Forest Carbon Partnership Facility (FCPF)

Carbon Fund

Emission Reductions Program Document (ER-PD)

ER Program Name and Country:

East Kalimantan Jurisdictional Emission Reductions Program, Indonesia

Date of Submission or Revision: 31 August 2018

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EXECUTIVE SUMMARY

The East Kalimantan Jurisdictional Emission Reductions Program builds on the substantial commitments of the Government of Indonesia and the Government of the Province of East Kalimantan to reducing emissions from deforestation. Indonesia has been an active participant in REDD+ dialogues and programs since 2007, and has committed to a reduction of 29% of its emissions through its own efforts, and up to 41% with international support, by 2030, and recognizes that a significant share of this will have to come from REDD+. Although much is still to be done in terms of implementation, both Indonesia and East Kalimantan have made significant progress toward REDD+ Readiness, and the ER Program is seen as an important milestone in the development of a national REDD+ mechanism. The ER program will be implemented by the Provincial Government with the guidance of the Ministry of Environment and Forestry.

The ER Program aims to reduce deforestation and forest degradation in an area that covers the entire 12.7 million hectares that comprise the Province of East Kalimantan. Around half of that area is covered by tropical forests which are home to a wealth of globally significant biodiversity, and that support numerous indigenous and other local communities. More than 10% of East Kalimantan's remaining forest was lost over the past decade, and this was mainly caused by the expansion of oil palm plantations, timber plantations, and mining, as well as by other drivers. Besides loss of habitat and other key ecosystem services, deforestation and degradation have led to emissions of CO_2 averaging 29 million tonnes per year.

From 2006 to 2016, up to 51% of East Kalimantan's forest loss was associated with the expansion of oil palm plantations, 22% with overlogging and poor forestry concession management, 10% with mining, 7% with illegal logging, and 6% with agricultural expansion. Other key drivers of deforestation and forest degradation are encroachment, fires, and aquaculture. Underlying drivers include poor spatial planning, lack of government capacity to oversee forests, and low productivity of local farming and limited alternative livelihood opportunities for local communities.

The ER Program will address deforestation by addressing underlying governance issues through policy reforms, by engaging with oil palm and forestry companies, and by engaging with local communities. The ER Program is expected to lead to emission reductions of (gross) 34.9 million tCO2e over the five-year ERPA period (2020-2024). Around half of this is expected to come from reduced deforestation within areas allocated to estate crops. The activities proposed for implementation are grouped under six components, with an additional cross-cutting set of activities designed to address emissions from fire:

Component 1: Improving land governance
Component 2: Strengthening Government Capacity for Forest Administration
Component 3: Reducing Deforestation Linked to Oil Palm Expansion
Component 4: Reducing Deforestation Linked to Overlogging and Timber Plantations
Component 5: Reducing Encroachment by Providing Sustainable Alternatives to Communities
Component 6: Program Management and Monitoring and Evaluation

The ER program was developed through a participative process involving all relevant stakeholders. Stakeholders in East Kalimantan helped identify the local drivers of deforestation, which are the basis of the ER activities proposed by this program. The proposed ER Program is also closely linked to Indonesia's and East Kalimantan's REDD+ plans which are the outcome of a comprehensive consultation process. The Benefit Sharing Mechanism will be designed through a consultative process and the SESA, which is in the process of finalization, seeks, among other things, to strengthen local stakeholder engagement, including potentially affected communities. The ER Program is developing a comprehensive Feedback

and Grievance Redress Mechanism (FGRM). A significant portion of the ER Program relies on the commitment of local stakeholders for adopting sustainable management practices, making consultations and outreach a necessary and integral part of the program.

The activities of the ER Program are aligned with East Kalimantan's Green Development plans and associated policies, and this will ensure long-term impact and reduce the risk of future reversal. In addition, as Indonesia's first jurisdictional REDD+ program, the ER Program will help accelerate the national REDD+ program, supporting future emission reductions beyond the accounting area.
Nonetheless, the ER Program is an ambitious effort that seeks to address highly complex underlying drivers of deforestation and that will require significant stakeholder support and coordination across sectors. As a hedge against future reversals the ER Program will deposit 26% of ERs delivered to the Carbon Fund in a buffer.

Following the approach used for the construction of the national Forest Reference Emission Level (FREL), the program has tracked land cover changes in East Kalimantan over the period 2007 to 2016 to establish a reference level for emission reductions. The change of forest into non-forest contributed 74% of emissions, followed by logging with 14%, and by fire with 5% of the total. Minor contributions came from the degradation of primary forest (1%), mangrove soils (2%), and peat decomposition (4%). Indonesia currently does not have an established methodology for measuring degradation within secondary forests with satellite data, so the program currently uses estimated emissions from logging and from fire as a proxy for degradation.

Measurement of these emission sources will be carried out annually during program implementation with complete emission reduction results submitted to the Carbon Fund in 2023 and 2025. All emission reductions will be registered with the National Registry System which is managed together with the national MRV system by the Climate Change DG of the MoEF. In addition to emission reductions, the Monitoring Measuring and Reporting system will also cover the key non-carbon benefits generated by the program.

Indonesia is in the process of establishing an Environmental Fund Management Agency, which is expected to become the centrepiece of the ER Program's benefit sharing mechanism. The Agency, which is expected to be completed by the end of 2018, will be under the combined supervision of the Ministry of Finance and the Ministry of Environment and Forestry, and will channel funding from the Carbon Fund to beneficiaries at the national, provincial, and local levels.

The overall cost of the program, is expected to be USD 90.7 million. Funding will come mainly from government sources (75%), with the remainder coming from the private sector (22%) and development partners (4%). It is expected that the Program will generate USD 110 million in performance-based payments through the sale of Emission Reductions to the Carbon Fund. In addition to emission reductions, the Program will generate significant non-carbon benefits. Priority non-carbon benefits include the protection of biodiversity and other ecosystem services, livelihood benefits to local communities, reduced conflict over land, and improved recognition of indigenous land claims.

LIST OF ACRONYMS/ABBREVIATIONS	
AMAN	Indigenous Peoples Alliance of the Archipelago (*Aliansi Masyarakat Adat Nusantara*)
AFOLU	Agriculture, Forestry and Other Land Uses
APBD	Regional Revenue and Expendute Budget (Anggaran Pendapatan Belanja Daerah)
APBN	National Revenur and Expenditure Budget (Anggaran Pendapatan Belanja Nasional)
APHI	Indonesian Forest Concessionaires Association (*Asosiasi Pengusaha Hutan Indonesia*)
APL	Areal Penggunaan Lain (land for other purposes)
BAPPEDA	Regional Development Planning Agency (*Badan Perencanaan Pembangunan Daerah*)
Bappenas	National Development Planning Agency (*Badan Perencanaan Pembangunan Nasional*)
BAU	Business As Usual
BESTARI	Sustainable Natural Healthy Clean Foundation (*Bersih Sehat Alam Lestari*)
BFCP	The Berau Forest Carbon Program
BLU	Public Finance Service (Badan Layanan Umum)
BMZ	German Federal Ministry for Economic Cooperation and Development
BRG	Peat Restoration Agency (Badan Restorasi Gambut)
BRWA	Customary Land Registration Agency (*Badan Registrasi Wilayah Adat*)
CBFM	Community–Based Forest Management
CF	Carbon Fund
CIFOR	Center for International Forestry Research
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP	Conference of the Parties
CSO	Civil Society Organization
CSR	Corporate Social Responsibility
DBH	Diameter at Breast Height
DG of CC	Directorate General of Climate Change
DKN	National Forestry Council (*Dewan Kehutanan Nasional*)
DDPI	Regional Council for Climate Change – East Kalimantan (*Dewan Daerah Perubahan Iklim – Kalimantan Timur*)
DPRD	Regional House of Representative (Dewan Perwakilan Rakyat Daerah)
ER	Emission Reduction
ERT	Emission Reduction Target
ERPIN	Emission Reduction Program Idea Note
ERPD	Emission Reduction Program Document
ERPA	Emission Reductions Payment Agreement
ESMF	Environmental and Social Management Framework
FCPF	Forest Carbon Partnership Facility
FCPF FMT	FCPF Facility Management Team

LIST OF ACRONYMS/ABBREVIATIONS	
FFI	Flora and Fauna International
FGD	Focus Group Discussion
FGRM	Feedback and Grievance Redress Mechanism
FIP	Forest Investment Program
FLEG	Forest Law Enforcement and Governance
FMU	Forest Management Unit
FORCLIME	Forests and Climate Change Program
FORDA	Forestry Research and Development Agency of the Ministry of Forestry
FOERDA	Forestry and Environmental Research and Development Agency
FPIC	Free and Prior Informed Consent
FREDDI	Funds for REDD+ in Indonesia
FREL	Forest Reference Emission Level
FRL	Forest Reference Level
FSC	Forest Stewardship Council
GCF	Governors' Climate Forest Task Force
GFTN	Global Forest Trade Network
GGGI	Green Growth Program Indonesia
GLAFOLU	Guidelines Agriculture, Forestry and Other Land Use
GoI	Government of Indonesia
GPG	Good Practice Guidance
GHG	Green House Gas (Gas Rumah Kaca)
HCV	High Conservation Values
HCVF	High Conservation Value Forest
HD	Village Forest (*Hutan Desa*)
HKm	Community Forest (*Hutan Kemasyarakat*)
HL	Protected Forest (Hutan Lindung)
HOB	Heart of Borneo
HP	Production Forest (Hutan Produksi)
HPH	Logging Concession
HPT	Limited Production Forest (Hutan Produksi Terbatas)
HTI	Industrial Timber Plantation (Hutan Tanaman Industri)
HTR	Community Plantation Forest (Hutan Tanaman Rakyat)
ICRAF	The International Centre for Research in Agroforestry - World Agroforestry Center
IFCA	Indonesian Forest Climate Alliance
IPCC	Intergovernmental Panel on Climate Change
IREDD	Impact Reducing Emission from Deforestation and Degradation
ISPO	Indonesian Sustainable Palm Oil
IUCN	International Union for Conservation of Nature
IUPHHKHA	Business Permit for Timber Forest Product Utilization – Natural Forest (*Izin Usaha Pemanfaatan Hasil Hutan Kayu – Hutan Alam*)
IUPHHKHT	Business Permit on Utilization Of Forest Wood Timber (*Izin Usaha Pemanfaatan Hasil Hutan Kayu Pada Hutan Tanaman*)
IUPHHKHTR	Utilization License Timber Forest Products Forest Plantation (*Izin Usaha Pemanfaatan Hasil Hutan Kayu pada Hutan Tanaman Rakyat*)
IUPHHKRE	Product Utilization License Timber Forest Ecosystem Restoration (*Izin Usaha Pemanfaatan Hasil Hutan Kayu Restorasi Ekosistem*)
JALA	Network management (*Jaringan Pengelolalaan*)

LIST OF ACRONYMS/ABBREVIATIONS	
JICA	Japan International Cooperation Agency
KALTIM	East Kalimantan (Kalimantan Timur)
KFCP	Kalimantan Forest Carbon Partnership
KHDTK	Forest Area with Special Purpose (*Kawasan Hutan Dengan Tujuan Khusus*)
KKI	The Indonesian Conservation Community (*Komunitas Konservasi Indonesia*)
KPH	Forest Management Units (*Kesatuan Pemangkuan Hutan*)
KPK	Anti-Corruption Commission (*Komisi Pemberantasan Korupsi*)
NGO	Non-Government Organization (*Lembaga Swadaya Masyarakat*)
LoI	Letter of Intent
LTB	Lembaga Tiga Beradik
MOU	Memorandum of Understanding
MCC	Millennium Challenge Corporation
MoEF	Ministry of Environment and Forestry
MoHA	Ministry of Home Affairs
MoU	Memorandum of Understanding
MRV	Measurement Reporting and Verification
NAMA	National Appropriate Mitigation Actions
NDC	Nationally Determined Contribution
NFI	National Forest Inventory System
NFMS	National Forest Monitoring System
NKB 12	Memorandum of Mutual Agreement – 12 Ministries (*Nota Kesepahaman Bersama* (NKB) 12 Kementerian)
NORAD	The Norwegian Agency for Development Cooperation
NTFP	Non-Timber Forest Product
OPANT	The Ngata Toro Customary Women's Organization (*Organisasi Perempuan Adat Ngata Toro*)
OPD	Provincial Government Organization (Organisasi Pemerintah Daerah)
P3SEKPI	Centre for Research and Development on Socio-Economic, Policy and Climate Change (Pusat Penelitian dan Pengembangan Sosial, Ekonomi, Kebijakan dan Perubahan Iklim)
PERPRES	Presidential Regulation (Peraturan Presiden)
PES	Payments for Environmental Services
PNPM	National Program for Community Empowerment (*Program Nasional Pemberdayaan Masyarakat*)
PP	Government Regulation (Peraturan Pemerintah)
PRISAI	Principles, Criteria and Indicators for REDD+ Safeguards in Indonesia (*Prinsip, Kriteria, Indikator, Safeguards Indonesia*)
PSP	Permanent Sample Plot
Puspijak	Center for Research and Development and Climate Change Policy *(Pusat Penelitian Perubahan Iklim dan Kebijakan*)
Pustanling	Center for Standardization and Environment (*Pusat Standardisasi dan Lingkungan*)
RAD GRK	Regional Action Plans to Reduce Green House Gases (*Rencana Aksi Daerah Penurunan Emisi Gas Rumah Kaca*)
RAN GRK	National Action Plan to Reduce Green House Gases Emissions (*Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca*)
REDD+	Reducing Emissions from Deforestation and Forest Degradation
REL	Reference Emission Level
RET	Reduce Emission Target

LIST OF ACRONYMS/ABBREVIATIONS	
RIL	Reduced Impact Logging
RIM	Regional Incentive Mechanisms
RKTN	National Forestry Plan (*Rencana Kehutanan Tingkat Nasional*)
RPJMD	Provincial Mid Term Development Plan (Rencana Pembangunan Jangka Menengah Daerah)
RSPO	Roundtable for Sustainable Palm Oil
RTRW	Regional Spatial Plans (*Rencana Tata Ruang Wilayah*)
SCBFWM	Strengthening Community Based Forest and Watershed Management Program
SDATTG	The Directorate of Village Natural Resources and Appropriate Technology (*Sumber Daya Alam dan Teknologi Tepat Guna Perdesaan*)
SEKDA	Provincial Secretary (Sekretaris Daerah)
SESA	Strategic Environmental and Social Assessment
SFMP	Sustainable Forest Management Program
S-G	Secretary General
SIPUHH	Forest Administration Information System (*Sistem Informasi Penatausahaan Hasil Hutan*)
SIS REDD+	Safeguards Information System for REDD+
SNV	The Netherlands Development Organization
SRAP – REDD	Strategy and Action Plans at Provincial Level - REDD (*Strategi Rencana Aksi Provinsi - REDD*)
SKPD	Regional and Local Government Agencies (*Satuan Kerja Perangkat Daerah*)
SVLK	Timber Legality Verification Standard (*Sistem Verifikasi dan Legalitas Kayu*)
TBI	The Borneo Initiative
TFCA II	Tropical Forest Conservation Act
TNC	The Nature Conservancy
TSP	Temporary Sample Plots
UKP4	Presidential Work Unit for Development Monitoring and Control (*Unit Kerja Presiden Bidang Pengawasan dan Pengendalian Pembangunan*)
UNDP	United Nations Development Program
UNEPFI	United Nations Environment Program Finance Initiative
UNFCCC	United Nations Framework Convention on Climate Change
UU	Constitution (Undang-Undang)
VER	Verified Emissions Reductions
WARSI	The Indonesian Conservation Community (WARSI)
WWF	World Wildlife Fund
YAKOBI	Education and Environmental Conservation Foundation (*Yayasan Komunitas Belajar Indonesia)*

LIST OF GLOSSARY

No	Terminology	Definition
1.	Forest or forested area	a land area of more than 6.25 ha with trees higher than 5 meters at maturity and a canopy cover of more than 30 percent". The area span is based on the production of land-cover maps through visual interpretation of satellite images at a scale of 1:50.000 where the minimum area for polygon delineation is 0.25 cm2 which equals to 6.25 ha (minimum mapping unit).
2.	Non-Forest	Non forested area
3.	Forest area	Areas designated by the government as a forestry cultivation area, forest protection and conservation
4.	Non-forest area	Areas designated by the government as for use outside of forestry, such as plantation cultivation, mining, settlements, industrial centers, tourism, and others
5.	Deforestation	conversion of natural forest cover to other land-cover categories that occurred once in an area. This means that deforested areas that might regenerate and meet again the forest definition were not taken into account a second time in the emission calculation from deforestation.
6.	Forest degradation	change of primary forest classes, which include primary dryland, primary mangrove and primary swamp forests, to secondary forest classes
7.	Primary dry land forest	Natural tropical forests grow on non-wet habitat including lowland, upland, and montane forests with no signs of logging activities. The forest includes heath forest and forest on ultramafic and lime-stone, as well as coniferous, deciduous and mist or cloud forest, which is not (or low) influenced by human activities or logging.
8.	Secondary dry land forest / logged forest	Natural tropical forests grow on non-wet habitat including lowland, upland, and montane forests that exhibit signs of logging activities indicated by patterns and spotting of logging (appearance road and patches of logged-over). The forest includes heath forest and forest on ultramafic and lime-stone, as well as coniferous, deciduous and mist or cloud forest.
9.	Primary swamp forest	Natural tropical forests grow on the wet habitat in swamp form, including, brackish swamp, marshes, sago and peat swamp, which is not or low influenced by human activities or logging.
10.	Secondary swamp forest / logged forest	Natural tropical forests grow on wet habitat in swamp form, including brackish swamp, marshes, sago and peat swamp that exhibit signs of logging activities indicated by patterns and spotting of logging (appearance road and patches of logged-over).
11.	Primary mangrove forest	Wetland forests in coastal areas such as plains that are still influenced by the tides, muddy and brackish water and dominated by species of mangrove and Nipa (*Nipa frutescens*), which is not or low influenced by human activities or logging.
12.	Secondary mangrove forest / logged forest	Wetland forests in coastal areas such as plains that are still influenced by the tides, muddy and brackish water and dominated by species of mangrove and Nipa (*Nipa frutescens*), and exhibit signs of logging activities, indicated by patterns and spotting of logging activities.
13.	Primary forest	Primary dryland forest or Primary swamp forest or Primary mangrove

No	Terminology	Definition
		forest
14.	Secondary forest	Secondary dryland forest or Secondary swamp forest or Secondary mangrove forest
15.	Plantation forest or Timber plantation	The appearance of the structural composition of the forest vegetation in large areas, dominated by homogeneous trees species, and planted for specific purposes. Planted forest including areas of reforestation, industrial plantation forest and community plantation forest.
16.	Dry shrub	Highly degraded logged over areas on non-wet habitat that are ongoing process of succession but not yet reach stable forest ecosystem, having natural scattered trees or shrubs.
17.	Wet shrub	Highly degraded logged over areas on wet habitat that are ongoing process of succession but not yet reach stable forest ecosystem, having natural scattered trees or shrubs.
18.	Savanna and Grasses	Areas with grasses and scattered natural trees and shrubs. This is typical of natural ecosystem and appearance on Sulawesi Tenggara, Nusa Tenggara Timur, and south part of Papua island. This type of cover could be on wet or non-wet habitat.
19.	Pure dry agriculture	All land covers associated with agriculture activities on dry/non-wet land, such as tegalan (moor), mixed garden and ladang (agriculture fields)
20.	Mixed dry agriculture	All land covers associated with agriculture activities on dry/non-wet land that is mixed with shrubs, thickets, and log over forest. This cover type often results of shifting cultivation and its rotation, including on karts.
21.	Estate crop	Estate areas that has been planted, mostly with perennials crops or other agriculture trees commodities.
22.	Paddy field	Agriculture areas on wet habitat, especially for paddy, that typically exhibit dyke patterns (pola pematang). This cover type includes rainfed, seasonal paddy field, and irrigated paddy fields.
23.	Transmigration areas	Kind of unique settlement areas that exhibit association of houses and agroforestry and/or garden at surrounding.
24.	Fish pond/ aquaculture	Areas exhibit aquaculture activities including fish ponds, shrimp ponds or salt ponds.
25.	Bare ground	Bare grounds and areas with no vegetation cover yet, including open exposure areas, craters, sandbanks, sediments, and areas post fire that has not yet exhibit regrowth.
26.	Mining areas	Mining areas exhibit open mining activities such as open-pit mining including tailing ground.
27.	Settlement areas	Settlement areas including rural, urban, industrial and other settlements with typical appearance.
28.	Port and harbor	Sighting of port and harbor that big enough to independently delineated as independent object.
29.	Open water	Sighting of open water including ocean, rivers, lakes, and ponds.
30.	Open swamps	Sighting of open swamp with few vegetation.
31.	RSPO	Roundtable Sustainable Palm Oil - promoting the growth and use of sustainable oil palm products in East Kalimantan through credible global standards and engagement of stakeholders.
32.	ISPO	Indonesian Sustainable Palm Oil - promoting the growth and use

No	Terminology	Definition
		of sustainable oil palm products in East Kalimantan through credible national standards and engagement of stakeholders.
33.	HCV	High Conservation Value – efforts to maintain biological, ecological, social or cultural values found in the concession in which those values are outstandingly significant or critically important at the national, regional or global level.
34.	RIL	Reduce Impact Logging – efforts by the forest concessions in East Kalimantan intensively to plan and carefully control the implementation of timber harvesting operations in order to minimize the environmental impacts on forest stands and soils.

