland conservation and restoration strategies.
- d. At least 2 models of credit schemes for on-farm and off-farm production, processing, and marketing activities using government social forestry program (BLU) or private companies' Corporate Social Responsibility (CSR) or community development resources.
- e. Value chain analyses of several prospective commodities linked with community on-farm and off-farm activities done and relevant recommendations developed for at least 3 potential agriculture or forest products.
- f. Formation of community or production groups that are granted social forestry licenses (HKM and or HTR) and or CSR facilities.
- g. Completed training and business partnership facilitation with community-based producer organizations.
- h. Established peer group functioning as consulting forum, knowledge sharing and monitoring the progress of project activities at provincial and district levels.

- i. Knowledge products that include a web portal, video, policy briefs, newsletters, guidebooks and scientific articles.

The HFSLP has two interlinked components.

Component 1. Models of on-farm and off-farm income generating activities developed and adopted by households in target villages: The on-farm and off-farm production models offer enhanced livelihood opportunities including income and employment while promoting peatland conservation and/or rehabilitation. Village development models will be developed based on 3-4 common characteristics of the communities and peat ecosystem (ex. ethnic groups, current land-use practices or peatland functions) in combination with on- and off-farm income generation opportunities. The on-farm production models will pursue agroecological principles for minimising damage to peatlands and for generating sustained income flow. Models will be developed for enhanced production systems that promote peatland conservation and restoration strategies, including integrating cattle raising activities under oil palm plantation areas and fish cultivation in blocked drainage canals. The activity will also identify other potential high-value timber and non-timber commodities based on the rapid assessment of community income portfolios.

Activities

- a. A survey will be undertaken for mapping the profile of the 13 villages to identify income sources, poverty levels, constraints for livelihood development, ethnicity and gender composition, business development capacities, community structure, organization and facilities. This profiling will be done as contribution to the baseline studies of the SMPEI project and completed before the start-up workshop. Out of the 13 target villages, several beneficiary groups will be identified based on socio economic variables, environmental variables, peatland hot spot monitoring results, poverty level and level of interest of community groups to participate in sustainable peatland management and fire prevention, and income-generating activities. Focus group discussions, household surveys and key informant interviews will be the main tools of the socio-economic profiling.
- b. Existing sustainable peatland farming models will be identified to function as demonstration sites for facilitating farmer-to-farmer exchange. On-farm trials will be undertaken to test new income generating sustainable farming approaches that include both subsistence crops and high value commodities such as timber, horticulture, oyster mushrooms, livestock, and aquaculture. Value chain analyses will inform the selection of the appropriate mix of high value commodities. The project will provide technical assistance and key inputs and equipment to a critical mass of lead-farmers to facilitate the transition to sustainable agriculture practices. The development of demonstration plots will be guided by the outcome and process of PHU-based planning of the SMPEI project (Component 3.1), and done in collaboration with Badan Perencanaan dan Pembangunan Daerah (BAPPEDA), the provincial and district Badan Lingkungan Hidup (BLH), Bupati, Pusat Pengelolaan Ekoregion (PPE) and Yayasan Mitra Insani (YMI).
- c. For broader scaling up of income generating sustainable agriculture systems, in addition to accessing government programmes that could be used for this purpose, the private sector will be engaged to help local farmers make the initial investments necessary to make the transition to sustainable farming systems through now mandatory CSR programs; corporate actors can help specifically with programs of credit and where possible marketing and technical assistance.
- d. Off-farm income generation will focus on creating green jobs related to peatland conservation and rehabilitation efforts, such as training in construction of canal blocks, seedling nursery management, repair of fire management equipment, and ground truthing for hydrogeological mapping. Also, support will be provided for handicraft production and ecotourism.

Component 2. Community-based producer organizations and business development: Develop and capacitate community based producer organizations and businesses to add value to local products (such as meat, fish, mushrooms, honey, etc.) and link them to wider markets through community-company partnerships. These activities will mobilize community organizations, women and youth by providing training and mentorship on income generating activities, such as post-harvest processing and marketing.