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1. ENTITIES RESPONSIBLE FOR THE MANAGEMENT AND IMPLEMENTATION OF THE PROPOSED ER PROGRAM

1.1. ER Program Entity that is expected to sign the Emission Reduction Payment Agreement (ERPA) with the FCPF Carbon Fund

Name of entity	**Ministry of Finance**
Type and description of organization	The MoF is a line agency of the Republic of Indonesia. Its function is governance in the realm of national finance in order to assist the President in governing the country. MOF's Director General of Financing and Risk Management will sign the ERPA.
Main contact person	Dr. Luky Alfirman, S.T., M.A.
Title	Director General of Financing and Risk Management
Address	Gedung Frans Seda, Lantai 6 Jl. Wahidin Raya No. 1, Jakarta Indonesia 10710
Telephone	Phone. (6221) 3459616
Email	iru.djppr@kemenkeu.go.id
Website	www.djppr.kemenkeu.go.id

1.2. Organization(s) responsible for managing the proposed ER Program

Name of entity	**Ministry of Environment and Forestry**
Type and description of organization	The MoEF is a line agency of the Republic of Indonesia. It has responsibility under Law 41 of 1999 to sustainably manage the forests and forest resources of the Republic of Indonesia The Secretariat General of Ministry of Environment and Forestry (S-G MoEF) coordinates the implementation and provision of supporting administration to activities from all directorates within Ministry. The S-G MoEF also has a role to coordinate ER Program as it is implemented through the other Directorates-General
Main contact person	Dr. Bambang Hendroyono
Title	Secretary General
Address	Gedung Manggala Wanabakti, Jl. Jenderal Gatot Subroto, Jakarta (12070)
Telephone	+62 21 5730191
Email	Banghen_11@yahoo.co.id
Website	http://menlhk.go.id
Name of organization	**Provincial Secretary of East Kalimantan**
Type and description of organization	The Provincial Secretary is the Head of the Civil Service of the Province and has authority under the Governor and the DPRD (Regional House of Representation) to direct and coordinate the Agencies and Services within the Provincial Government.
Organizational or contractual relation between the organization	The Provincial Secretary heads the administrative arm of the Provincial Government that is provincial regional of the National Government. An MOU between the MoEF and the Governor will be used to define the

and the ER Program Entity identified in 1.1 above	cooperative relationships between the national and the sub-national entities engaged in implementing the FCPF ER Program.
Main contact person	Dr. Hj. Meiliana, SE., MM.
Title	Acting Provincial Secretary of East Kalimantan
Address	Jalan Gajah Mada No. 1 Samarinda
Telephone	+62541 733333
Email	humas@kaltimprov.go.id; kaltimprov@gmail.com
Website	http://www.setdaprovkaltim.info

1.3. Partner agencies and organizations involved in the ER Program

Central Government Agencies

Name of partner	Contact name, telephone and email	Core capacity and role in the ER Program
Ministry of Environment and Forestry:		
● *Secretariat General*	Ir. Bambang Hendroyono, MM; Secretary General Banghen_11@yahoo.co.id	Coordinate the implementation of tasks, guidance and administration support to all elements of the organization within the Ministry of Environment and Forestry and also represent the Minister for formal submission of the ERPD on behalf of the Government of Indonesia to the World Bank
● *Directorate General of Climate Change*	Dr. Ir. Ruandha Agung Sugardiman, M.Sc (DG of Climate Change) ra.sugardiman@gmail.com	Providing guidance to East Kalimantan in addressing climate change particularly in the implementation of mitigation, monitoring, reporting and verification of climate change mitigation action and forest and land fire control.
● *Forestry and Environment Research, Development and Innovation Agency (FOERDIA) c.q. Center for Research and Development on Socio-Economics, Policy and Climate Change (P3SEKPI)*	● Dr. Agus Justianto, MSc. (DG of FOERDIA) ajustianto@gmail.com ● Dr. Ir. Syaiful Anwar, M.Sc. (Director of P3SEKPI) Telp. +62 251 8633944 Fax. +62 251 8634924 syaifula09@gmail.com	Providing technical support to East Kalimantan Provincial Government through research and innovation in relation to ER Program at Provincial Level. It focuses on social development, economy, policy, and climate change (on land based). P3SEKPI plays a key role in liaising communication and coordination between Regional Secretary of East Kalimantan and SG MoEF and communication with Facility Management Team (FMT) regarding methodological framework and preparation of the ER Program

● *Directorate General of Forestry Planning and Environmental Management*	Prof. Dr. Ir. Sigit Hardwinarto, M.Agr; shardwinarto@yahoo.com 08111588708	To oversee forestry planning, development of FMU, and the provision of area for utilization for the community living surrounding the forest
National Development Planning Agency (Bappenas)	Ir. Wahyuningsih Darajati, MSc, Director of Forestry and Water Resources +6221 392 6254 ext. 2209 ningsih@bappenas.go.id	To formulate and synergy proposed budget for development of forestry management unit (FMU) at provincial level
Ministry of Finance:		
● *Directorate General of Financing and Risk Management*	Suminto., Director of Loan and Grant Gedung Frans Seda, Lantai 6 Jl. Wahidin Raya No. 1, Jakarta Indonesia 10710 Phone. (6221) 3459616	To provide direction with regard to foreign grants that will be transferred to the regions
● *Directorate General of Fiscal Balance*	Putut Hari Satyaka Director of Financing and Regional Capacity putut.satyaka@gmail.com Gedung Frans Seda, Lantai 6 Jl. Wahidin Raya No. 1, JakartaIndonesia 10710 Phone. (6221) 3459616	To provide direction with regard to the mechanism of financing of Emission Reductions activities in the regions
● *Fiscal Policy Agency (Badan Kebijakan Fiskal)*	Parjiono S.E., MPP. ; Head of Climate Change Policy and Multilateral Financing Gedung RM Notohamiprodjo Lantai 5, Jalan Wahidin Raya No. 1 Jakarta	To provide fiscal policy recommendations related to climate change mitigation including REDD+
Directorate General of Regional Finance Development, Ministry of Home Affairs	Dr. Mochamad Ardian Noervianto, M.Si., Director of Facilitation of Balance Fund	To provide direction to regional governments related to the administration and operation of the balance fund at the regional level

Province and District Government Agencies

Name of Partner	**Contact name, telephone and email**	**Key capacity and role in the proposed ER Program**
Development Planning Agency (BAPPEDA) of East Kalimantan Province	Dr. Ir. H. Zairin Zain, M.Si (Head) +62 541 741044; humasbappedakaltim@gmail.com	To coordinate development activities in East Kalimantan Province, including efforts to reduce emissions
Forestry Office of East Kalimantan Province	Ir. Amrullah, MM; Head of Provincial Mining Service (0541) 733621, Fax. 744917	To arrange the forest development at the provincial level, including the development of FMU

Name of Partner	Contact name, telephone and email	Key capacity and role in the proposed ER Program
Environment Agency of East Kalimantan Province	Ir. Nursigit; Head of Provincial Fishery and Marine Service (0541) 732443	To conduct monitoring and reporting of emission reduction efforts in East Kalimantan Province
Fishery Service of East Kalimantan	Ir. Riza Indra Riadi, MSi; Head (0541) 7779423,760304, Fax. 7779424, 760303	To conduct monitoring and developing of fishery sector in environmentally friendly
Plantation Office of East Kalimantan Province	Ir. Ujang Rachmad, M.Si; Head of Provincial Estate Crops (0541) 736852	To arrange the plantation development, particularly in oil palm sector, to minimize emissions in East Kalimantan Province
Mining and Energy Office of East Kalimantan Province	Ir. H. Wahyu Widhi Heranata, MP; dishut.kaltim@gmail.com http://dishut.kaltimprov.go.id/	To regulate mining activities to reduce emissions in East Kalimantan Province
BAPPEDA of Berau District	Ir. M. Gazali, S.IP.MM; Head of BAPPEDA Berau District	To coordinate regional development activities, including efforts to reduce emission, at the district/city level
BAPPEDA of Kutai Barat	Ir.H. Achmad Sofyan, MM ; Head of BAPPEDA District Kutai Barat	To coordinate regional development activities, including efforts to reduce emission, at the district/city level
BAPPEDA of Penajam Pasir Utara District	Drs. Alimuddin, M.Si; Head of Bappeda Penajam Pasir Utara	To coordinate regional development activities, including efforts to reduce emission, at the district/city level
BAPPEDA of Paser District	Ir. I Gusti Putu Suantara; Head of BAPPEDA Paser	To coordinate regional development activities, including efforts to reduce emission, at the district/city level
BAPPEDA of Kutai Timur District	Ir. H. Sumarjana, MP; Head of BAPPEDA Kutai Timur District;	To coordinate regional development activities, including efforts to reduce emission, at the district/city level
BAPPEDA of Kutai Kartanegara District	Wiyono, S.IP., M.Si; Head of BAPPEDA Kutai Kartanegara District	To coordinate regional development activities, including efforts to reduce emission, at the district/city level
BAPPEDA of Mahakam Hulu District	Drs. Stephanus Madang, MSi; Head of BAPPEDA Mahulu District;	To coordinate regional development activities, including efforts to reduce emission, at the district/city level
BAPPEDA of Bontang City	Ir. Zulkifli, MS; Head of BAPPEDA Bontang;	To coordinate regional development activities, including efforts to reduce emission, at the district/city level
BAPPEDA of Balikpapan City	Ir. Nining Surtiningsih; Head of BAPPEDA Balikpapan;	To coordinate regional development activities, including efforts to reduce emission, at the district/city level
BAPPEDA of Samarinda City	Dr. H. Asli Nuryadin; Head of BAPPEDA Samarinda City	To coordinate regional development activities, including efforts to reduce emission, at the district/city level

Non-Government Institutions

Name of Partner	Contact name, telephone and email	Key capacity and role in the proposed ER Program
Regional Council on Climate Change (DDPI)	Prof. Daddy Ruhiyat, Executive Director	Coordinator of ER Program at the provincial level
National Forestry Council	Ir. Zulfikhar, MM; Head of Climate Change Commission	To coordinate the role of members of the Council in addressing climate change in forestry in Indonesia
Regional Forestry Council	Prof. Suyitno Sudirman; Head	To coordinate the role of stakeholders in forestry development in East Kalimantan
WWF Indonesia	Zulfira Warta, REDD+ Project Coordinator, WWF Indonesia, zwarta@wwf.or.id, +628121250127	Implementation partner of Kutai Barat and Mahakam Hulu Districts
The Nature Conservancy (TNC)	Saipul Rahman, Berau Program Senior Manager, +62 811 1637846, srahman@tnc.org	Implementation partner of Berau District and East Kalimantan Province
Forests and Climate Change Program (FORCLIME) GIZ	Ir. Tunggul Butar Butar, M.Sc;	Implementation partner of East Kalimantan Province and Berau District
Forests and Climate Change Program (FORCLIME) KfW	Harry Kuswondo	Implementation partner of East Kalimantan Province and Berau District
GGGI	Marcel J. Silvius	Partner of DDPI in developing a low-carbon development plan
BIOMA	Aspian Nur	Community assistance
KERIMAPURI	Asrani	Community assistance
Centre for Climate Change Studies (C3S)	Prof. Deddy Hadriyanto	To conduct study for the direction and strategy of mitigation and adaptation in climate change in East Kalimantan
CSF (Centre for Social Forestry)	Dr. Fadjar Pambudhi	To conduct study and advocacy for the development of community-based forest management
Centre for Tropical Ecosystem and Sustainable Development (TESD) UNMUL	Dr. Harmonis	To conduct study on the sustainability of ecosystems in East Kalimantan
APHI	Wayan Sujana	Private partner in the implementation of REDD+
GAPKI	MS. Djafar	Private partner in the implementation of REDD+
PETKUQ MEHUY	Ledjie Taq	Indigenous organization which is active in environmental conservation
PRAKARSA BORNEO	Dr. M. Muchdar	Community assistance
Kawal Borneo Community Foundation (KBCF)	Mukti Ali Azis	Community assistance
Yayasan Bumi	Muhammad Fadli	Community assistance
REDD+ Working Group of Berau District	Drs. Syamsul Abidin	Planning and monitoring of the implementation of REDD+ in the district

Name of Partner	Contact name, telephone and email	Key capacity and role in the proposed ER Program
Working Group for Management of Forest and Timber Legality (TKHLK) of Kutai Kartanegara District	Hamly	Planning and monitoring the implementation of sustainable forest management in the district
REDD+ Working Group of Paser District	Ii Sumirat	Planning and monitoring of the implementation of REDD+ in the district
Green Economy Working Group of Kutai Timur District	Wahyu Gatut Purboyo	Implementation and monitoring of green development in the district

2. STRATEGIC CONTEXT AND RATIONALE FOR THE ER PROGRAM

2.1. Current status of the Readiness Package and summary of additional achievements of readiness activities in the country

Indonesia is a globally important country in terms of reducing GHG emissions from forest carbon sources. The successful implementation of REDD+ initiatives in Indonesia will contribute substantially to global efforts to contain climate change. Although much is still to be done in terms of implementation, Indonesia has made significant progress toward REDD+ Readiness (MoEF, 2018). The country has been an active participant in REDD+ dialogues and programs since 2007. In 2009, Indonesia committed to reduce GHG emissions by 26% through its own efforts, and by up to 41% with international support, below the business as usual scenario by 2020. Later in 2015, at COP 21 in Paris, Indonesia committed to reduce 29% of its emissions through its own efforts, and up to 41% with international support, below the business as usual scenario by 2030, through submission of the Nationally Determined Contribution (NDC).

In 2010, Indonesia received FCPF funding. The funds, together with other funding sources, are used to improve Indonesia's readiness in implementing REDD+. In January 2017, Indonesia's Readiness Package was submitted and endorsed by the FCPF Participants Committee. This document shows Indonesia's overall progress toward readiness for REDD+ (https://www.forestcarbonpartnership.org/sites/fcp/files/2017/Sep/FCPF%20Indonesia%20R%20Package%20-%20Final%20revised%20July%2028%20version.pdf). The main outcomes of the self-assessment of readiness package for REDD+ readiness preparation is that Indonesia, in general, has made significant progress in REDD+ readiness, including readiness organization, strategy preparation, a reference emission level (REL), and monitoring system for forests and safeguards. The progress to date is the following:

Component 1. Readiness Organization and Consultation.

Sub-component 1a. National REDD+ Management Arrangement.

- Since 2015, all REDD+ related matters are managed under the Ministry of Environment and Forestry's Directorate General for Climate Change (DGCC).
- At the sub-national level, DGCC has 5 technical implementation units to speed up the readiness progress at the sub-national level. One of these is responsible for the Kalimantan Region.
- Sub-national REDD+ institutions have been developed in 11 provinces. Sub-national REDD+ institutions in 23 further provinces are under development.

Sub-component 1b. Consultation, Participation and Outreach.

- Participation, engagement and consultation processes for various REDD+ readiness aspects have taken place at the national and sub-national levels.

Component 2. REDD+ Strategy Preparation.

Sub-component 2a. Assessment of Land Use, Land-Use Change Drivers, Forest Law, Policy and Governance.

- Numerous studies related to land use and land use change, forest law, policy and governance have been undertaken. These studies have led to improved policies, such as the one map policy, the forest and peat land concession moratorium policy, forest and land fire prevention policy, and increased recognition of local community rights.

Sub-component 2b. REDD+ Strategy Options.

- Indonesia has developed a strategic framework for REDD+
- Milestones for Indonesia REDD+:
  - National strategy for implementation of REDD+ Indonesia was developed in 2010.
  - By 2012, eleven pilot provinces had completed REDD+ strategies.
  - Safeguard Information System (SIS) REDD+ was developed in 2013 and is operational in 3 provinces (East Kalimantan, Jambi, and West Kalimantan).
  - Indonesia's National Forest reference emission level was submitted in 2015 and assessed by the UNFCCC.
  - Guidance for National and sub-National FREL was developed in 2017 (Ministerial Regulation number 70 year 2017) and Sub-national FRELs for several provinces have been established (including East Kalimantan Province).
  - Indonesia's REDD+ MRV system and National Registry System for Climate Change were developed in 2016. Training and capacity building in these systems are in progress.
  - Funding instrument is in progress since 2015.

Sub-component 2c. Implementation Framework.

- Numerous regulations and policies related to REDD+ programs and activities have been drafted, enacted, adopted, and implemented. These include the following:
  - Ministerial regulations on REDD+ implementation guidance.
  - The Moratorium on new licenses in primary forest and peatland (this is reviewed every 6 months).
  - The One Map Policy
  - Forest management units (FMU) as a basis for the implementation of the REDD+ framework are being developed
  - The REDD+ National Registry is ready to be operated.

Sub-component 2d. Social and Environmental Impacts.

- Indonesia has developed several safeguards instruments to address social and environmental impacts. These include the REDD+ SES, the national Environmental Impact Assessment System (AMDAL), Strategic Environmental Assessments (KLHS), and the Safeguard Information System (SIS) for REDD+.
- In 2016, the Ministry of Environment and Forestry produced a compilation of background information for the development of SESA and preparation of the ESMF was initiated.
- The SESA report will be finalized in 2018.

Sub-component 2e. Funding Instrument and Benefit Sharing Mechanism
Funding Instrument:

- Strategic plan for financing climate change mitigation and adaptation has been developed.
- Presidential Regulation on Environmental Economic Instrument (as an umbrella for General Services Agency) has been enacted (Presidential Regulation no 46 year 2017).

Benefit Sharing Mechanism:

- There are the existing vertical and horizontal benefit sharing mechanisms in the national and sub- national levels, such as the Fiscal Transfer, Trust Funds, National Community Empowerment Programs (PNPM) and General Services Agency (*Badan Layanan Umum*/BLU).
- Lots of lessons learned and the experience of REDD+ Demonstration Activities and projects at the site level for horizontal benefit sharing mechanism.

Component 3. Reference Emission Levels/Reference Levels.

- Indonesia's FREL document was developed based on a robust methodology, and a participatory process and was submitted has been submitted to the UNFCCC.

Component 4. Monitoring System for Forest and Safeguards.

Sub-component 4a. National/Sub- national Forest Monitoring System.

- A National Forest Monitoring System (NFMS) and other forest monitoring-related systems have been established.
- National and sub- national institutions are available to implement the NFMS.
- There are other activities on forest and carbon monitoring developed by projects, Demonstration Activities and other REDD+-related programs (such as the FCPF, INCAS, etc.) that provide important additional data.

Sub-component 4b. Information System for Multiple Benefits, Other Impacts, Governance and Safeguards.

- National regulations and environment assessment instruments are available.
- SIS-REDD+ is ready to be operated.

R-Package document was presented in Laos
The document officially is accepted by FCPF (24th participant committee meeting and 10th participant assembly

REDD+ READINESS	MTR 2014	2016
Component 1: Readiness Organization and Consultation		
1.a. National REDD+ management arrangement		
1.b. Consultation, participation and outreach		
Component 2: REDD+ Strategy Preparation		
2.a. Assessment of land use, land use change drivers, forest law, policy and governance		
2.b. REDD+ strategy options		
2.c. Implementation framework		
2.d. Social and environmental impacts		
2.e. Funding instrument and benefit sharing mechanism		
Component 3: Reference Emission Level/Reference Level		
3.a. Reference emission level/reference level		
Component 4: Monitoring System for Forest and Safeguards		
4.a. National forest monitoring system		
4.b. Information system for multiple benefits, other impacts, governance, and safeguards		

GREEN 'significant progress'

YELLOW 'progressing well, further development required'

ORANGE 'further development required'

RED 'not yet demonstrating progress'

Figure 2.1 REDD+ Readiness Package Indonesia

Although there has been significant progress, key remaining gaps are as follows:

Component 1. Readiness Organization and Consultation.

Sub-component 1a. National REDD+ Management Arrangement.

- Coordination among institutions and agencies (the Ministry of Finance, the National Planning Agency, and other sectoral agencies such as in agriculture, mining, agrarian or other sectors) needs to be further improved.
- Human resource capacity for local governments and DGCC regional offices needs to be strengthened.
- A Feedback and Grievance Redress Mechanism is available, but needs to be better adapted to REDD+.

Sub-component 1b. Consultation, Participation and Outreach.

- The existing consultation, participation and outreach processes need to be further extended to reach all relevant entities across the country.

Component 2. REDD+ Strategy Preparation.

Sub-component 2a. Assessment of Land Use, Land-Use Change Drivers, Forest Law, Policy and Governance.

- Unclear tenure rights remain a constraint to the implementation of land-use regulations.
- The data management system for spatial and statistical information related to the ER program needs to be put in place.

Sub-component 2b. REDD+ Strategy Options.

- Not all local political interests at the sub- national levels support the REDD+ strategy.
- Understanding of the National REDD+ Strategy across sectors needs strengthening.
- The role of REDD+ within Indonesia's NDC has not been finalized.

Sub-component 2c. Implementation Framework.

- Laws and regulations related to low carbon development have not been fully adopted by the private sectors.
- Institutional, authority and procedures in issuing the REDD+ business permit at the protected forest areas are not yet clear.
- The National REDD+ Registry System has not yet been fully disseminated to the responsible and relevant entities.

Sub-component 2d. Social and Environmental Impacts.

- Existing safeguards approaches related to REDD+ are not fully coordinated and the SESA and ESMF documents have not yet been finalized.

Sub-component 2e. Funding Instrument and Benefit Sharing Mechanism

Funding Instrument:

- Participation by the private sector in REDD+ financing needs to be enhanced.
- The funding scheme needs a stronger legal basis.

Benefit Sharing Mechanism:

- The Benefit Sharing Mechanism needs to be finalized and adopted at the national and sub-national levels.

Component 3. Reference Emission Levels/Reference Levels.

- Jurisdiction boundaries used by the national and sub-national systems are not fully aligned.
- Measurement timeframes across various schemes need to be harmonized.

Component 4. Monitoring System for Forest and Safeguards.

Sub-component 4a. National/Sub-national Forest Monitoring System.

- There are still uncertainties in the data.
- The system excludes forest regrowth and degradation within secondary forests.
- Methodologies for assessing displacement and reversal have not yet been developed.
- The data validation process is still under development.
- Other initiatives related to measurement and monitoring at the ground level need to be harmonized, and aggregated to the national level.

Sub-component 4b. Information System for Multiple Benefits, Other Impacts, Governance and Safeguards.

- SIS-REDD+ needs a legal foundation to improve legitimacy.
- Coordination among agencies that possess forest related data at the national and sub-national levels needs to be improved.
- The REDD+ safeguards-related systems need to be better coordinated.
- Capacity of institutions at the sub-national level to operate the SIS REDD+ needs strengthening.
- Community involvement in the SIS needs to be improved.

The strategies and timeline for addressing the remaining gaps in Indonesia's REDD+ Framework are presented in the following table.

Table 2. 1 Strategies and timeline for addressing the remaining gaps in Indonesia's REDD+ Framework

Activity/Strategy	**Years**				**Responsible Entity**
	2018	2019	2020	2021	
Sub component 1a. National REDD+ management arrangement					
Intensification of the REDD+ coordination process by DGCC.					DGCC
Further technical capacity building for local governments (provinces and districts) and DGCC regional offices.					DGCC
Capacity building for the FGRM related to REDD+.					DGCC
Development of a sub-national level FGRM adapted for REDD+.					DGCC, Provincial Forestry Services
Sub component 1b. Consultation, participation and outreach					
Continuing the consultation, participation and outreach process related to REDD+ strategies and implementation across Indonesia, prioritizing the sub-national level.					DGCC, Local Government, Project Proponents, NGOs
Improving the dissemination strategy.					DGCC, Local Government, Project Proponents, NGOs
Sub component 2a. Assessment of land use, land use change drivers, forest law, policy and governance					
Carry out further work on land rights assessment related to REDD+, with East Kalimantan as a priority province and accelerate the land administration process for REDD+ implementation.					FOERDIA and DGCC

Activity/Strategy	Years				Responsible Entity
	2018	2019	2020	2021	
Developing and establishing data management system for critical spatial and statistical information related to emission reduction programs, with East Kalimantan as a priority province.					FOERDIA and DGCC
Sub component 2b. REDD+ strategy options					
Mainstreaming the REDD+ Strategy at the provincial and district levels to strengthen their local development planning and strategy implementation.					DGCC, NGOs, DDPI and East Kalimantan Forestry Service
Intensive communication and outreach with land-based sectors at the national and sub-national levels.					DGCC, local government, NGOs
Sub component 2c. Implementation framework					
Enhancing the roles and participation of the private sector in low carbon development and REDD+, with a focus on East Kalimantan.					FOERDIA
Analysis to develop the regulation on the REDD+ business permit in order to improve the Ministerial Decree/Regulation on REDD+ permit procedure.					MoEF
Socialization and dissemination of the REDD+ registry.					DGCC
Operationalization of the data management system related to the National Registry System, and integration with sub-national data management systems.					DGCC, FOERDIA, DDPI
Field testing of MRV systems at the sub-national level					
Sub component 2d. Social and environmental impacts					
Finalization of the SESA and ESMF documents.					DGCC
Sub component 2e. Funding instrument and benefit sharing mechanism					
Further exploration the role of private sector in benefit sharing.					DGCC, FOERDIA, DDPI
Acceleration of Government Regulations, other statutory laws and related ministerial technical decrees, including the finalization of a REDD+ Public Service Agency (BLU), and the legal establishment of the Benefit Sharing Mechanism.					DGCC, FOERDIA
Adjustment of existing mechanisms for the REDD+ benefit sharing mechanism					DGCC
Reference emission level/reference level					
Development of standards and methodologies for aligning national and sub-national FRELs.					DGCC

Activity/Strategy	Years				Responsible Entity
	2018	2019	2020	2021	
Developing the methodology or approach for synchronizing varied year-bases for different purposes.					DGCC
Sub component 4a. National forest monitoring system					
Development of additional PSP's to reduce uncertainty.					FOERDIA
Improving land cover data to detect forest regrowth and degradation.					MoEF
Improving the REDD+ policy, the REDD+ management arrangements, the NFMS and safeguards to cover leakage and non-permanence, both on the conceptual framework and practical guidelines					DGCC, FOERDIA, East Kalimantan (DDPI)
Further development of a data validation process.					MoEF,East Kalimantan
Development of clear mechanisms and procedures to facilitate the compilation and scaling-up of existing initiatives and ongoing activities into robust national capacity.					MoEF
Sub component 4b. Information system for multiple benefits, other impacts, governance, and safeguards					
Formalization of legal aspects for the full implementation of SIS-REDD+					DGCC
Capacity building for responsible institutions at the sub-national level.					DGCC
Improvement in synergy among agencies that collect forest related data at the national and sub national levels.					DGCC
Further alignment of existing safeguards approaches.					DGCC
Further raising of community awareness and applying capacity building.					DGCC
Further strengthening the implementation of REDD+ Safeguards.					DGCC, FOERDIA

2.2. Ambition and strategic rationale for the ER Program

The ER Program will advance the implementation of REDD+ at the national level; will contribute to the achievement of nationally and internationally significant emissions reductions, helping Indonesia achieve its climate targets and international commitments; and will support East Kalimantan's path toward a green economy.

As described in Section 2.1, Indonesia has made significant progress toward developing a national REDD+ architecture, and is at a point where a jurisdictional program will provide added stimulus and practical knowledge for finalizing the national system. A critical next step toward national REDD+ implementation is the finalization and implementation of subnational REDD+ frameworks. The proposed program offers to test a comprehensive approach to REDD+ that covers policy-level changes as well as field-based activities, and that addresses drivers of deforestation that are prevalent in most of Indonesia's forested regions. Provincial governments will have an important role in REDD+ implementation, for example through their responsibility for managing most Forest Management Units. The province-level approach will be scalable to other provinces across Indonesia. Lessons gained from implementing the ER Program in East Kalimantan will be valuable in finalizing the design of the national REDD+ framework, including the national MRV system, safeguards approaches, benefit sharing and ER registration.

The ER program will support transformative changes in forest governance and spatial planning, and is expected to lead to significant emissions reductions in one of the world's most significant forest regions. The proposed ER Program will cover the entire province of East Kalimantan which includes diverse forest and land types, including coastal forests, lowland forests, and upland forests, and which has been a significant source of national emissions. East Kalimantan's annual emissions from deforestation, forest degradation, and peat degradation are approximately 38.9 million tCO2e/yr, which is around 6% of the equivalent emissions at the national level. Over the ERPA period (2020 to 2024) the ER Program is estimated to lead to total emission reductions of 35.8 million tCO2e, which is equivalent to an 18% reduction in the province's reference level emissions over that period.

The ER Program will be sustained in the context of a longer term program. The enabling elements of this long term program commenced in 2010 and are continuing through national, provincial and local government processes that address the components of *REDD+ Readiness*. It is intended that the ER Program's activities will be integrated into the East Kalimantan Green framework within the longer timeframe of transition of government activities through to 2035 and they are in line with the Ministerial Regulation No. 70 Year 2017. It more clearly places responsibilities in each of the sectors involved in land management that affect forest ecosystems in East Kalimantan. Specifically, the ER Program includes activities to reduce emissions in the forestry, estate plantation, mining, agriculture, and fisheries sectors and will integrate these activities into East Kalimantan's up-coming mid-term strategic development plan to be implemented through the next period of government (*Rencana Pembangunan Jangka Menengah Daerah – RPJMD 2018-2023).* This process is illustrated in Figure 2.1. Framing the FCPF ER Program within the longer-term Green East Kalimantan transformation to 2035, allows the FCPF activities to continue beyond that period to ultimately achieve a *wall to wall* jurisdictional program in a reduced carbon economy, consistent with Indonesia's NDC.

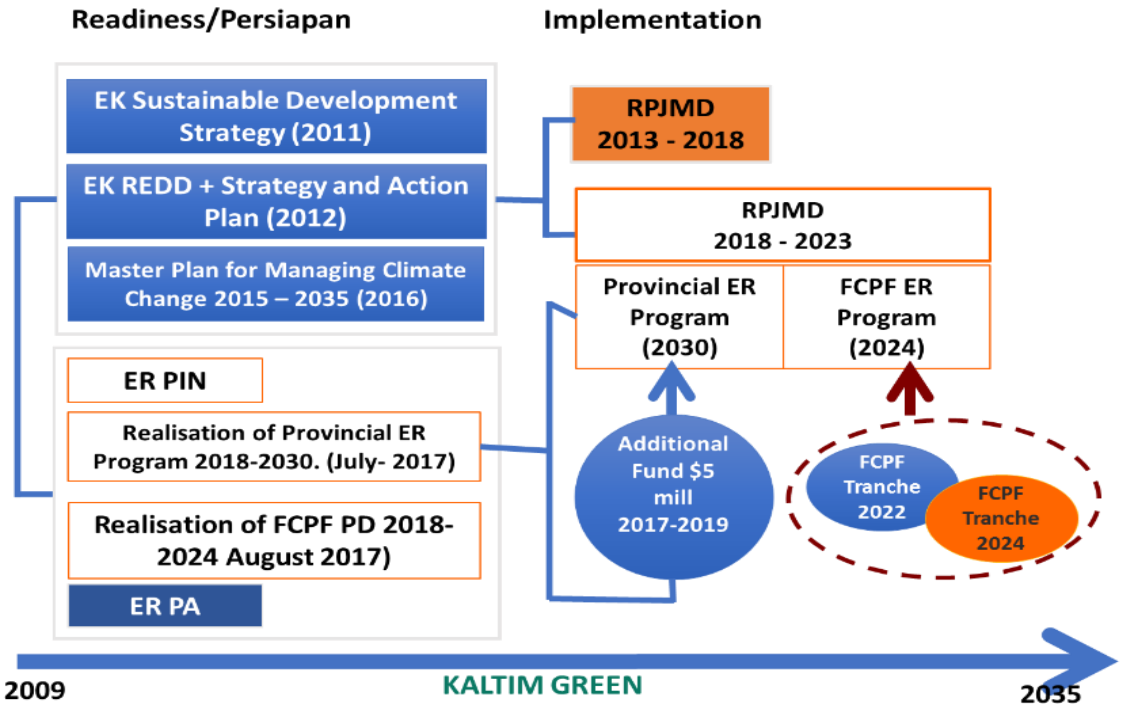


Figure 2. 2 Relationship between the ER Program for East Kalimantan and its planning processes for a Green East Kalimantan economic transition

2.3. Political commitment

2.3.1 Political commitment to REDD+ and the ER Program at the national level

At the national level, the Indonesian Government has established (i) Directorate General of Climate Change (DG of CC) as the national institution to manage and coordinate REDD+ implementation in Indonesia, (ii) the Technical Management Unit of Climate Change to facilitate REDD+ implementation at the province level, (iii) Peat Restoration Agency (Badan Restorasi Gambut-BRG), established through Perpres No. 1 Year 2016, to develop a national peat land map, then restore and rehabilitate the degraded peat land; and, (iv) Centre for Research and Development on Socio-Economic, Policy and Climate Change (P3SEKPI) as a research institution that has a mandate to provide scientific recommendations to inform climate change policy. At the sub-national level, there are ad-hoc institutions to implement the REDD+ program (among others, the working group on climate change in South Sumatera Province, provincial Commission on REDD+ in Jambi Province, and Provincial Council of Climate Change in East Kalimantan Province). The East Kalimantan Provincial Council on Climate Change (DDPI) is formed with Governor's Decree No. 02/2011 amended by Governor's Decree No. 09/2017.

Indonesia has issued policy frameworks related to REDD+ implementation at national and sub-national levels. At the national level, some of the commitments are:

(i) development of national REDD+ framework and REDD+ related instruments. This includes National Strategy for REDD+, national FREL, MRV System and National

Registry System on Climate Change, SIS-REDD+, and REDD+ funding instrument (in progress);

(ii) ratification of the Paris Agreement through Act No. 16 Year 2016. This Act indicates the commitment of the Government of Indonesia to join the global commitment to combat adverse impacts of climate change and to reduce global emissions of GHGs;

(iii) submission of Indonesia's NDC. Under this NDC, REDD+ is one of the climate change mitigating actions taken by GoI. The NDC was developed to follow up the political will of the GoI to voluntarily reduce GHGs emissions by 29 per cent of the business-as-usual (BAU) scenario without international support, or by 41 per cent with international support;

(iv) issuance of national policies to support the implementation of REDD+. In May 2011 GoI announced a two-year moratorium on the allocation of new logging concessions in areas where production forests have not yet been licensed, through Presidential Instruction No. 10 of 2011 on the suspension of granting new permits to improve primary natural forest and peatland governance. The suspension of new permits for logging concessions represents a new direction in Indonesia's political economy of forests (Ministry of Forestry, 2008). This moratorium policy has been extended for three times through Presidential Instruction No. 6/20013, Presidential Instruction No. 8/2015, and Presidential Instruction No. 6/2017.

2.3.2 Political commitment to REDD+ and the ER Program in East Kalimantan

The national decision to implement the ER Program in East Kalimantan recognizes the extent of *Readiness* and political commitment in the province. East Kalimantan has been closely involved in supporting the national commitment to reduce carbon emissions since 2009. East Kalimantan was one of the first Provinces to join the GCF association, and signed the Declaration of Rio Branco, a document firmly stating the commitment to reducing tropical deforestation, protecting the global climate system, improving rural livelihoods and reducing poverty. East Kalimantan was one of the first Indonesian provinces to appoint a REDD+ Task Force, to undertake REDD+ pilot projects and to embrace a Governor's priority policy for a transition to a low carbon economy. In 2014 the Governor of East Kalimantan augmented the national moratorium on peat land conversion and primary forest logging by issuing a province-level moratorium. East Kalimantan Province is integrating REDD+ into its Medium Term Development Plan, has allocated a portion of its budget (APBD, APBN) for activities related to REDD+, and has prepared various regional regulations in support of REDD+. The province has established a Working Group on REDD+ and a Regional Council on Climate Change (*Dewan Daerah Perubahan Iklim-DDPI*).

The multi-stakeholder DDPI represents the interests of the regional and local governments, university and civil society organizations. The DDPI has been closely involved with the development of the East Kalimantan Environmentally Sustainable Development Strategy (2011); the East Kalimantan Provincial Strategy and Action Plan for REDD+ (SRAP) and the East Kalimantan Master Plan for Climate Change (2015-2035).

In order to ensure continuity of the commitment beyond the next provincial government election in 2018, the current government is in the process of developing a regulation (*Perda*) on Climate Change Management in East Kalimantan. The regulation provides guidance for climate change mitigation and adaption and will serve a reference for the next administration's development planning.

3. EMISSION REDUCTION PROGRAM LOCATION

3.1. Accounting Area of the ER Program

The Emission Reduction Program will reduce emissions by slowing down the rate of deforestation and implementing sustainable logging practices to reduce forest degradation. The Accounting Area for the ER Program encompasses the boundaries of the East Kalimantan Provincial jurisdiction (Figure 3.1). The area consists of seven districts (Figure 3.2); three cities; 103 sub-districts; 1,026 villages; 20 Forest Management Units (FMU); 6 conservation forest areas; and concessions for estate crops, monoculture timber plantations, mining, logging, ecosystem restoration, and social forestry. East Kalimantan is Indonesia's third largest province, covering 6.6% of the total country area.

Figure 3. 3 Map of East Kalimantan Province in Indonesia

East Kalimantan is geographically located at 4° 24' North Latitude (NL) and 2° 25' South Latitude (SL), 113° 44' East Longitude (EL) and 119° 00' East Longitude (EL). East Kalimantan is strategically located in an international sea transportation route. The province is rich in natural resources such as: timber, mining, oil, gas, and productive soils. It has hundreds of rivers that flow throughout the province and that form the main transportation infrastructure for the distribution of products extracted from natural resources.

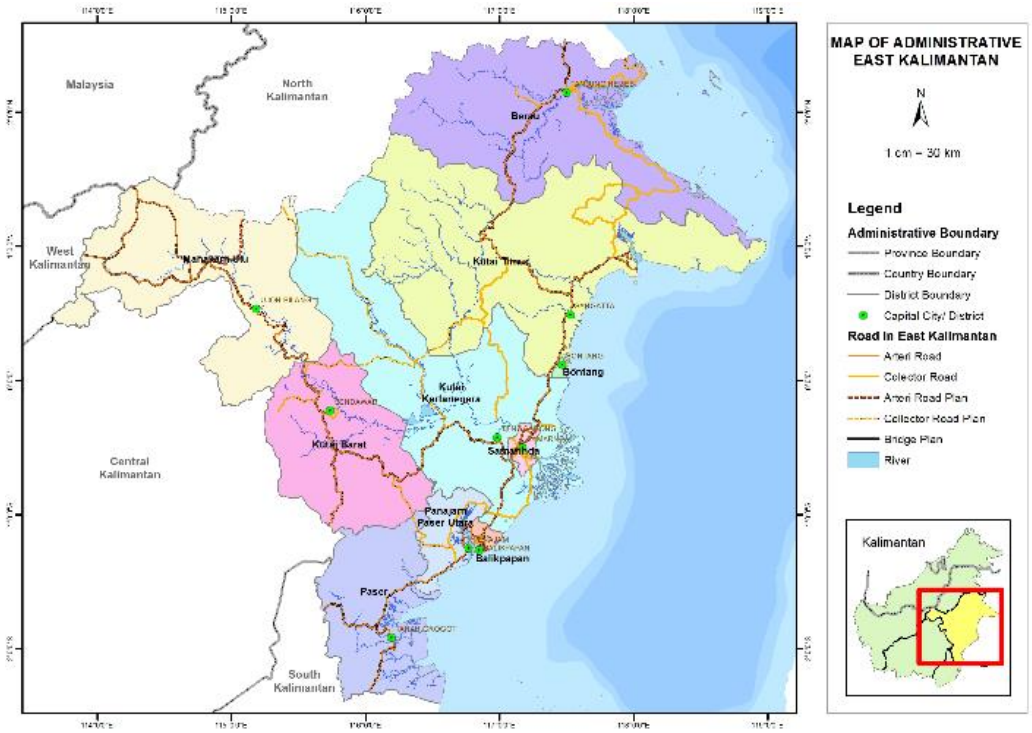


Figure 3. 4 Administrative boundaries of East Kalimantan

The administrative boundaries of East Kalimantan Province are as follows:

- The northern boundary is shared with North Kalimantan Province
- The western boundary is shared with the State of Sarawak in Malaysia, and with West Kalimantan and Central Kalimantan Provinces
- The southern boundary is shared with South Kalimantan Province
- The eastern boundary is the coastline of the Makassar Strait and the Sulawesi Sea

The original boundaries of the East Kalimantan administrative area were established through Law No. 25 of 1956 and were subsequently amended through Law No. 20 of 2012 that established the new Province of North Kalimantan.