Activities

- e. Participate in the community group capacity building programme of the SMPEI project on group formation, facilitation, financial management, and contribute to the training material development from the perspective of livelihoods development
- f. Identify and engage technical facilitators (individually or a NGO) who will support SMPEI Component 3 Coordinator by providing technical services, coordinating market development activities, train community group members, support community working groups to monitor the results of each intervention strategy
- g. Provide training to community-based producer organizations that focus on commercial products, for example, timber (*Shorea* and *Gonystylus* species adapted to peatland condition), honey, oyster mushrooms, and processed meat to name a few. Training modules will be based on identified training needs and will draw on additional resources from government agencies (such as Balai Pengelolaan Daerah Aliran Sungai (BPDAS), Forestry Research and Development Agency (FORDA) Kuokm, Badan Koordinasi Penyuluhan), private companies' CSR divisions, local NGOs and community organizations (such as Jaringan Madu Hutan Riau). At least 6 formal trainings will be attended by a total of 1000 farmers from the targeted 13 villages.
- h. Facilitate the participation of producer groups in the SMPEI project's multi-stakeholder partnership platforms for informing them of the livelihood development opportunities
- i. Contribute to the knowledge management strategy of the SMPEI project by providing input to its web portal, policy briefs, newsletters, handbooks or any other knowledge products. Knowledge products will be developed for facilitating farmer behavioural change, income generation from adoption of sustainable agriculture models, and for informing policy dialogue through documentation of the livelihood development strategy and activities. Special attention will be paid to assessing past and continuing issues with groups marginalized because of gender, age, ethnicity, or migration history as well as gaps and windows of opportunities to develop value chains. These knowledge products produced by the project will feed into the SMPEI policy dialogue at the national and provincial levels to replicate community-driven on-farm and off-farm activities elsewhere in Indonesia.

1.4 Lesson learning and knowledge management agenda

The lesson learning and knowledge management of the project will be done following the knowledge management strategy of the SMPEI project and in contribution to the implementation of scaling-up strategy of the SMPEI project. The key elements of the SMPEI's knowledge management strategy include i) evidence-based targeting; ii) enhanced capacities and knowledge of trainers or high-level authorities; iii) outcome-based community management; iv) encouraging peer-to-peer learning or farmer-to-farmer initiatives as the first-step of bottom-up knowledge generation; v) clearly defining approaches, methods and outcome monitoring for scaling up best practices in similar contexts.

In line with the above strategy, CIFOR will also develop a matrix to show key audiences, clearly defined methods for sharing knowledge and lessons learned and communicating results and findings, with a view to creating uptake pathways for appropriate policy options on the livelihoods development.

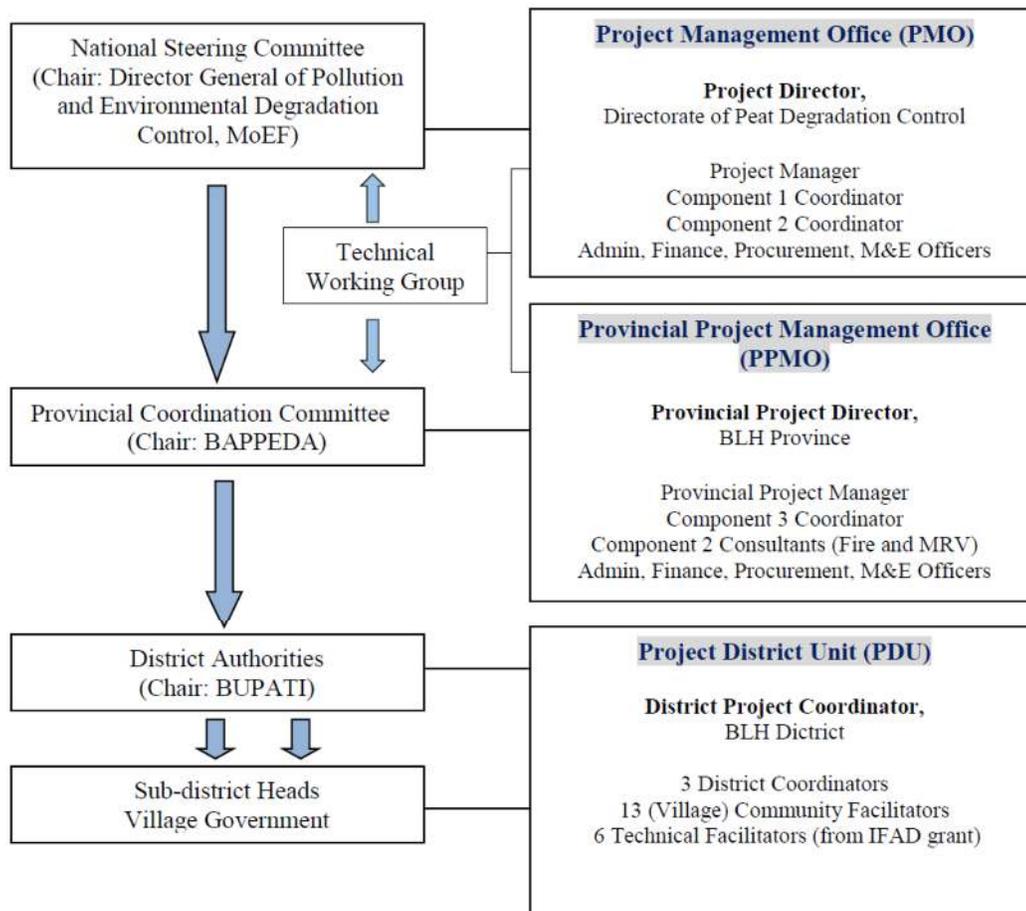
Communications and knowledge-sharing activities will utilize the National Steering Committee, Provincial Steering Committee and other meetings that will be organized by the SMPEI bringing together key stakeholders, including producers, government, and the private sector, to share project lessons, findings and to evaluate actions to improve livelihood outcomes. For other audiences, a range of communications and knowledge-sharing outputs will be developed, including blogs and media articles, policy and information briefs aimed at policymakers and development practitioners, posters and flyers, as well as scientific articles and reports/ papers.