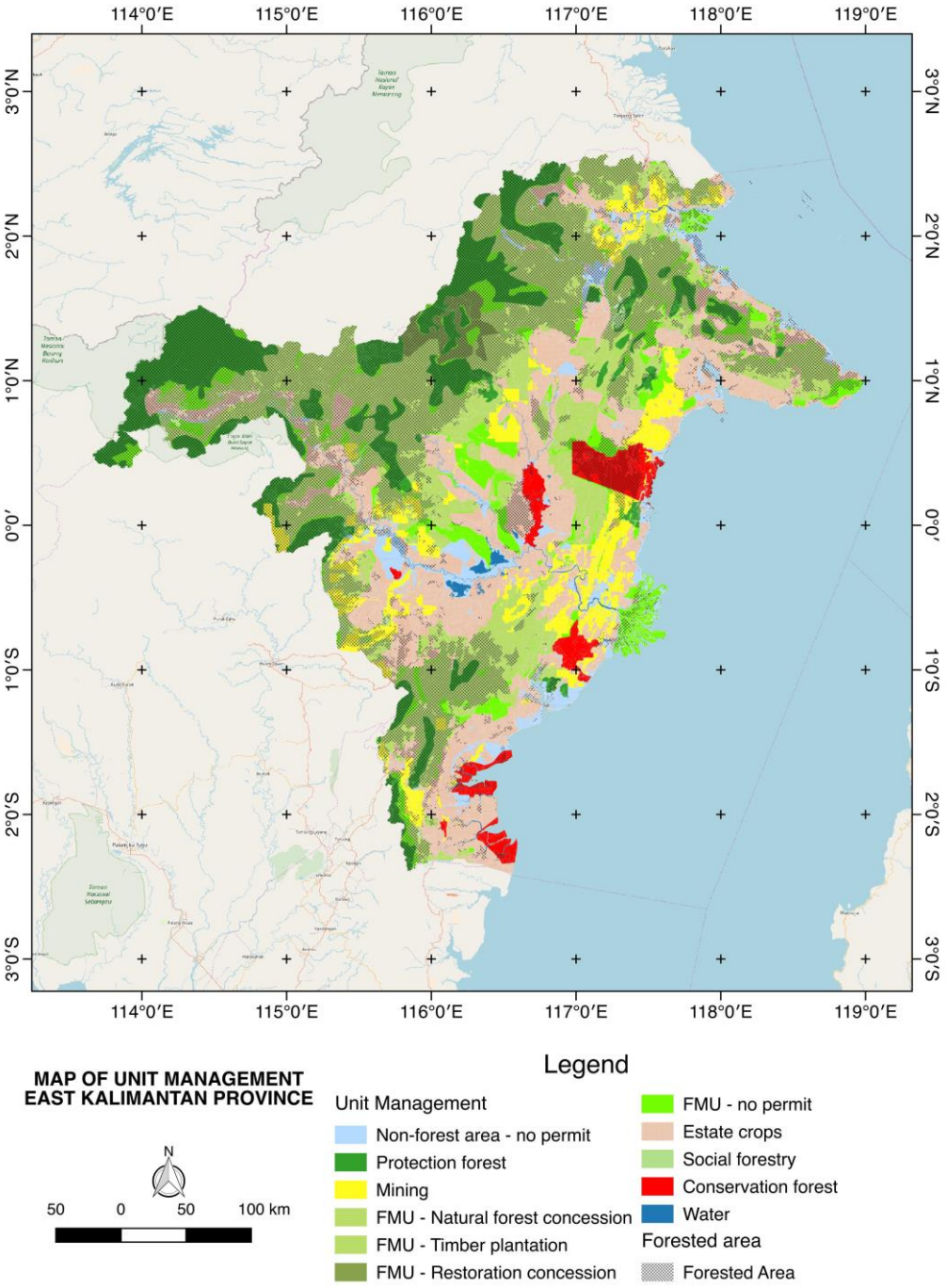


Figure 3. 5 Map of accounting area for ER program

The total area of East Kalimantan is 12,747,924 ha, of which 6,508,998 ha (54%) is still covered by natural forest. Most of the natural forests are found within areas allocated to discrete Forest Management Units (FMU or KPH) and in conservation areas. There are two types of FMUs: Production Forestry FMUs (KPHP) and Protection Forest FMUs (KPHL). Approximately 952,000 ha fall outside of FMU boundaries, (the blue shaded area in Table 3.1) and most of this is

allocated to non-forestry use. Conservation areas have well-established management units that are supported by the central government to strictly protect the remaining natural forest.

Table 3. 2 Distribution of Natural Forests within Forest Management Units

No	Unit Management	Natural forest area (Ha)		No	Unit Management	Natural forest area (Ha)
1	Balikpapan	2,251		**18**	UNIT XVII – KPHP	146,043
2	Berau	286,458		**19**	UNIT XVIII - KPHP	238,797
3	Bontang	1,689		**20**	UNIT XX - KPHP	16,409
4	Kutai Barat	114,510		**21**	UNIT XXI - KPHP	82,588
5	Kutai Kartanegara	73,826		**22**	UNIT XXII - KPHL	634,986
6	Kutai Timur	107,224		**23**	UNIT XXIII - KPHP	196,914
7	Mahakam Ulu	276,953		**24**	UNIT XXIV - KPHP	459,817
8	Paser	73,573		**25**	UNIT XXIX - KPHP	30,207
9	Penajam Paser Utara	15,353		**26**	UNIT XXV - KPHP	323,680
10	Samarinda	30		**27**	UNIT XXVI - KPHP	698,506
11	UNIT IX - KPHP	671		**28**	UNIT XXVII - KPHP	20,334
12	UNIT XII - KPHP	711,193		**29**	UNIT XXVIII - KPHP	274
13	UNIT XIII - KPHP	12,098		**30**	UNIT XXX - KPHL	6,625
14	UNIT XIV - KPHP	203,594		**31**	UNIT XXXI - KPHP	72,881
15	UNIT XIX - KPHP	607,905		**32**	UNIT XXXII - KPHP	243,574
16	UNIT XV - KPHP	267,533		**33**	UNIT XXXIII - KPHP	216,785
17	UNIT XVI - KPHP	118,799		**34**	UNIT XXXIV - KPHP	93,084
				35	Conservation Area	153,835
TOTAL						**6,508,998**

Based on its function, total area in East Kalimantan is divided into protection forest, conservation forest, limited production forest, production forest, convertible production forest (area that can be converted for other uses outside of forestry), and land for other purposes (APL, Figure 3.4; Table 3.2). APL is managed by the Agrarian Ministry and is available for other uses including agriculture, settlement, and other uses except forestry. MoEF is responsible for managing the area in protection forest, conservation forest, limited production forest, production forest, and convertible production forest.

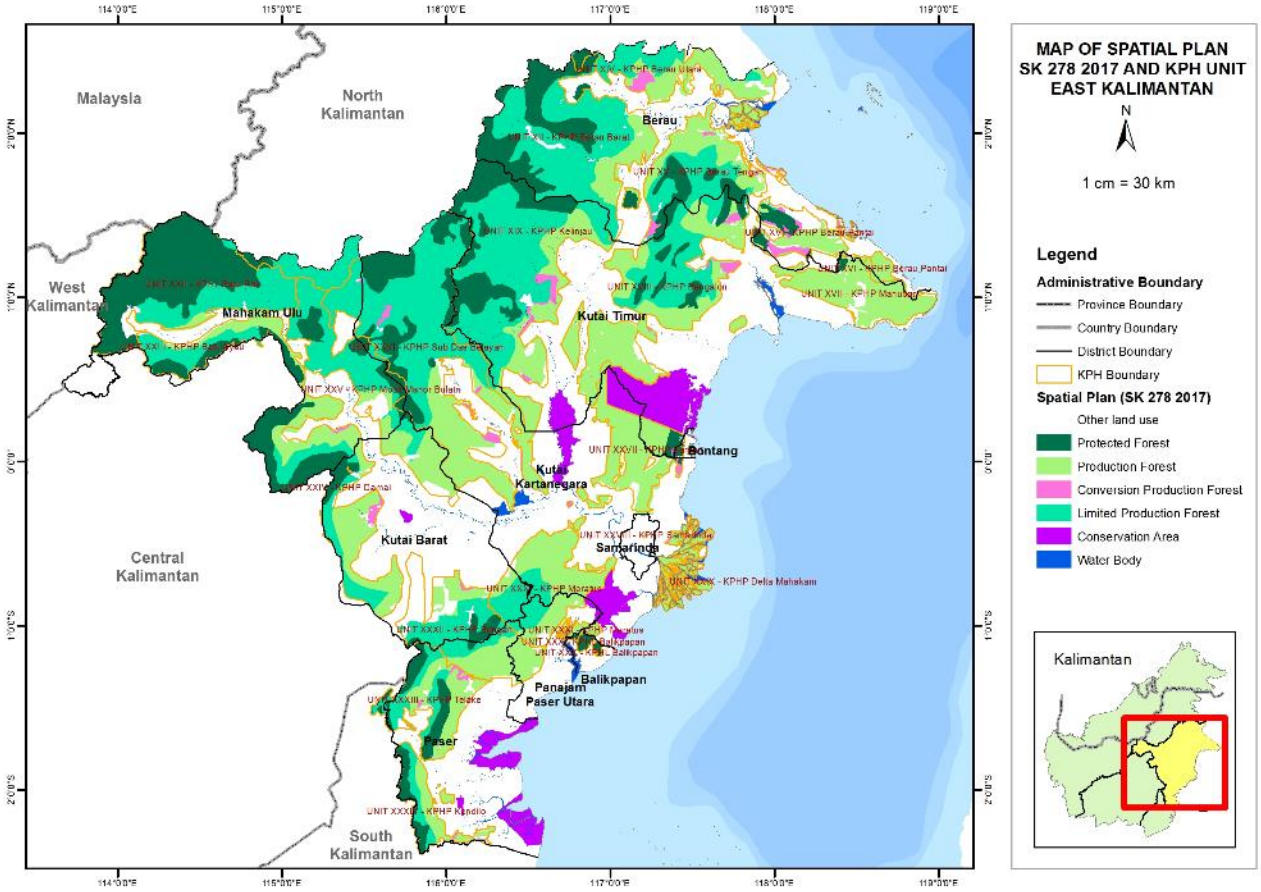


Figure 3. 6 Land type based on its function in East Kalimantan (Ministry Decree No.278/2017)

Table 3. 3 Forest and Non-Forest Area in East Kalimantan Province (2017)

Spatial plan	Forested Area		Sub total
Forest Area	**5,765,861.55**	**2,645,818.68**	**8,411,680.23**
Protected forest	1,752,238.32	105,415.40	1,857,653.72
Limited production forest	2,505,731,86	427,996.97	2,933,728.83
Production forest	1,304,720.72	1,752,485.49	3,057,206.22
Conservation forest	155,762.41	285,987.99	441,750.39
Convertible production forest	47,408.25	73,932.83	121,341.07
Non-Forest Area	**818,017.30**	**3,514,161.82**	**4,332,179.13**
Non-Forest Area - Estate crops	669,304.67	2,624,868.65	3,294,173.32
Non-Forest Area - Others	148,712.63	889,293.18	1,038,005.81
EAST KALIMANTAN	**6,583,878.86**	**6,159,980.50**	**12,743,859.36**

Within these land use zones permits and concessions are allocated for selective logging, social forestry, ecosystem restoration, mining, palm oil plantations, and industrial timber plantations. Permit holders have rights and responsibilities to manage the area and any natural forest that

still exists there (Table 3.3, Figure 3.5). Total remaining natural forest area inside concessions is about 4 million hectares and, as a result, they are considered key actors for the ER Program.

Table 3. 4 Concessions in East Kalimantan

No	Type of Concessions	Units	Remaining forests by 2016 (ha)
1	Selective logging (IUPHHK-HA)	64	2,834,807
2	Forest plantation (IUPHHK-HTI)	42	325,416
3	Estate Crops plantation	373	467,721
4	Mining	1434	299,340*
5	Ecosystem Restoration	2	170,381
6	Social forestry	38	58,127

Note: * size of remaining forests for mining Clean and Clear (CnC)

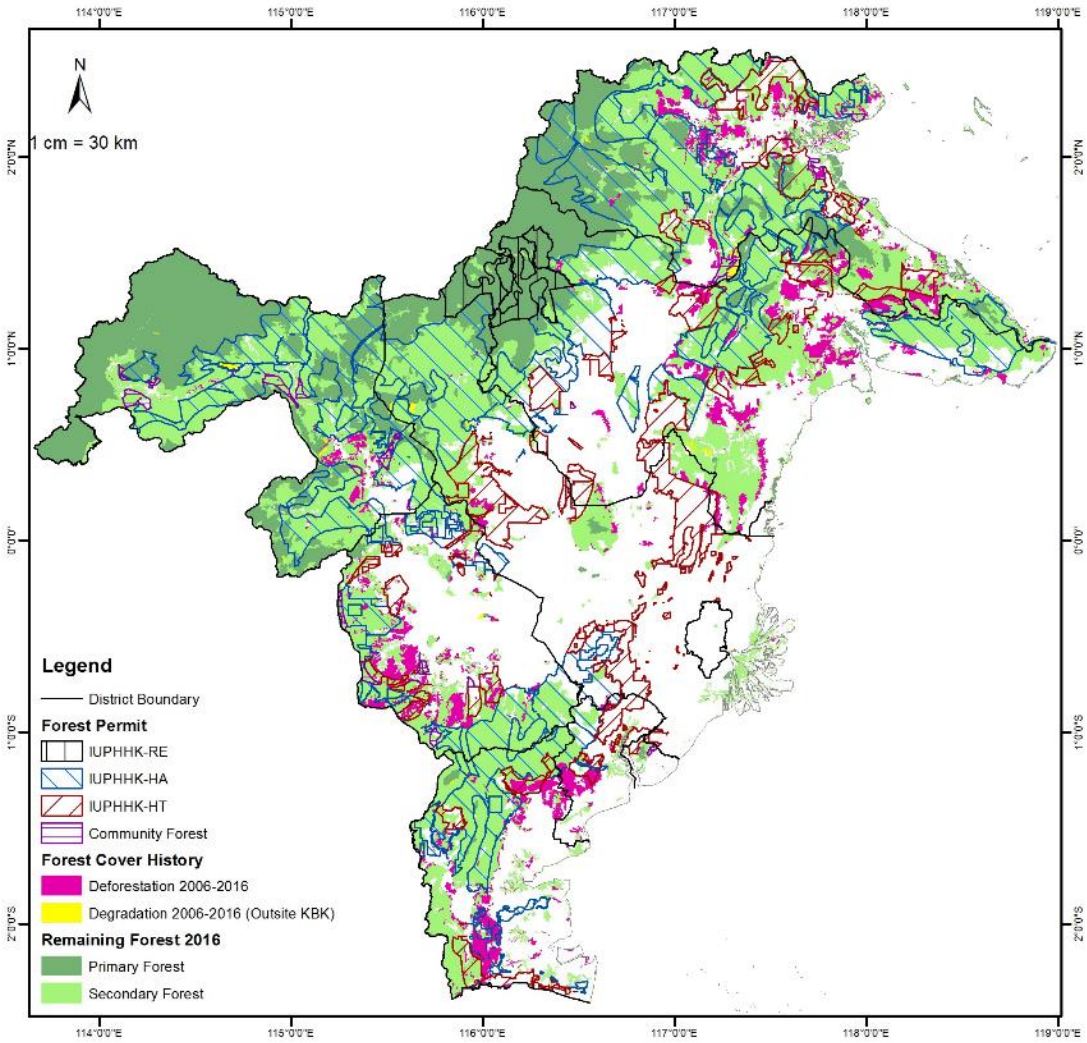


Figure 3. 7 The distribution of concessions in East Kalimantan

3.2. Environmental and social conditions in the Accounting Area of the ER Program

3.2.1. Natural Forest type

According to the 2016 landcover map, the total remaining natural forest in East Kalimantan is 6,508,998 ha. It consists of primary dryland forest, secondary dryland forest, primary mangrove forest, primary swamp forest, secondary mangrove forest, and secondary swamp forest (Table 3.4). Dryland forest in East Kalimantan is dominated by Dipterocarps species, especially *Shorea Sp*. that are used commercially for the timber industry. Mangrove forests are dominated by *Rhyzophora* sp, *Bruguiera* sp., *Avicenia* sp, and *Nypa* sp.

Table 3. 5 Natural forest type in East Kalimantan in, 2016, (MoEF)

Forest class	Area (ha)
Primary dryland forest	2,190,192
Secondary dryland forest	4,018,093
Primary mangrove forest	36,275
Primary swamp forest	22,674
Secondary mangrove forest	130,700
Secondary swamp forest	111,064
Total	**6,508,998**

3.2.2. Climatic conditions

East Kalimantan has a humid tropical climate with annual rainfall ranging from 1,363 to 2,150 mm. It is strongly influenced by moonsons, i.e. the west moonson wind between November-April and the east moonson wind between May-October. Thus, the dry season usually occurs in May to October, while the rainy season occurs in November through April. The impact of El Nino Southern Oscillation (ENSO) on rainfall variability is quite significant. During El Nino years, rainfall in the dry season is normally far below normal, and the forest is prone to fires that may cause degradation or deforestation. However, in recent years, rainfall was often far below normal during the rainy season. Air temperature also varies with location depending on altitude and distance from the shore. In general, the average daily temperature in low altitude areas is about 28^{o}C. The night and day temperature is about 24 ^{o}C and 32 ^{o}C respectively. Average air humidity is between 82% and 86%[1].

3.2.3. Forest Fire

Fires occur annually in East Kalimantan, but periods of prolonged drought, such as those linked to El Niño - Southern Oscillation (ENSO) events, can lead to severe and large-scale fires that cover significant areas. Besides impacting forests, the smoke and haze from land fires affect the health of people nationally and regionally. This has led to significant negative attention for Indonesia from neighboring countries and globally.

In 1982/83, fires destroyed about 3.5 million ha of forests in East Kalimantan[2,3]. In 1997/98, after a prolonged El Nino event, fires are reported to have burned approximately 5 million ha or 25

[1] Source: https://www.worlddata.info/asia/indonesia/climate-east-kalimantan.php
[2] Malinau, Tarakan, Nunukan, and Bulungan were still part of East Kalimantan
[3] http://www.fire.uni-freiburg.de/Manag/CiF-Ch-8-East-Kalimantan.pdf

percent of the forests in the province[4]. Yulianti et al (2012) stated that in 2004, East Kalimantan had the highest numbers of hotspots (5,440 fires) compared to the other provinces in Kalimantan. It was found that the active fires throughout Kalimantan in 2002, 2004, 2006, and 2009 occurred when the total precipitation of the three driest months (August, September, and October) was less than 100 millimeters (Putra et al, 2011 cited in Yulianti et al., 2012). Based on FREL data, the highest peat fire occurred in 2015 for East Kalimantan, contributing 3.8 million tCO2. Fires on peatlands are a particular concern, as they lead to significant emissions of greenhouse gases from concentrated areas.

Recent, analysis carried out by MoEF shows that land fires in from 2006 to 2016 caused over 93 million tonnes of emissions per year, but that 63% of the fire occurred in areas that are not classified as forested, including large areas that are categorized as brush (Figure 3.6, Figure 3.7, and Figure 3.8). Most of the emissions from fire are therefore not accounted for under the ERP carbon accounting framework.