1.5 Recipient's implementation procedures

CIFOR will work under the overall guidance of the SMPEI executing agency, which is the Directorate-General of Pollution Control and Environment Degradation, Ministry of Environment and Forestry and

under the direct coordination of the Project Management Office headed by Director of Peat Degradation Control.

The SMPEI will have the following implementation structure:



1.6 Recipient's implementation procedures

The Annual Work Programme and Budget (AWPB) will be jointly developed by the SMPEI and the project to ensure full integration and harmonisation between the projects. The harmonized AWPB will be approved by the National Steering Committee however governed by different grant agreements (i.e. the SMPEI between IFAD and Ministry of Environment and Forestry, and the project agreement between IFAD and CIFOR). Supervision and implementation support missions for the SMPEI including the project will be conducted together. CIFOR will be responsible for project supervision activities for sub-component 3.2 of the SMPEI and for contributing to the assessment of disbursement, financial management, knowledge management, scaling-up, and monitoring and evaluation in compliance with relevant IFAD procedures for grant-funded projects as outlined in the agreement between IFAD and CIFOR and in harmoniation with the IFAD/GEF supervision activities. The project will recruit technical facilitators (individuals or an NGO) who will support the SMPEI Component 3.2 Coordinator by providing technical services, coordinating market development activities, train community group members, and support community working groups to monitor the results of each intervention strategy. CIFOR will be responsible for funds management and will submit annual financial reports to IFAD. Project partners and consultants will share their financial reports with CIFOR to consolidate all expenditures incurred under the project in the annual project financial report to IFAD.

CIFOR will be the grant recipient and executing agency for the project. CIFOR will also work closely with the Directorate-General of Pollution Control and Environment Degradation and the Directorate General of Social Forestry of the Ministry of the Environment and Forestry, BAPPEDA, BLH and PPE. At the district level CIFOR will work with the local government unit of work (Satuan Kerja Perangkat Daerah or SKPD) that includes District offices dealing with forestry, agriculture, industry and trade, extension, and private companies (Sinar Mas and APRIL, and possibly Sime Darby). CIFOR will also partner with NGOs including Yayasan Mitra Insani and Jikalahari; Jaringan Masyarakat Madu Hutan Riau. Sub-Component 3.2 funded by the project will also build on CIFOR's partnerships and findings in the context of the SWAMP programme on restoration, and rehabilitating drained peatlands.