[4] Malinau, Tarakan, Nunukan, and Bulungan were still part of East Kalimantan

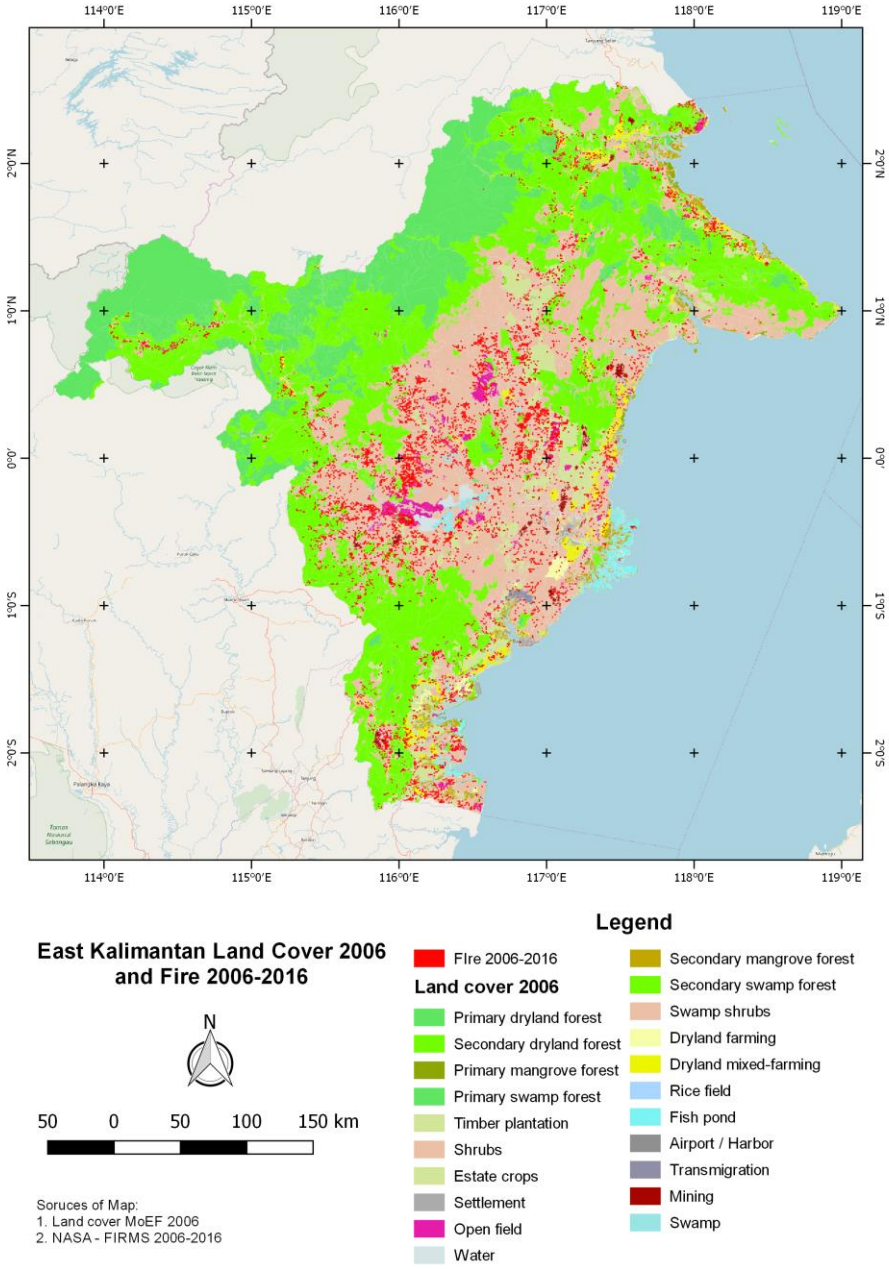


Figure 3. 8 Fire and Land Cover in East Kalimantan

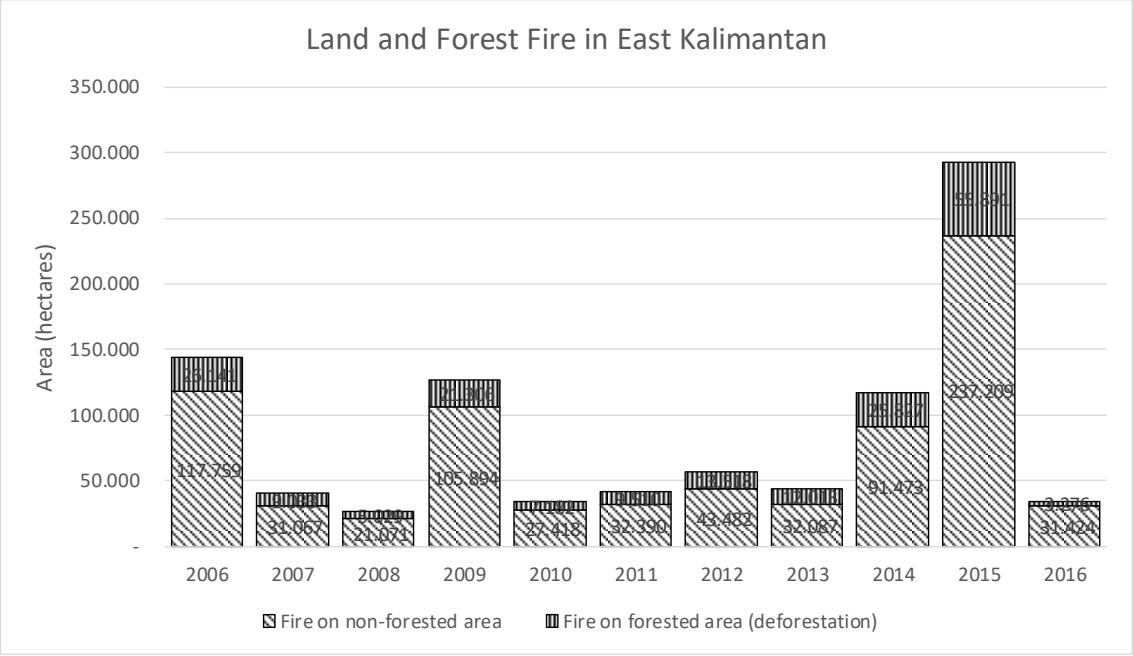


Figure 3. 9 Land and Forest Fire in East Kalimantan from 2006-2016

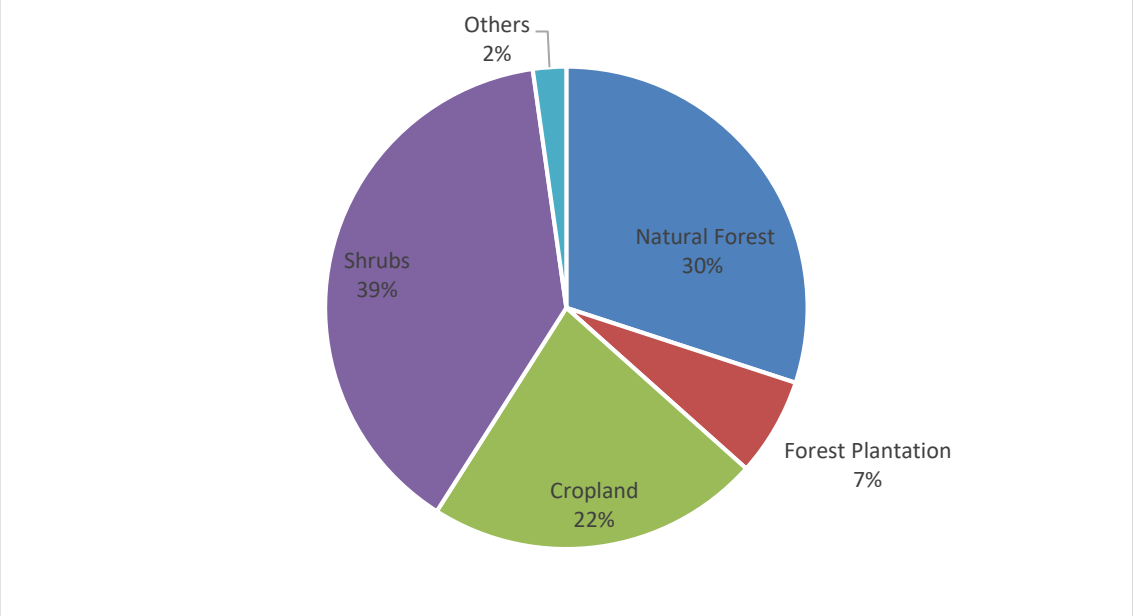


Figure 3. 10 Source emissions from Fire 2006 - 2016 East Kalimantan

3.2.4. Soil and topography

East Kalimantan is dominated by pure podsolic land, comprising 78.5% of the area, the rest are lithosol (8.75%), alluvial (4.6%), organosol (3.3%), hydride gleisel (1.4%) and several combinations of various other types of soils in small quantities. These soils are generally low in fertility and not suitable for long-term agricultural production. East Kalimantan also has peat lands (peat soil) containing significant amounts of carbon. This area is relatively small, only 164,879 ha or 1.3% of total land area. It is mostly located in the Kutai kartanegara district, and the rest is in Kutai Barat and Berau district (Figure 3.9).

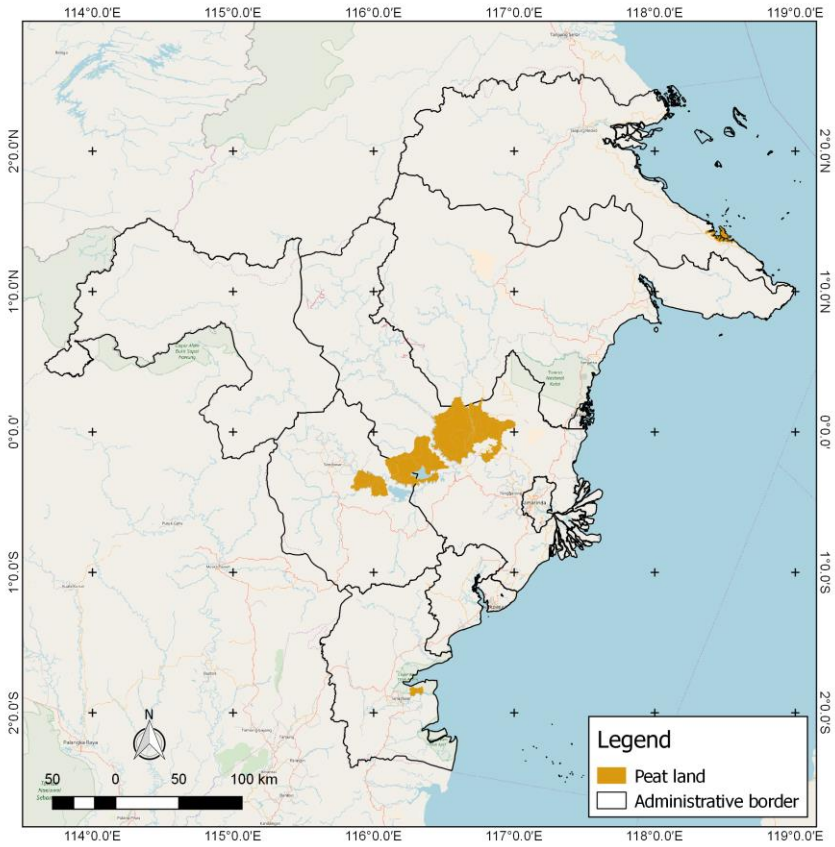


Figure 3.1 Peat land map in East Kalimantan

The topography of East Kalimantan is hilly, with altitudes ranging from 0 - 1,500 meters above sea level (Table 3.5). The topographic characteristics of East Kalimantan are dominated by lands with slopes above 40 percent and altitude less than 500 meters above sea level. Flat areas (0-2% slope) in East Kalimantan Province are generally found only in coastal areas and large river basins covering 10.70% of the total area, while sloping land (2-15%) reaches 16.16%. Hilly land with a slope greater than 15% covers about 73.1% of the total area. Approximately 40% of East Kalimantan is a steep slope (> 40%), and about 39% are areas with low slopes, while 13% are flat areas. Forested areas are generally located on steep slopes.

Table 3. 6 Percentage of Area by Regency/Municipality and Altitude Class from Ocean in Kalimantan Timur Province (Percent), 2016

Regency/ Municipality	Area (hectare)	Altitude Class (%)					
		0-7 m	7-25 m	25-100 m	100-500m	500-1000m	>1000m
Balikpapan	51,224.29	13.87	34.29	51.84	0.00	0.00	0.00
Berau	2,179,626.58	3.75	8.27	27.44	43.27	17.27	3.01
Bontang	16,314.23	10.10	41.01	48.89	0.00	0.00	0.00
Kutai Barat	1,371,512.40	3.57	29.07	25.89	19.48	21.99	8.99
Kutai Kartanegara	2,617,890.66	4.76	26.57	21.89	22.65	24.13	7.89
Kutai Timur	3,088,798.78	0.04	11.70	39.51	39.21	9.54	5.96

Regency/ Municipality	Area (hectare)	Altitude Class (%)					
		0-7 m	7-25 m	25-100 m	100-500m	500-1000m	>1000m
Mahakam Ulu *)	1,944,940.65						
Paser	1,109,629.88	18.80	19.88	33.98	22.92	4.42	0.03
Penajam Paser Utara	294,956.99	7.39	25.58	31.24	35.78	0.01	0.00
Samarinda	71,651.41	20.11	42.77	37.07	0.05	0.00	0.00
East Kalimantan	**12,746,545.87**	**4.65**	**24.05**	**28.11**	**26.94**	**16.25**	**5.28**

*)= *Mahakam Ulu still join Kutai Barat*

3.2.5. Rare and Endangered Species and their habitat within the ER Accounting Area

East Kalimantan is home to 2,500 orangutans, the largest remaining population of the northeast Borneo subspecies. The scientists estimate that the province contains roughly 10% of the world's remaining wild orangutan population[5]. In addition to that, East Kalimantan is also a huge habitat for 10 vulnerable and endangered species (Figure 3.10). Eight of the ten species are mammals. Detailed information about the species is describe below[6]:

1. Orangutan (*Pongo pygmaeus*) – critically endangered
    - Habitat: Bornean Orangutans are lowland forest specialists, rarely found above 500 m a.s.l. In the 1950s, the habitat suitable for orangutans extended across ~255,000 km² of the island of Borneo. Compounding loss of habitat, recent interview surveys in Kalimantan have concluded that 2,000–3,000 orangutans were killed every year in Indonesian Borneo during the past four decades alone (Meijaard *et al*. 2011). This would represent a loss of 44,170–66,570 individuals (Davis *et al*. 2013), or more than 50% of the original population in just 40 years. Such a rate of killings is unsustainable (Marshall *et al*. 2009) and many populations will be reduced or become extinct in the next 50 years (Abram *et al*. 2015).
2. Honey Bear (*Helarctos malayanus*) – vulnerable species
    - Habitat: Tropical evergreen rainforest is the sun bear's main habitat in Borneo. This seasonal habitat receives high annual rainfall that is relatively evenly distributed throughout the year. Tropical evergreen rainforest, includes a wide diversity of forest types used by sun bears, including lowland dipterocarp, peat swamp, freshwater swamp, limestone/karst hills, hill dipterocarp, and lower montane forest
3. Enggang Bird (*Buceros rhinoceros*) – near Threatened species
    - Habitat: This species occurs in extensive areas of primary lowland and hill forest, extending into tall secondary forest and swamp forests, up to 1,400 m. In Borneo, it is shot for food and hat feathers by local tribes. It returns to customary nest-holes, even after surrounding forest has been disturbed, and studies demonstrate that logging reduces overall numbers.
4. Irrawaddy Dolphin (*Orcaella brevirostris*) – vulnerable species

[5] https://www.nature.org/ourinitiatives/regions/asiaandthepacific/indonesia/placesweprotect/east-kalimantan.xml
[6] http://www.iucnredlist.org

- Habitat: In rivers and mangrove channels, the species is most often observed at channel confluences and divergences and downstream of sharp meanders. Deforestation and gold, sand and gravel mining are causing major changes to the geomorphologic and hydraulic features of rivers and marine-appended lakes where Irrawaddy dolphins occur (Smith *et al*. 2007-b). Increased sedimentation resulting from deforestation in surrounding watersheds has resulted in declining water depths in Semayang Lake, Kutai Kartanegara District. Based on reports from local fishermen and the retrieval of eight carcasses along the Mahakam River between 1995 and 2005, Kreb *et al*. (2007) documented 48 deaths, 66% of them from entanglement in large-mesh (10 –17.5 cm) gillnets.

5. Proboscis Monkey (*Nasalis larvatus*) – endangered species
    - Habitat: the species is in greater abundance in Kalimantan (Indonesian Borneo), where Meijaard surveyed the population. The Indonesian populations range in size from over 1,000 to less than 100, depending on past and current threats (Meijaard and Nijman 2000).
6. Green Turtle (*Chelonia mydas*) – endangered species
    - Habitat: green turtles are highly migratory and use a wide range of broadly separated localities and habitats during their lifetimes. Green turtles, like other sea turtle species, are particularly susceptible to population declines because of their vulnerability to anthropogenic impacts during all life-stages: from eggs to adults. Perhaps the most detrimental human threats to green turtles are the intentional harvests of eggs and adults from nesting beaches and juveniles and adults from foraging grounds.
7. Wild Bulls (*Bos javanicus*) – endangered species
    - Habitat: On Borneo (East Kalimantan, Indonesia), ancient cave art (circa 10,000 BP) depicting a bovid figure, thought to be *Bos javanicus*, was found in 1994 (Chazine 2005), which suggests the natural range of Banteng extended up until Wallace's line. In Eastern Kalimantan (Indonesia Borneo), it occurs along the border with Sarawak (Malaysia) in North Kalimantan in Kayan Mentarang (E. Meijaard pers. comm. 2013), and Kutai National Park (S. Cheyne pers. comm. 2013) in East Kalimantan. Banteng may also be present in Hutan Kapur Sangkulirang Nature Reserve.
8. Clouded Leopard (*Neofelis diardi*) – Vulnerable species
    - Habitat: The Sunda Clouded Leopard appears to be a relatively adaptable species, and is found in a range of forest types, elevations and levels of disturbance. Recent camera trap surveys have recorded the felid in primary lowland, upland and sub montane Dipterocarp forest (Ross *et al.* 2010, Brodie and Giordano 2012, McCarthy *et al.* 2015, Loken *et al.* unpubl data, Hearn, Ross and Macdonald unpublished data), selectively logged Dipterocarp forest (Ross *et al.* 2010, Wilting *et al.* 2012, Mathai *et al.* 2014, Sollmann *et al.* 2014, Loken *et al.*unpublished data), and peat-swamp forest (Cheyne *et al.* 2011, 2013).
9. Sambar Deer (*Cervus unicolor*) – Vulnerable species
    - Habitat: Sambar is listed as Vulnerable through sustained declines across its range. These vary in severity between regions, and in some areas considerably exceed the threshold for Vulnerable. In the last three generations (taken to be 24–30 years), declines in mainland South-east Asia, and possibly Borneo and Sumatra have exceeded 50%.
10. Tarsius Monkey (*Tarsius bancanus*) – Vulnerable species

- Habitat: This species can live in both primary and secondary forest, as well as along the coasts or on the edge of plantations (Niemitz 1979). This is often described as a lowland species, most common below 100 m elevation.

11. The Bornean rhinoceros (*Dicerorhinus sumatrensis*) – Critical endangered
    - The Bornean rhinoceros, also known as Eastern Sumatran rhinoceros or Eastern hairy rhinoceros, is one of the three subspecies of Sumatran rhinoceros. Signs of rhinoceros presence in Borneo are detected in early 2000. Bornean rhinoceros found in West Kutai, until now identified through camera traps and footprints there are at least 15 individuals Sumatran Rhino in three pockets of population in the region West Kutai.

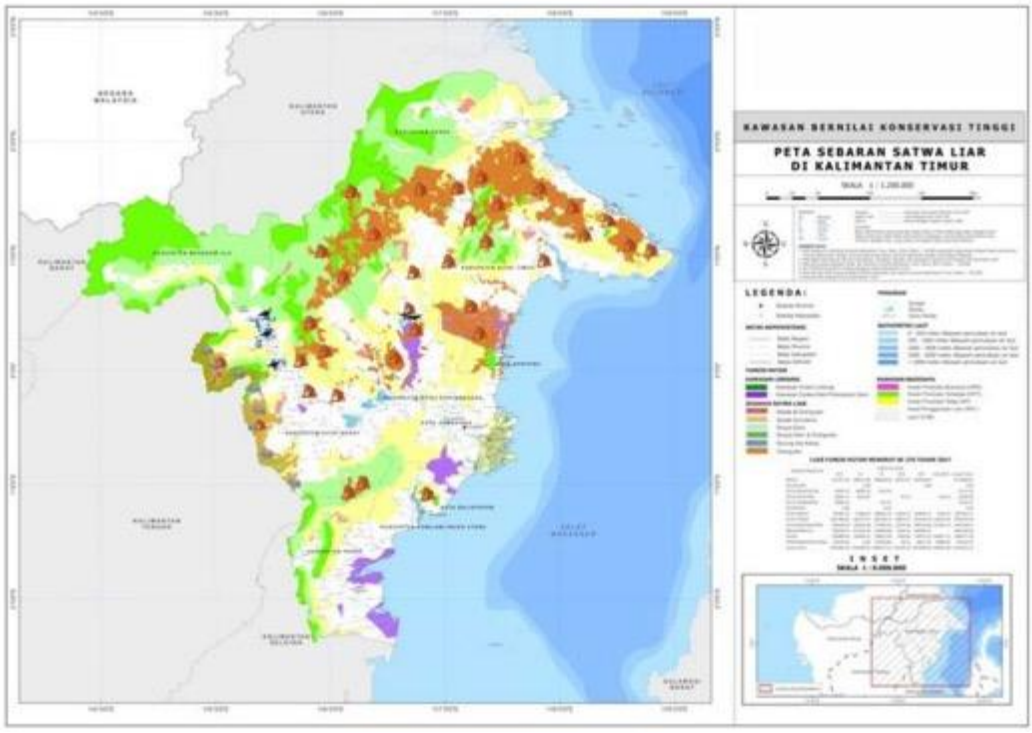


Figure 3.2 Protected Wildlife Distribution Map in East Kalimantan

3.2.6. Demography, Livelihood and Socio-cultural diversity

East Kalimantan has a population of about 3.5 million (2016) and this includes indigenous Dayak and Kutai, as well as Javanese, Chinese, Banjarese, Bugis, and Malay people (Table 3.6). Bugis and Malay, who are mostly Muslim, dominate the southern part and most coastal areas; the northern and north-western parts are home to minorities of Christians and Indigenous Peoples. Communities in remote areas often practice traditional lifestyles, governed by customary law. Most of the people who live in rural is still practicing swidden agriculture.