1.7 Recipient's monitoring and evaluation approach

Monitoring, evaluation, reporting and impact assessment will be an integral part of the project. The project will capitalize on CIFOR's leadership, expertise, and capacity for quantitative and qualitative impact monitoring and evaluation of all three project components. The project will begin by drawing up a plan for monitoring and evaluating impacts. The plan will include "Outcome Mapping" of which template will be discussed and agreed during the start-up workshop and the development of a "Theory of Change (ToC)" that will articulate the cause-and-effect relationships between the project's activities and outputs and what we hope to achieve in the project's goal and specific objectives. The project team will use CIFOR's Monitoring, Evaluation, and Impact Assessment (MEIA) Project Planning tool, which adapts the Overseas Development Institute's (ODI) Rapid Outcome Assessment approach into an easy-to-use forecasting package. In addition, the project will use CIFOR's Monitoring and Evaluation Planning: Gender Relevant Assessment Tool given the integral role gender will play. These tools will be rolled out at the inception meeting. The project will develop a baseline followed by periodic participative assessments at regular intervals and, where relevant, control groups will be selected. Project results will be tracked in terms of their gender impact, including disaggregated data for men and women, as well as other livelihood benefits and women's ownership of assets and access to land and resources. The project team will present results for evaluation during multi-stakeholder exchange and dialogue workshops.

1.8 Scaling-up

The vision for the scaling-up of the project is to integrate sustainable peatland management practices with the livelihoods development in all peatland communities in Indonesia. The scope of the current project is to pilot and establish models for several types of community groups taking into account their ethnicity, migration history, gender and age composition as well as the characteristics of peatland ecosystems and land planning.

The two main elements that will support scaling-up are i) land use planning guidelines which requests the private companies to allocate 5% of the concession areas for community development; and ii) the renewed attention of the government of Indonesia to community-driven development as an approach to economic development and natural resource management. For instance, the central and local governments are being restructured accordingly to better support village-level development and the National Medium Term Development Planning states the Government's commitment to allocate 12.7 million ha of state forests to be managed by communities under various social forestry schemes.

The pathways for scaling-up are to replicate and adapt experiences from the large- and small-scale demonstration plots in the 13 target villages to additional project districts within the project period through mobilizing other resources and then post project scaling-up to additional districts and villages. Post-project scaling-up through another forthcoming GEF project will ensure scaling-up at least to northern Riau and build a foundation to mobilize resources for other provinces in Indonesia. The approach for the scaling-up will include: (i) socio-economic profiling of community groups and ecosystem conditions to develop a set of models for peat-dependent community livelihoods; (ii) documenting project experiences and assembling these into a readily accessible database; (iii) promoting the project and organizing information sharing and exchanges to promote project activities within interested districts; (iv) soliciting interest in the 3 project districts to take up project activities at a broader scale; and (iv) facilitating access to further funding including exploring the Green Climate Fund

and the Norway/UNDP project. At the mid-term review, the progress of the scaling-up will be reviewed under the overall guidance of the National Steering Committee and in direct collaboration with the Project Management Office.

1.9 Other sources of funding for the project

IFAD's Sustainable Management of Peatland Ecosystems in Indonesia (SMPEI) project funded by the Global Environment Facility (GEF) will co-finance a total value of US\$ 4,766,000 through establishing partnership among central government, provincial and local government, private sector and communities for fire prevention, and peatland rehabilitation and conservation, and livelihoods development, and establishing a foundation for integrated sustainable peatland management schemes. Private sector co-financing of US\$ 18,000,000 will be provided to the overall SMPEI including sub-component 3.2 that will be fully financed by the project.

CIFOR's co-financing totals US\$ 205,739, will be allocated from the Sustainable Wetlands Adaptation and Mitigation Program (SWAMP) project funded by USAID, from CIFOR's Forest Tree and Agroforestry (FTA) phase 2, flagship 1, and from other in-kind contributions. The SWAMP project's output and lessons learned in successful peatland management practices on restoration, and rehabilitating drained peatlands will be brought into income generating options that will be introduced to peat communities. The FTA phase 2 will provide options how trees and agroforestry practices contribute to smallholder livelihoods. As well, in-kind contribution of staff-time for scaling-up of knowledge-sharing, media outreach, supervision and material review will be provided to the project.

Appendix 10: Technical working papers

Working Paper 1: Community development modalities
Working Paper 2: Innovative partnership with private sector
Working Paper 3: Institutional capacities and implementation arrangements
Working Paper 4: Survey of peatland-related policies
Working Paper 5: Fire Management
Working Paper 6: Peatlands management and site selection
Working Paper 7: Framework to mainstream gender and empower women
Working Paper 8: Terms of Reference of project staff

(See Attachment 4)