Population density in East Kalimantan is 27.13 people/km^2, and around 6.11% of East Kalimantan's population was classified as poor in 2016[7]. The distribution of poverty is skewed towards rural areas where 10.1% of the population was classified as poor, compared to 4% of the urban population.

[7] Center of Statistics Bureau for East Kalimantan, 2017

Table 3. 7 Ethnic groups in East Kalimantan as of 2010

No	Ethnic group	Population (2010)[8]	Percentage (2010)
1	Javanese	1,069,605	30,24%
2	Bugis	735,819	20,81%
2	Banjar	440,453	12,45%
4	Dayak	351,437	9,94%
5	Kutai	275,696	7,80%
6	Toraja	78,251	2,21%
7	Paser	67,015	1,89%
8	Sunda	55,659	1,57%
9	Madura	46,823	1,32%
10	Buton	44,193	1,25%
11	Others	371,552	10,51%
	Total	3,536,503	100,00%

Source: http://bps.kaltim.go.id (2010)

The coastal area of East Kalimantan is a concentration of distribution centers of trade and government, and has attracted migrants, both from other islands in Indonesia, as well as from outside Indonesia. Some settlers live and settle in the coastal areas of East Kalimantan and along its major rivers. Ethnic migrants whose numbers are quite dominant in East Kalimantan are Java, Bugis and Banjar. While the upland is a place of concentration distribution of forest natural resources, which has long been a source of life of the mainstay of the population of local ethnic, which many inhabit this area, both from local ethnic which is categorized as Dayak, and Kutai.

The population of East Kalimantan from year to year has increased significantly. This can be seen from the population of 2010, 2014, 2015 and 2016. Population in 2010 amounted to 3,047,479 people, increased to 3,351,432 people in 2014, increased to 3,426,638 in 2015, and increased to 3,501,232 in 2016. The population rate has grown to 2.34 percent from 2010 to 2016. The highest rate for the growth was experienced by East Kutai district at 4,40 percent, while other regency/cities had growth by 0.64-2.97 percent.

Further information is provided in Section 5, including: information on ER Program stakeholders and rights-holders; and information on the main livelihoods and economic activities in and around the Accounting Area and the dependence of local populations on forest resources.

[8] Aris Ananta, Evi Nurvidya Arifin, M. Sairi Hasbullah, Nur Budi Handayani, dan Agus Pramono (2015). *Demography of Indonesia's Ethnicity*. Institute of Southeast Asian Studies dan BPS – Statistics Indonesia

4. Description of Actions and interventions to be implemented under the proposed ER Program.

4.1. Analysis of drivers and underlying causes of deforestation and forest degradation, and existing activities that can lead to conservation or enhancement of forest carbon stocks

4.1.1 Analysis of drivers of deforestation and forest degradation

An analysis of East Kalimantan's land cover shows a decline in forested area of 700,280 ha between 2006 and 2016, which is equivalent to an average annual forest loss of 70,028 ha. Degradation of primary forest to secondary forest occurred on 71,672 ha over the same period.

Qualitative information on the drivers of deforestation and forest degradation was collected through a series of consultative meetings, conducted with local stakeholders between May 2017 and March 2018 (see Section 5). These meetings identified the following 7 main drivers of deforestation and forest degradation in East Kalimantan:

1. Timber plantations
2. Estate crops
3. Mining
4. Subsistence agriculture
5. Unsustainable logging practices
6. Forest and land fires
7. Aquaculture

Spatial analyses carried out during ER Program preparation provides evidence for the above drivers, and gives an indication of their relative scales. A two-part analysis was carried out. The first part involved identifying the final (2016) land cover of the areas that had been deforested since 2006. Of the 700,280 ha of forest lost between 2006 and 2016, 34% had been planted with oil palm, 7% had been planted with plantation timber, 6% was used for agriculture, 2% was mining area, and 1% had been turned into ponds.

Table 4.1 2016 Land cover of area deforested since 2006

Land Cover	Overlap with area deforested since 2006 (ha)	Share of deforested area
Shrubs	243,807	35%
Oil Palm	235,700	34%
Bare Land	100,254	14%
Timber plantation	51,608	7%
Agriculture	44,393	6%
Mining	17,284	2%
Aquaculture	6,782	1%
Others	452	0%
Total deforested area since 2006	**700,280**	**100%**

The second part of the analysis involved identifying the likely drivers in the areas where the land cover itself did not point to a specific land use, i.e. on the significant areas of shrub and bare

land which made up 49% of the deforested area. By analyzing the location of the areas relative to land use designations, it was possible to further categorize land use changes and to make inferences about drivers. Bare land and shrub within timber plantation concessions (44,175 ha) was assumed to be associated with timber plantations, while bare land and shrubs within areas licensed for oil palm (118,074 ha) were assumed to be associated with oil palm, and bare land and shrubs within areas licensed to mining were assumed to be associated with mining (51,692 ha). The remaining 30,980 ha of bare land was categorized as unlicensed land clearing. Remaining shrubs were categorized as overlogging/poor concession management if they were found within forest concessions (51,992 ha), and as illegal logging if not (47,148 ha).

A number of these assumptions that cannot be verified and may not be fully accurate, meaning that the actual impact of each driver may differ from the estimate provided in table 4.2. For example, in addition to inaccuracies in identifying land cover, some of the land use designations may have been made after deforestation had already taken place. Also, some of the deforestation attributed to illegal logging, may in fact be sanctioned by local licenses, that were not part of the analysis. In spite of these caveats, the result of the analysis provides an indication of the relative scale of each driver, which helps to identify activities that can address deforestation in East Kalimantan.

Table 4.2. 2016 shrub area that was forested in 2006 by 2016 land-use designations and assumed drivers of deforestation

Land-use designation	**Shrubs overlapping with deforested area (ha)**	**Likely Driver**
Outside Forest Estate with no license	17,349	Illegal logging
Protection Forest (HL)	4,612	Illegal logging
Ecosystem Restoration Concession (IUPHHK-RE)	87	Overlogging/Poor concession management
Natural Forest Management Concession (IUPHHK-HA)	47,934	Overlogging/ Poor concession management
Timber Plantation Concession (IUPHHK-HT)	31,334	Timber Plantations
Forest Estate Area without License	17,208	Illegal logging
Conservation Area (KSA/KPA)	7,979	Illegal logging
Oil Palm License (HGU/IUP)	72,809	Estate Crops
Social Forestry License	3,971	Overlogging/ Poor concession management
Mining Exploitation License, CNC	40,524	Mining
Total Shrub Area overlapping with deforestation	**243,807**	

Table 4.3. 2016 bare land area that was forested in 2006, by 2016 land-use designations and assumed drivers of deforestation

Land-use designation	Bare land overlapping with deforested area (ha)	Likely Driver
Outside Forest Estate with no license	15,710	Unlicensed land clearing
Protection Forest (HL)	456	Unlicensed land clearing
Ecosystem Restoration Concession (IUPHHK-RE)	0	Unlicensed land clearing
Natural Forest Management Concession (IUPHHK-HA)	6,575	Unlicensed land clearing
Timber Plantation Concession (IUPHHK-HT)	12,841	Timber Plantations
Forest Estate Area without License	4,773	Unlicensed land clearing
Conservation Area (KSA/KPA)	3,241	Unlicensed land clearing
Oil Palm License (HGU/IUP)	45,266	Estate Crops
Social Forestry License	226	Unlicensed land clearing
Mining Exploitation License, CNC	11,168	Mining
Total bare land overlapping with deforestation	**100,254**	

Table 4.4. Estimated share of deforestation, by driver

Driver	Area Deforested since 2006 (ha)	Share of total deforestation
Oil Palm	353,775	51%
Timber plantation/ Poor Concession Management	95,783	14%
Mining	68,976	10%
Overlogging/Poor Concession Management	58,568	8%
Illegal Logging	47,148	7%
Agriculture	44,393	6%
Unlicensed land clearing	24,404	3%
Aquaculture	6,782	1%
Others	452	0%
Total deforested area since 2006	**700,280**	**100%**

i. Conversion of forest to oil palm

Indonesia's palm oil sector has long been criticized for causing deforestation and more recently has been identified as a leading contributor to greenhouse gas emissions (MOFR 2008). In recent years, the Indonesian palm oil industry has expanded rapidly, positioning the country as the largest global producer of palm oil. Indonesia is the world's leading producer of palm oil, supplying approximately half of the commodity globally from both large private enterprises (accounting for approximately half of the production) and smallholdings (accounting for 35 percent).[9] Growing demand for palm oil as cheap cooking oil especially from China and India, and increasingly as biofuel, is likely to sustain the sector's attractiveness well into the future.

As land for expansion of large oil palm estates on the island of Sumatra has become largely unavailable, new development is being targeted at Kalimantan and Papua (World Bank 2010). While oil palm can be planted in a wide range of soils, estate companies often favor previously forested areas (Fairhurst and McLaughlin 2009). East Kalimantan's area of oil palm in 2016 was 1.2 million ha, up from 800,000 ha in 2012. The only other significant estate crop in East Kalimantan is rubber, which has remained fairly constant at only around 115,000 ha (Figure 4.1).

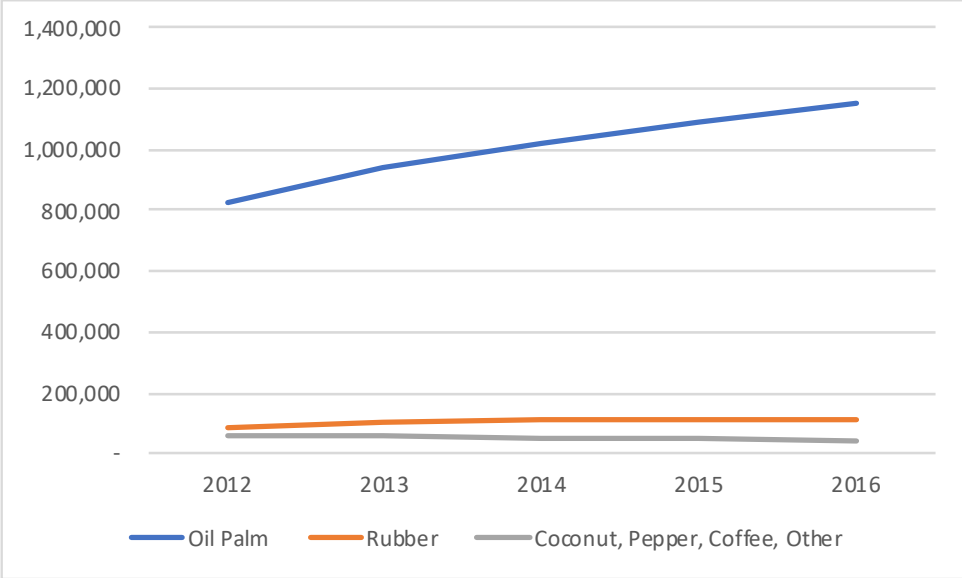


Figure 4.11 Estate crop area in East Kalimantan, 2012-2016 (ha)

In East Kalimantan, up to 51% of deforestation between 2006 and 2016 is associated with oil palm development. Of the total area that was deforested, 224,828 ha (33%) were covered by oil palm in 2016. Most of this is found within areas allocated for estate crop development, while 22,690 ha (3% of the deforested area) lies outside of the licensed area. Additional deforested area that was bare land or brushland found within areas licensed for oil palm expansion covered 118,074 ha, or 17% of the total deforested area.

A total of 3.2 million ha are currently allocated for oil palm development across East Kalimantan and the remaining forest in this area is 376,414 ha, or 6% of the total remaining forest area. While these forests are under most direct threat from conversion to oil palm, further expansion

[9] Pittman in Chelsea Petrenko, Julia Paitseva, and Stephanie Searle. "Ecological Impact Palm Oil Expansion in Indonesia". International Council on Clean Transportation. Washington D.C., 2016.

of oil palm is likely to occur outside of the areas that are currently licensed. This includes unlicensed expansion as well as expansion associated with the issuance of further licenses.

ii. Conversion of natural forests to industrial timber plantations

Industrial tree plantation development is supported through the Ministry of Forestry's Industrial Forest Plantation (Hutan Tanaman Industri, or HTI) program, which was initiated in the late-1980s. The program was largely developed to supply the growing national pulp industry, and coincided with a productivity decline of many of Indonesia's natural forest timber concessions. However, in spite of significant government subsidies for planting, only a small portion of the areas cleared for plantations were properly planted and maintained (Barr 2001). In 2011, the Ministry of Forestry recorded an allocation of 249 HTI licenses covering a total of 10 million hectares nationwide. The average size of industrial timber plantation concessions is 40 thousand hectares and the main species planted are *Acacia mangium* and *Acacia crassicarpa* which are grown on six to seven-year rotations for pulpwood. East Kalimantan was among the first regions in Indonesia to have industrial timber plantation (HTI) licenses issued, with the first concessions appearing in 1984. By 2016, East Kalimantan had 42 HTI concessions licensed, covering 1.6 million hectares. The average concession size is over 40 thousand hectares, ranging from 9 to 200 thousand hectares.

Past plantation policies in Indonesia have been associated with deforestation, leading to a potential environmental tradeoff to economic development. However, in theory plantation development can take place on non-forested land and can reduce demand for timber from natural forests. Partly because of this potential, timber plantations are playing a central role in green development plans, such as East Kalimantan's ESDS.

Timber plantations are associated with between up to 14% of the deforestation that occurred in East Kalimantan between 2006 and 2016. Of the total area that was deforested, 51,608 ha (7%) were covered by timber plantations in 2016. Additional deforested area that can be associated with timber plantations includes the deforested area within timber plantations that is currently brushland or bare land. This area covers 44,175 ha.

An issue of concern is the presence of 255,398 ha of remaining forests within areas allocated for timber plantation concessions. Legally, only highly degraded forest should be converted to timber plantations; however, in the past, lax enforcement of rules allowed concession holders to log the natural forests in their concessions (Kartodihardjo and Supriono 2000).

iii. Poor management of natural forest concessions and illegal logging

Unsustainable logging practices, particularly illegal logging, continue to be a major cause of deforestation and forest degradation. Around 2.6 million hectares of forest is found within East Kalimantan's 63 forest management concessions (IUPHHK-HA). These concessions provide timber mainly for East Kalimantan's wood-processing industry, which is focused on plywood, and to a lesser degree on sawn wood production. Currently only a few of the existing logging concessions have voluntary SFM certificates although this number has recently increased due to efforts by The Borneo Initiative (TBI).

A recent study indicates that, even the selective logging which concessionaires are meant to apply, while not always leading to deforestation, leads to significant forest degradation. The

emissions derived from timber harvesting in East Kalimantan are estimated at 129 tCO_2e/ha[10]. By using Reduced Impact Logging – Carbon (RIL-C), these emissions can be reduced by 40%[11].

For the purpose of this analysis, it was assumed that all deforestation within logging concessions that did not result in a new land use, can be attributed to poor management of the concession. This area, consisting of shrub and bare land, covers 54,509 ha or 8% of the total deforested area.

Over-harvesting is exacerbated by illegal logging, which increased during the reformation era and the political transition toward regional autonomy (1998-2003). Increased law enforcement efforts from 2004, have led to a reduction in illegal logging, but the problem persists. The deforested area of shrub outside of concession and estate crop boundaries was used as a proxy for illegal logging. This area covers 47,148 ha, which is equivalent to 7% of total deforestation between 2006 and 2016. It should be noted, however, that some of this area may be linked to other drivers as some current brushland may be in a transition to a different land use.

Table 4.5. Estimated area of deforestation due to illegal logging 2006-2016

Land Use Zone	Estimated Illegally Logged Area (ha)
Outside Forest Estate with no license	17,349
Protection Forest (HL)	4,612
Forest Estate Area without License	17,208
Conservation Area (KSA/KPA)	7,979
Total illegal logging	47,148

iv. Deforestation due to agriculture

Around half of East Kalimantan's population lives in rural areas and many people practice their traditional form of shifting cultivation, or swidden, agriculture. Increasing population pressure and cultural shifts have meant that this form of agriculture, in some cases, is not sustainable and may also lead to deforestation and forest degradation. Encroachment in these communities is often an expression of traditional land use practices without clear boundaries. Local communities often lack alternative livelihood options, and inadequate land rights decrease the incentive for long-term management.

There is a lack of quantitative data on the impact of encroachment on forests; however, encroachment by smallholder farmers is generally believed to have a small impact on deforestation in Indonesia, at least in comparison to the large-scale clearing associated with the expansion of industrial-scale plantations. At local levels there is evidence of small-scale clearing having significant impacts on deforestation, with specific crops having regional importance. The land cover analysis shows that agriculture is present on 44,393 ha of the deforested area (6% of the total).

[10] Griscom et al 2014, Emissions performance from commercial logging in East and North Kalimantan. Global Change Biology Journal.
[11] Ibid.

v. Mining

East Kalimantan is at the heart of Indonesia's coal production and the mining sector dominates the province's economy, accounting for 46% of its GDP (followed by the manufacturing sector accounting for 19%) in 2017. Slightly over 1 million ha of land in East Kalimantan is allocated to some form of mining activity.

Mining operations can lead to a direct loss of forest cover, especially with surface (or open pit) mines where the topsoil including vegetation is removed prior to mineral extraction. Land reclamation is often difficult or poorly executed, leading to excessive erosion and preventing reestablishment of forest cover. In addition, road access and social problems associated with mining such as conflicts over land, ethnic tensions, in-migration of laborers, and land squatting are common and can lead to indirect impacts on forest cover (McMahon et al. 2000). While mining is known to lead to deforestation at local scales, the cumulative impacts of mining on deforestation in Indonesia have not been fully assessed, in part because of lack of data over the extent of mining operations. A recent study using ultrahigh-resolution satellite imagery to monitor forest change in Indonesia, found that coal mining alone contributed 2 per cent of forest loss in Indonesia.[12]

The area of East Kalimantan licensed to coal mining activities increased through the first decade of the century driven by high international and national demand for electrical power. At the present time the licensed area for exploration is over 3 million ha, covering approximately one fifth of East Kalimantan's land area. Most of the over 1,400 mining licenses are small-scale national companies which obtained their permits from local (District) governments, prior to 2016, when the right to issue mining licenses reverted to the province.

The recentralization of mining licensing coincided with a dramatic decline in international demand for coal, with a subsequent severe impact on provincial and local government earnings. However, after reaching a record low of USD 49 per ton in 2016, coal prices have recovered and coal mining is likely to continue to put significant pressure on East Kalimantan's forests going forward.

[12] Chatham House. The Royal Institute of International Affairs. "The Impact of Mining on Forests: Information Needs for Effective Policy Responses". Energy, Environment and Resources Meeting Summary. 3 June 2015

Figure 4. 12 International coal prices (USD/MT) 2009 to 2018, Source: tradingeconomics.com

The spatial analysis shows that mining may have contributed up to 10% of deforestation over the 2006 to 2016 period. This includes area identified as mining area within the deforested area (17,284 ha), and shrubs and bare land within areas allocated to mining that were previously forests. Remaining forest in current mining concessions is 249,686 ha, or 4% of the total.

vi. Aquaculture in mangrove forests

Mangrove forests occur along East Kalimantan's coastline and extensive deltas, and they provide important ecological and economic functions as well as being stores of carbon. Based on spatial analysis, the total area of mangrove forests covered approximately 170,000 ha in 2017, which is a decrease of nearly 7% from its extent in 2006. Conversion to fish and shrimp ponds is regarded as the greatest single cause of mangrove degradation and decline.[13] Other causes include conversion to agriculture, development of industrial and urban areas, and logging for wood and charcoal. The recorded change in mangrove forest area over that period is 12,000 ha, which is small compared to overall forest losses. However, consultations with local stakeholders have indicated that a significant portion of remaining mangrove area is under threat from the expansion of aquaculture. There are few conservation efforts for mangrove forests in East Kalimantan, and only a few mangrove areas are incorporated within legally protected areas. Consequently, large areas of mangroves are left vulnerable to human pressures[14].

vii. Fire

Fires occur across administrative land use zones, and are linked to several of the drivers described above, in particular to land-clearing activities and to forest degradation. While the causes of fire are complex, the use of fire for land clearing appears to be an important proximate cause. Fire is used for large-scale land clearing, for example for pulpwood and oil palm estates, as well as by farmers to clear land and burn agricultural waste (Schweithelm, 1998, Boonyanuphap et al. 2001). Areas that have been previously logged-over are particularly prone to burning, as logging leaves behind dead biomass, which serves as fuel for fires (Lennertz and Panzer, 1983). Peat fires are linked to clearing and drainage of peat areas for cultivation, including for oil palm and timber plantations.

[13] Hamilton, S. 2015. Mangrove forest to shrimp farm conversion in Indonesia from 2000 to 2012. A report prepared for the Moore Foundation. Department of Geography and Geosciences, Salisbury University, Salisbury.
[14] WRI: http://www.wri.org/blog/2015/02/satellite-data-reveals-state-world's-mangrove-forests

As noted in section 3.2.3, only around 2% of the fires in East Kalimantan directly affect the area that falls under the forest category used in the FREL, while most fires impact areas that are categorized as brushland. Between 2006 and 2016 fire led to the change of only 14,741 ha of secondary forest into brush. For this reason, most of the fire emissions are not accounted for under the ERP's carbon accounting framework. Nonetheless, the ERP recognizes the need to address the emissions from land fires as they make up a significant share of LULUCF emissions. Also, there is likely to be some risk of fires spreading to secondary forests should climactic conditions favor this. The ERPD therefore includes a number of activities that address land fires.

Figure xxx: Deforestation caused by fire, 2006 to 2016

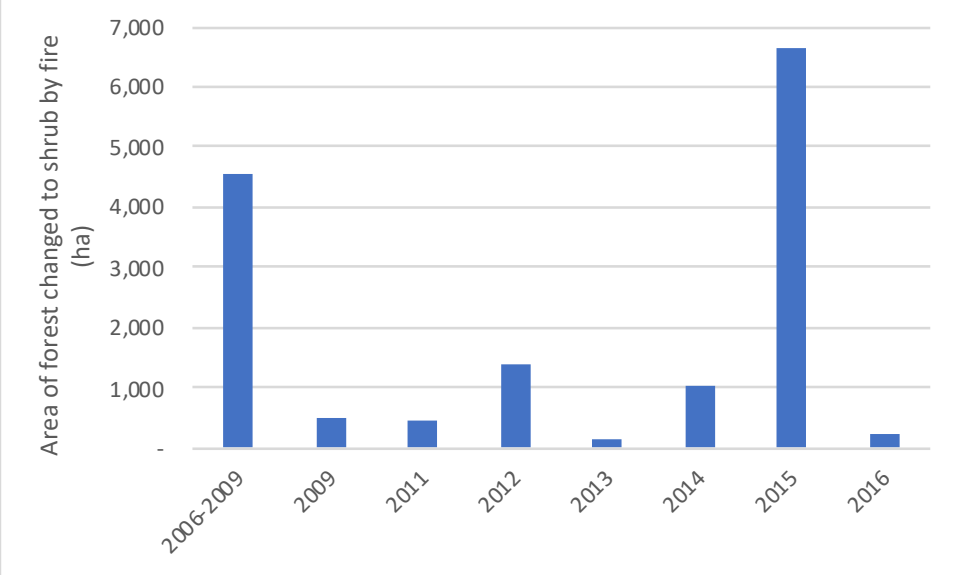


Figure 4. 13 Estate crop area in East Kalimantan, 2012-2016 (ha)

4.1.2 Underlying causes of deforestation and forest degradation

Weaknesses in the forest governance system

Forest governance issues underlie a significant share of forest loss, and cut across many of the proximate drivers. Deforestation caused by illegal logging is the most direct outcome of lack of enforcement of forestry rules. Illegal land clearing is another key outcome, and is evidenced by the existence of land uses outside of their designated areas as shown in the table below. If poor management of forestry concessions is included, which arguably also is in contravention of existing regulations, poor land governance appears to be associated with at least 181,993 ha of deforestation between 2006 and 2016, or 26% of the total.

Poor spatial planning leads to overlapping land claims, conflicts, and lack of accountability. Lack of coordination between institutions providing land use licenses has contributed to overlapping land claims, and this has contributed to underinvestment in the forestry sector and to lack of accountability for large areas of forests. Overlapping land claims can in part be attributed to lack of clarity in the underlying legal framework, particularly conflicting implications of law No. 41/1999 regarding forestry and law No. 26/2007 regarding spatial arrangement. The land cover analysis revealed that around 11% of the deforestation since 2006 occurred through land uses that were outside of their designated areas.

Poor spatial planning. Regional Spatial Plan (RTRW) development has been hampered by a lack of accurate data and information and by a lack of coordinated sectoral development plans. Spatial planning is further impeded by the unclear status of land ownership, lack of demarcation of state forest land boundaries, lack of recognition of customary and local rights to land, and lack of ownership at the local level. This has led to conflict between different land claimants, and underinvestment in long-term sustainable land uses.

Table 4.6. Unlicensed land uses and associated deforestation

Unlicensed Land Use	**Associated Deforestation 2006-2016 (ha)**
Timber plantations in Natural Forest Management concessions	2,414
Oil palm in Natural Forest Management concessions	2,721
Agriculture in Natural Forest Management concessions	5,736
Oil palm in Timber Plantation Concessions	3,076
Agriculture in Timber Plantation Concessions	7,293
Timber Plantations on Forest Estate land without permit	18,311
Agriculture on Forest Estate land without permit	1,668
Timber plantations within conservation areas	1,289
Agriculture within conservation areas	3,164
Timber plantations on areas licensed for oil palm	5,833
Agriculture on areas licensed for oil palm	13,083
Timber plantation on mining areas	3,467
Oil palm on mining areas	2,962
Agriculture within mining areas	5,260
Total deforestation associated with unlicensed activities	**76,277**

Ineffective forest supervision and management. A critical shortcoming in Indonesia's forest governance framework is the weak local government capacity to manage land areas. A direct result of this, are the high level of illegal logging (see table xxx above) and the deforestation associated with poor concession management and overlogging. Government capacity to plan, monitor, and manage activities in forestry areas is critical to translating national level policy developments to the local level and to achieving positive outcomes for forests and local communities. Implementation of acceptable forest management practices has been ineffective due to misaligned institutional capacity at the local level, including underfunding and understaffing. Regional governments, which are in charge of managing Protection Forests, have not performed well in this role. Meanwhile, responsibility for the management of Production Forest areas lies largely with concession holders who have acted with little government oversight in the past.

Estate crop and forestry companies lack incentives for sustainable management practices. Concession companies compete in an unlevel playing field, as regulations are not properly enforced and a significant share of the market is composed of illegally produced timber and palm oil that is not produced sustainably. In addition, the weak governance framework imposes high costs on production where companies are forced to navigate a complex regulatory environment and often lack legal certainty for their investments. Costs of dealing with overlapping land claims can be significant. Also, there is a lack of market premium for sustainable production while costs of compliance can be significant and certification often depends on considerable support from third parties, such as NGOs.

Limited alternative livelihood opportunities facilitate encroachment. Encroachment is facilitated by poor forest protection and is driven by population pressure and a lack of alternative livelihood opportunities. Productivity of farming in East Kalimantan tends to be low, especially as smallholders have only limited access to technology and finance. This promotes extensification of agriculture, requiring more land area and often replacing natural forests.

Table 4.7. Drivers and underlying drivers of deforestation and forest degradation

PROXIMATE CAUSES	KEY UNDERLYING DRIVERS
MINING	Poor spatial planning leading to unclear land use boundaries Ineffective forest supervision and management
TIMBER PLANTATIONS	Poor spatial planning leading to unclear land use boundaries Ineffective forest supervision and management Lack of capacity to implement sustainable management practices Lack of incentives for sustainable management practices
ESTATE CROPS	Poor spatial planning leading to unclear land use boundaries Ineffective forest supervision and management Lack of incentives for sustainable management practices
AGRICULTURE/ ENCROACHMENT	Poor spatial planning leading to unclear land use boundaries Ineffective forest supervision and management Limited alternative livelihood opportunities for local communities
AQUACULTURE	Poor spatial planning leading to unclear land use boundaries Ineffective forest supervision and management Limited alternative livelihood opportunities for local communities
FOREST AND LAND FIRES	Poor spatial planning leading to unclear land use boundaries Ineffective forest supervision and management Climate factors
UNSUSTAINABLE LOGGING PRACTICES	Poor spatial planning leading to unclear land use boundaries Lack of capacity to implement sustainable management practices Ineffective forest supervision and management Lack of incentives for sustainable management practices

4.1.3 Existing activities and policies that can lead to conservation or enhancement of forest carbon stocks

The ER Program is set in a context of significant reform within Indonesia's forest sector. More transparency and stakeholder involvement, combined with a process of decentralization, have led to an important push toward addressing many of the underlying drivers that are discussed above. Of particular importance are potentially transformative changes in the institutional framework for forest governance, with a shift from the center to the local level in the form of Forest Management Units. Also, there are important national and province-level efforts to address the broader land governance issues, such as overlapping land rights, lack of access for local communities, and resulting conflict. At the same time, there are significant changes in private sector governance with greater focus on sustainability, driven in part by market pressure. Many of the activities are integrated into national and province-level strategies and development plans. The program also builds on a number of ongoing partner activities in East Kalimantan.

Spatial Planning: Boundary demarcation and the One Map Policy

An important step toward improved spatial planning is the ongoing delineation of the boundaries of the Forest Estate. Clear boundaries between the Forest Estate and lands that lie outside, as well as clear demarcation of land use designations within the Forest Estate, are expected to lead to improved legal certainty in forest management, and to increase public recognition of community rights.

Another positive development is what is generally referred to as the "One Map Policy" (Kebijakan Satu Peta). This effort, first launched in 2012, involves the synchronization of maps used by different agencies and levels of government. The objective of this policy is to create a single 1: 50,000 scale map that can serve as a standard geospatial reference, based on a single standard, a single database, and a single geoportal. In addition, the Government of Indonesia is developing a national cadastre and continues the delineation and demarcation of land to be designated as state forest areas.

Agrarian Reform and Social Forestry Programs

The government is pursuing two programs related to land reform and land distribution which aim to create more equitable access to forest land and to reduce conflict. First is the Agrarian Reform Program which covers 9 million hectares of land.

Second is a program that seeks to allocate forestry land through various social forestry schemes. These are agreements between the state and communities for accessing and using areas within the forest estate for specified purposes. The main social forestry schemes are Community Forests (Hutan Kemasyarakat or HKm), Village Forests (Hutan Desa or HD), Community Plantation Forests (Hutan Tanaman Rakyat, HTR) and partnerships (kemitraan). By the end of 2017, there were 27 partnerships between companies and timber plantation companies in East Kalimantan, covering 1,989 ha and involving 687 community members.

Adat Forests are defined as forests located within territories over which Adat communities hold traditional rights (Adat). In order to bring the nation's forest regulation in line with a high-profile decision by Indonesia's Constitutional Court in 2013 concerning Adat forests, the Ministry of Environment and Forestry issued a new regulation on Forest Rights in 2015. Four adat areas have been recognized in East Kalimantan. This includes a 49 ha Hutan adat area in Hemaq Beniung village, a Hutan adat forest in Kekau covering 4,026 ha, and a wilayah adat area in Mului in which covers 7,803 ha. The total adat area that is officially recognized is currently 11,878 ha.

Licensing Moratorium

The Moratorium on the utilization of primary natural forest and peatlands is based on a Ministerial Decree with an Indicative Map for the Suspension of the Issuance of New Permits, for the Utilization of Forest Resources and Forest Areas and Revisions to the Designation of Forest Areas and Other Use Areas (PIPPIB; more commonly known as the moratorium map). Nationally, the map covers more than 66 million hectares of mostly primary and/or peat forests, none of which are believed to be encumbered with resource licenses (for logging, plantations, mining, etc). Within the 66 million hectares, no new resource concessions may be awarded, for as long as the moratorium is in place. The moratorium was put into force in 2011 and was recently extended by President Joko Widodo in December 2017. In 2014 the Governor of East Kalimantan augmented the national moratorium on peat land conversion and primary forest logging by issuing a province-level moratorium.

Fire management
Following the fires of 1997, the government implemented a zero-burning policy, banning the use of fire for land clearing. In 2009, the Provincial Government issued Local Regulation No. 5/2009 on Forest and Land Fire Control, which is currently being revised. The provincial government has also established a forest and land fire control unit at the management unit level and has strengthened the Community Care Fire program (Masyarakat Peduli Api). Forest and Land Fire Patrol Posts have been established in 15 villages in East Kalimantan covering 90 villages.

Forest Management Units (KPH)
The introduction of Forest Management Units (KPHs) is intended to improve and further decentralize forest management, increase accountability over forest outcomes, improve local stakeholder involvement, and potentially increase transparency. Prior to the *reformasi* period, the administration of Indonesia's Forest estate was under the domain of the central Ministry of Forestry. As part of the general decentralization process, local forestry agencies- Dinas Kehutanan (Dinas)- were placed under the jurisdiction of district and provincial governments. The Dinas carry out mainly administrative tasks, but they lack the mandate and capacity for effective resource management and law enforcement. The KPH program divides state forest land into discrete area units to be managed by dedicated local institutions that are staffed by forestry professionals. A countrywide KPH system is firmly anchored in the forestry legal framework and in forestry development plans.

While forest concession licenses will still be issued by the central Ministry of Forestry, the KPH will be responsible for developing management plans, for overseeing license holders, and for monitoring land use activities, particularly in open access areas not under license. Importantly, KPHs will be part of local government structures, strengthening decentralized forest governance. By placing forestry professionals at the local and field levels, KPHs will facilitate better law enforcement, improved outreach to local communities, and more structured and localized approaches to addressing land based conflicts and improving local people's access to forests.

Traditional Zones in National Parks
Starting in 2015, conservation programs have been conducted to enable communities to access and utilize non-timber forest products in designated Traditional Zones, in National Parks. These zones may be utilized for the benefit of communities that have traditionally been dependent on certain non- timber forest products found in these zones. Through these partnership arrangements, conservation areas have contributed to improving the welfare of 4,812 households in 62 villages living in and at the fringes of 15 National Parks.

Overlogging and illegal logging
The Government has taken a number of far-reaching measures to minimize unsustainable or illegal forest production practices. Indonesia has a mandatory national system for the certification of forest sustainability known as PHPL. It also has a national chain of custody system which ensures the legality of timber (SVLK) which in turn has allowed Indonesia to be the first country to successfully complete a legal timber trade agreement with the EU.

Regulations have been promulgated to reduce the impact of logging in terms of the volume of carbon emissions (Reduced Impact Logging-Carbon, RIL-C). These regulations will be applied to all production forest concession holders. RIL-C is an intensive logging system that involves the use of low impact techniques and equipment, with close monitoring to ensure the minimal

possible damage to soil and remaining forest stands, and thus the minimal release of carbon. The implementation of RIL-C is expected to reduce emissions by up to 40 percent from the Business as Usual baseline for logging practices. To date, 22 IUPHHK concession holders in natural forests have implemented RIL-C. The policy will become mandatory for all concession holders.

To address illegal logging, the government of Indonesia has undertaken hundreds of anti-illegal logging operations since 2000.

Palm oil certification: ISPO and RSPO

Policies that should lead to reduced deforestation from the palm oil sector include the moratorium on new licenses in primary forests, the implementation of the Indonesian Sustainable Palm Oil (ISPO) scheme, and sustainability policies of a number of estate companies.

The Indonesian Sustainable Palm Oil (ISPO) standard, introduced in 2011 by the Government of Indonesia, is designed to ensure that all Indonesian oil palm growers conform to higher agricultural standards. Based on existing Indonesian legislation, it aims to improve the sustainability and competitiveness of the Indonesian palm oil industry, whilst contributing to the Indonesian government's commitments to reducing greenhouse gas emissions. It is mandatory for all oil palm growers operating in Indonesia to adhere to the Standard, from large plantation companies to smallholders, although requirements for each vary. ISPO criteria are closely aligned with existing legal and regulatory requirements, and the system relies heavily on the Indonesian Environmental Impact Assessment (AMDAL), in its requirements. Voluntary implementation of ISPO for independent smallholder farmers began in 2015, and the Ministry of Agriculture has set a target for mandatory ISPO certification by 2022 for smallholders. So far, an area of 198,171 ha is ISPO certified in East Kalimantan (23 companies), or around 17% of the planted area.

The Roundtable on Sustainable Palm Oil (RSPO) is the main voluntary certification standard for the use of palm oil in food and oleo-chemicals and currently 20% of palm oil worldwide is RSPO certified. Founded in 2004, it is a multi-stakeholder, non-profit group that unites seven sectors of the palm oil industry in regular dialogue, including investors, growers, retailers and NGOs, using a consensus voting system to develop standards and criteria on an on-going basis. It uses a business-to- business model to encourage the adoption of sustainable practices by members (particularly producers) and promotes the uptake of certified sustainable palm oil internationally. The total RSPO certified oil palm area is 137,083 ha, or about 12% of the planted area.

Mining

A number of policies are in place or are in the process of being developed, that should lead to reduced deforestation from mining. At the present time, there is a process to rescind 809 of the coal exploration and operational licenses that are not active. At the same time, there is a province-led momentum to drive rehabilitation of mined areas and to ensure that the mining companies bear the responsibility for this. Overall improvements in forest governance, such as the establishment of FMUs, and improved spatial planning should also reduce the impact of mining on forests.

Protection of HCV Forests within Concessions and Oil Palm Plantation Areas

MOEF has issued a number of regulations to support the protection of High Conservation Value Forests (HCVF) within forestry concessions (logging concessions, timber plantation concessions,

and ecosystem restoration concessions). The Ministry of Agriculture and the National Land Agency have issued a letter in support of HCVF implementation within areas licensed for estate crops. A number of licenses have been issued, requiring recipients to protect HCVF within the licensed area.

A number of policies related to the development and management of Estate Crops in East Kalimantan are expected to be include in the provincial and district development plans:

- Prioritizing increased productivity rather than establishing new estate crop plantations;
- Directing new development of estate crop plantation to smallholders on land with low carbon stock values (shrubs and open land on mineral soils) through partnerships with large estate crop companies (low-emission supply chain).
- Encouraging the acceleration of estate crop plantations on areas where the permits have been issued and evaluating the existing permits.
- Protecting natural forests and peatlands with high carbon stock values. To the extent possible, collectively maintain 640,000 ha of natural forests and 50,000 ha of peatlands by 2030 in the allocated plantation areas.
- Ensuring compliance with the principles of sustainable estate crop development.

Ongoing partner activities in East Kalimantan

GGGI (Global Green Growth Institute) is an international organization headquartered in Soul, South Korea. The organization aims to promote green growth, a growth paradigm that is characterized by a balance of economic growth and environmental sustainability. GGGI's role and objective in Indonesia is to assist the Government of Indonesia in delivering green growth by driving investment and designing green projects with social, environmental and economic benefits for the people of Indonesia. The investment plan of GGGI for East Kalimantan is up to $316,946 (from 2020 – 2025).

The Nature Conservancy (TNC) has been working in Indonesia for 25 years. TNC's Indonesia Terrestrial Program (ITP) has five 5 main implementation strategies:

- Corporate Sustainable Practices (CSP): Promoting sustainable practices in resource-based industries with particular focus on natural forest logging concessions, forest plantations, and oil palm plantations.
- Community-based Natural Resources Management (CBNRM): Strengthening community engagement in sustainable natural resource management while improving the community's well- being.
- Conservation Land Management (CLM): Developing models and approaches for managing protected areas, particularly protection forests (hutan lindung) and essential ecosystems.
- Endangered Species Habitat Conservation (ESC): Supporting endangered species habitat conservation, particularly orang utan, through science, policy, and best management practices.
- Jurisdictional Forest & Climate Initiative (JFCI): Demonstrating jurisdictional approaches in green development at the provincial/district level.

For much of the past decade, the ITP has focused on implementing these strategies in the Indonesian province of East Kalimantan. TNC has helped 27 natural forest concessions with the total of 2,772,860 hectares achieve mandatory and FSC certification. TNC's funding for the East Kalimantan initiative is mostly obtained from Packard (CLUA). The investment plan of TNC for East Kalimantan estimates US$ 1.624.497 for period of 2020 – 2025.

The Gesellschaft für Internationale Zusammenarbeit (GIZ) FORCLIME program in Indonesia aims to reduce greenhouse gas emissions from the forest sector while improving the livelihoods of Indonesia's poor rural communities. GIZ FORCLIME plans to invest approximately USD 1 million in East Kalimantan for 2020 – 2025.

World Wild Fund (WWF) in East Kalimantan has been facilitating numerous forest conservation, community, and biodiversity projects. The focus area of WWF East Kalimantan is in West Kutai District, Mahakam Ulu and Derawan Islands. Derawan is focused on marine protected areas, whereas West Kutai and Mahakam Ulu are focused on biodiversity conservation. WWF has developed an MRV REDD+ portal for East Kalimantan (mrv.kaltimprov.go.id). WWF plans to invest USD 264, 678 in East Kalimantan between 2020 and 2025.

East Kalimantan is a member of the Governor Climate Forum Task Force (GCF Task Force). The GCF aims to support the political leadership of committed Governors in the fight against climate change and deforestation. It also seeks to strengthen and support the actors involved in building East Kalimantan's low emissions development programs. The Task Force plans to invest USD 105,214 between 2020 and 2025.

Belantara Foundation is an Indonesian grant-making institution formed in 2014 by Asia Pulp and Paper Group (APP) with the goal of delivering wide-ranging community and conservation results. Belantara Foundation plans to invest USD 157,341 in East Kalimantan to address resource management issues in the Essential Ecosystem Areas (KEE) in Kalimantan. Belantara has programs in East Kutai and Kutai Kartanegara.

The World Bank's Forest Investment Program (FIP) supports the KPH Kendilo Forest Management Units (KPH), located in Paser District East Kalimantan. The program aims to support the KPH by strengthening the expertise of local governments, community organizations, forest management permit holders and strengthening the partnership among them. The program also aims to overcome the limitations of regulations and regulations that have so far affected KPH performance.

Table 4.8. Donor/Bilateral/Partners Projects' Core Activities in East Kalimantan

Partner Programs	Resolution of Land Use Disputes	Support for spatial planning	FMU Financial support, business planning, and regulatory improvement	Support for improved practices of private sector stakeholders
FORCLIME	✓	✓	✓	.
GGGI Indonesia (Norwegian Embassy)		✓	✓	✓
Packard/TNC	✓	✓	✓	✓
FIP (World Bank)	✓	✓	✓	
Belantara	✓	✓	✓	✓
WWF	✓	✓	✓	✓
GCF Task Force			✓	✓

4.1. Assessment of the major barriers to REDD+

A number of the underlying drivers of deforestation discussed above, also present barriers to the implementation of policies, including those that are linked to REDD+. Key barriers are as follows:

Ineffective spatial planning and weak tenure. Regional Spatial Plan (RTRW) development has been hampered by a lack of accurate data and information and by a lack of coordinated sectoral development plans. Spatial planning is further impeded by the unclear status of land ownership, lack of demarcation of state forest land boundaries, lack of recognition of customary and local rights to land, and lack of ownership at the local level. As noted, this has led to conflict between different land claimants, and underinvestment in long-term sustainable land uses. According to the National Forestry Plan (RKTN), up to 15% of the forest estate cannot be effectively used due to ill-defined land use rights and conflicting claims. Lack of clear accountability for specific forest areas makes it difficult to efficiently target interventions and can be a barrier to channeling incentives such as performance-based REDD+ funding to the right stakeholders.

High opportunity costs of REDD+. According to some private sector stakeholders, an underlying driver of deforestation is the lack of incentives for implementing more sustainable management practices. In some cases, the benefits associated with deforestation also outweigh the incentives that REDD+ payments can provide. Where deforestation occurs illegally, law enforcement would be an effective strategy for REDD+. However, REDD+ funding alone may not be able to compete with the private economic benefits of, for example, legally converting forest to oil palm plantations or mining sites. These activities provide significant financial returns, and protection of forests- including sustainable management practices such as reduced impact logging and voluntary certification- are often seen as incurring significant costs, without direct benefits. This problem is linked to the fact that until now there has been little to no differentiation of commodity prices on the basis of sustainability. In some cases, REDD+ also competes with substantial public benefits. East Kalimantan still needs economic growth for development and improving people's welfare and emission reduction efforts need to be pursued in line with economic growth.

Coordination issues between government levels and between sectors. Coordination across sectors remains a challenge in Indonesia, especially for the land-based sectors. Separate ministries continue to be responsible for mining, agriculture, and forestry, and conflicts in the legal frameworks of each sector as well as overlapping land claims are a barrier to sustainable land use. Government capacity to plan, monitor, and manage activities in forestry areas is critical to translating national-level policy developments to the local level and to achieving positive outcomes for forests and local communities. This is particularly true for REDD+ with its added technical requirements, such as MRV and benefit sharing.

4.3. Description and justification of the planned actions and interventions under the ER Program that will lead to emission reductions and/or removals

4.3.1. Description and Justification of Key Activities

The ER program will support a combination of enabling conditions and promotion of sustainable management practices that will directly address the drivers of emissions resulting from sectoral activities including, timber plantations, estate crops, subsistence agriculture, aquaculture, natural and human-induced fires, and unsustainable logging practices. The program design considers the distribution of remaining forests, the threats to those forests, and the key stakeholders involved in the respective areas.

The activities are grouped into 6 components. The first two components address weak land and forest governance. The first component directly addresses issues related to overlapping licenses and to conflict and is expected to improve poor land governance, which is an underlying driver for most deforestation. The second component seeks to strengthen the capacity of the government to protect remaining forests. Within the Forest Estate, this will be achieved by strengthening the capacity of forest management institutions to oversee the Forest Estate. On land outside of the Forest Estate, the Program will strengthen the role of villages in implementing sustainable development.

Components 3 and 4 are concerned with the management practices of oil palm companies and forestry companies respectively. As discussed in the section on drivers of deforestation, estate crop and forestry companies play an important role in managing remaining forested areas. Oil palm is the largest direct driver of deforestation and nearly half of East Kalimantan's remaining natural forests are currently found within forestry concessions. Poor management practices within these areas are a key driver of deforestation. The ER Program will work with key actors to support them in adopting and implementing sustainability approaches. This will include the adoption of certified sustainability standards, such as RSPO or ISPO for oil palm, and PHPL, HCVF, and RIL-C for the timber sector.

Component 5 seeks to address deforestation linked to encroachment and agriculture from communities surrounding forest areas. The component will support the government's social forestry programs, as well as partnerships around conservation areas. The component will seek to provide sustainable livelihood opportunities to local communities, also through village development programs, thereby addressing a key driver of encroachment.

Component 6 includes all activities related to program management, including monitoring and evaluation

Figure 4.3 provides an overall summary of the different components and subcomponents of the ER Program and how they respond to the drivers of deforestation and forest degradation.

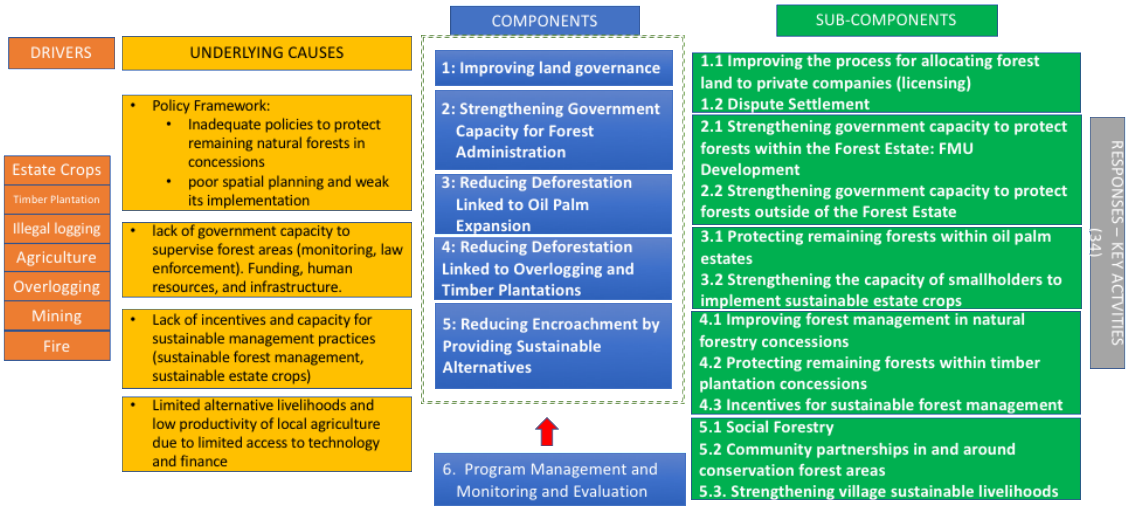


Figure 4. 14 The Overall ER Program Design

i.

ii. Component 1: Improving land governance

1.1 Improving the process for allocating forest land to private companies (licensing)

1.1.1 Revoking overlapping and non-clean and clear permits, and enforcing the licensing moratorium

The Provincial Mine and Energy Service will revoke mining permits that are not "clean-and-clear". The total mining permits to be withdrawn are 809 out of 1404 permits. Up to now, 405 permits have been revoked, and the other 404 permits are being examined. The ER program is expected to accelerate and enforce the process of revocation. This activity will also monitor the implementation of the moratorium on mining licenses (Governor Regulation 1/2018).

The review of estate crop permits will be led by the Provincial Estate Crop Service. There are 373 licenses for estate crops, some of which overlap with other existing licenses or are found inside areas that are off-limits due to the moratorium. Concessions found inside these areas will be reviewed and possibly amended by the Provincial Estate Crop Service. The results of reviews will be published.

1.1.2 Improving policies on transparency and access to information related to licensing

This activity will be led by the Provincial Investment and Licensing Integrated Service (DPMPTSP). It aims to strengthen and empower the offices to manage and provide information on land-use licenses and licensing processes. The policy development will be conducted through consultation and meetings with relevant sectors such as mining, estate crop, agriculture, fishery, and forestry.

1.1.3 Reducing deforestation and forest degradation within logging concessions by finalizing the RIL-C policy

The Directorate General of Sustainable Production Forest Management (DG PHPL) will lead this activity through policy review, gap analysis, focus group discussions and public consultations to complete the formulation of the draft RIL policy.

1.2 Dispute Settlement

1.2.1 Settlement of existing land tenure disputes

The activity will accelerate and enforce land tenure settlements for communities in forest areas. The Provincial Forestry Service is in charge of mediating land tenure disputes, and will conduct focus group discussions and consultations with relevant stakeholders, advancing and resolving disputes where possible. This process, which is an integral part of the national Agrarian Reform Program (TORA), will be facilitated and mediated by the Forestry Service with the guidance of relevant Ministries.

1.2.2 Development of a policy on cross-sectoral dispute settlement

To address any overlapping areas between forestry and mining or estate crops, the program will seek regulations by the Governor to settle disputes. A governor regulation is being drafted and now being discussed by all sectors and stakeholders. The Economic Bureau of the Governor's Office will lead the policy development and facilitate the process until the regulation is signed by the Governor by the end of 2018.

Expected outcomes of Component 1

- Strengthened and more transparent Information Management and Documentation related to land-use licensing process
- Permits for forestry, mining, and estate crops are reviewed and revoked where applicable, leading to clearer land-use boundaries
- Clear guidelines and regulations are in place for integrating REDD+ activities into village spatial planning
- The moratorium on licensing (Governor Regulation 1/2018) continues to be enforced, protecting forested areas potentially at risk of conversion.
- The RIL policy is finalized, leading to improved logging practices
- Strengthened conflict resolution mechanisms contribute to improved land governance

Component 2. Strengthening Government Capacity for Forest Administration

2.1 Strengthening management capacity within the Forest Estate: FMU development

2.1.1 Demarcation of FMU and forest utilization boundaries
Determination of FMU boundaries and Forest Utilization Blocks will be conducted by the FMUs. This activity will be supervised by the Provincial Forestry Service of East Kalimantan. Determination of boundaries will ensure that the concession area inside FMUs does not overlap with other permits or community lands. The boundary marking will be conducted through mapping and ground checking in the field. Consultations with MoEF, the Provincial Government, and District Governments will be conducted in order to ensure overlaps are minimized and settled.

2.1.2 Support for FMU management planning and business development
An early part of this activity will focus on supporting FMUs in developing sustainable approaches to forest management through the development of planning documents. Development of long-term management plans known as RPHJP for FMUs will be supported by the Ministry of Environment and Forestry (MoEF). This includes the collection of social and environmental field data. The program will also support FMUs in the development of short-term development plans (RPHJPendek) and strategic business plans.

The East Kalimantan Forest Service will work with 20 FMUs to identify business opportunities, develop business plans, and strengthen their capacity to become partially self-financing. The focus will be on business activities linked to SFM and social forestry that will directly support the reduction of deforestation and forest degradation. There will be at least five business plans completed by 2020 and 20 business plans completed by 2022.

2.1.2 Capacity building for FMUs for supervision, social forestry, and forest fire control
The East Kalimantan Forest Service will support selected FMUs with the development of guidelines and approaches for monitoring and supporting concessions in the implementation of HCV and RIL policies. The capacity of FMUs to support and implement Social Forestry programs will also be strengthened. Further capacity building of FMUs will focus on supervising, facilitating, and monitoring the implementation of Fire Prevention and Control activities carried out by concessions and local communities.

To decrease the incidence of fires, FMUs will work with forestry concession companies and with communities surrounding forest areas to support fire prevention and control. Forest fire management plans will be developed in key villages.

The ER Program will support coordination activities and learning across FMUs by supporting the FMU Center, which was established in early 2017. The Center aims to enrich and improve the capacity of FMUs to achieve their objectives and goals. The Center will facilitate exchange of information and knowledge among FMUs in East Kalimantan.

2.2 Strengthening government capacity to protect forests outside of the Forest Estate

2.2.1 Strengthening provincial and district government to supervise and monitor implementation of sustainable Estate Crops

The Estate Crops Service will work with the relevant government agencies at the district level toward a declaration of commitment to sustainable estate crops, including the protection of remaining HCV forest areas. The declaration will be facilitated through consultations involving the government agencies and the private sector. The Program will offer technical assistance to the government agencies for the implementation of these commitments. The East Kalimantan Estate Crops Service will lead a consultation process with district governments and with private companies, aiming toward a commitment to implement sustainable estate crops plantations.

The Forestry Education and Training Center (Pusdiklat) of the Ministry of Environment and Forestry (MoEF) will provide training on HCV management for government officials of the Forestry Service and Estate Crop Services from Province and District governments. There will be seven districts targeted for the trainings. In addition, the ER program will facilitate government supervision on the implementation of HCV management by plantation companies. The target for supervision will be 150 estate crop companies by 2024.

2.2.2 Technical support for Village Low Emission Development Planning

This activity will develop guidelines and regulations for integrating REDD+ activities into village spatial planning and will support the integration of emission reduction activities into village development plans. The activity will be carried out largely by the District Community Empowerment and Village Government Service (DPMPD) which will support communities in integrating REDD+ activities into village spatial and development plans. Facilitation will include community training to develop guidelines for village development plans and village spatial planning. The budget will be derived from district and provincial government budgets. The facilitation will be supported by development partners, such as TNC and TFCA.

This activity will build the capacity and skills of village institutions to integrate low emissions development planning into village development plans. At the village level, ER program activities will be integrated into village development plans. The establishment of Green Villages, or *Kampung Iklim* aims to reduce emissions based on village development plan. The activity will target 170 priority villages throughout the province. Specific ER activities that could be integrated into village plans include supervision of forested areas, community based fire management, and other ER activities.

This activity for the preparation of village spatial and village development plans will be led by the East Kalimantan Community Empowerment and Village Government Service. The activity will include trainings, consultations, and community meetings. Trainings will include development of village spatial land use plans. This includes development of village policy on land

use. The plans will be designed in a participatory way with communities. The agreed plan is then consulted in order to obtain approval from the district government. Academia from local university and non-government organization will be invited as resource persons and facilitators. The village plans will be in line with the ER program so that the objective to address emission reductions at village level can be achieved.

Expected Outcomes of Component 2

- Land use boundaries are clarified as the forest area demarcation process is completed
- FMUs are strengthened by being partially self-financed through sustainable forest-related businesses
- FMUs supervise district-level forest concessions and timber plantations for compliance with RIL and HCV policies
- Key villages implement Forest Fire Management Plans leading to a reduction of fires
- Villages incorporate ER activities into their spatial and village development plans (target 150 villages in 7 districts)

Component 3: Reducing Deforestation Linked to Oil Palm Expansion

Component 3 will target the 3.2 million hectares that are allocated to estate crops across East Kalimantan. In 2016 this area had 677,137 ha of natural forest remaining and much of these forests are under threat of conversion, mainly to oil palm plantations. Activities under this component will be led mainly by the East Kalimantan Estate Crops Service, and will involve government agencies at the district level and up to 100 estate crop license holders.

3.1 Protecting remaining forests within oil palm estates

3..1.1 Private sector commitments on sustainable estate crops

The ER Program will build on the recent draft declaration to restore 640,000 ha of natural forests and 50,000 ha of peat land inside estate crop concessions by 2030. This draft has been circulated to district governments and is waiting for district approval. The ER program will facilitate and accelerate the signing and approval of the declaration by district governments. The facilitation will be hosted by the Provincial Government (Governor) and includes dissemination of the declaration to a wide variety of stakeholders.

The Estate Crops Service will work with the relevant government agencies at the district level and with plantation companies toward a declaration of commitment to sustainable estate crops, including the protection of remaining HCV forest areas. The declaration will be facilitated through consultations involving the government agencies and the private sector. The Program will offer technical assistance to the companies and to the government agencies for the implementation of these commitments. on sustainable estate crop implementation of the commitments done by private sectors. As a further incentive, the Program will provide technical assistance to companies to improve plantation productivity and for fire prevention.

The East Kalimantan Estate Crops Service will lead a consultation process with district governments and with private companies, aiming toward a commitment to implement sustainable estate crops plantations. Large companies will conduct inventory and identification of HCV forest and natural forests inside their concessions. Training on the identification of HCV forest and natural forest, including field guidance, will be provided by the Provincial Forestry Service with coordination with the Provincial Estate Crop Service. Training on HCV management

will be provided as well, so that the companies will be able to calculate the remaining natural forests in their concession area. Academia from local university and non-government agency will be involved as resource persons for capacity building provision for the companies.

3.1.2. Implementation of Land Fire Prevention and Suppression

Partnerships between large estate crop companies and local communities in controlling forest and land fires will be facilitated. Companies will identify communities in areas that are vulnerable to fires and will facilitate the development of community groups for fire prevention. Capacity building for the groups will be provided. Training will focus on a community-based fire management and monitoring system (CBFMMS) which will cover fire management, response, monitoring, and prevention of fires. The company, together with guidance from district estate crop service, will develop standard operation procedures (SOP) for CBFMMS. The company and district service will monitor and evaluate the implementation of CBFMMS. The training module can be replicated in other districts or villages within the province. It is expected that 150 estate crop companies will develop and implement this initiative model partnership with 180 local framer groups in controlling forest and land fires.

3.1.3 Implementation of HCV management by estate crop companies

After identification and inventory of HCV forest and natural forests, companies will facilitate and protect those forests from land clearing. Forest protection systems will be developed and used by the companies when developing and managing estate crop plantations. The Provincial Estate Crop Service will manage HCV inventory data and will monitor progress.

3.2 Strengthening the capacity of smallholders to implement sustainable estate crops

3.2.1 Supporting sustainable smallholder plantations

The East Kalimantan Estate Crop Service will provide technical assistance to smallholders to improve their capacity for complying with sustainability principles. The program will help smallholders meet the principles of the Indonesian Sustainable Palm Oil (ISPO) standard. Module capacity building on sustainable estate crop development (particularly for sustainable palm oil) for smallholder estate crops will be developed by district services through focus group discussions and consultations. Training and field facilitation to smallholders will be provided. Academia from local university and non-government organization will be invited as resource persons and facilitators. District estate crop services will monitor and evaluate the implementation of ISPO by smallholders.

3.2.2 Implementation of Land Fire Prevention and Suppression by smallholders

The East Kalimantan Estate Crop Service will provide technical assistance and training for fire prevention and control by smallholders and will provide relevant equipment for smallholders.

Expected Outcomes of Component 3

- A substantial increase in the number of estate crop companies implementing sustainable plantation policies (including ISPO, RSPO, and HCV) leads to improved protection of remaining forests within areas allocated to estate crops.
- Estate crop companies commit to and implement more sustainable practices
- Reduced deforestation through improved management and protection of remaining forests within areas allocated for estate crops
- Improved management practices by smallholder oil palm farmers leads to reduced deforestation in and around smallholder plantations.

- Improved capacity of smallholders to prevent and control fires leads to fewer and less severe forest fires.

Component 4: Reducing Deforestation Linked to Overlogging and Timber Plantations

Ensuring commitments from different stakeholders in implementing sustainable management practices

4.1 Improving forest management in natural forestry concessions

4.1.1 Disseminating SFM and RIL policies to relevant stakeholders

Under the ER Program, the DG PHPL will invite the East Kalimantan Provincial Government and forest concessionaires (of East Kalimantan) to further discuss the commitment of the companies to implement RIL. By 2024, the aim is for 19 IUPHHK-HA (natural forest concessions) to be implementing RIL-C. Monitoring and facilitation for RIL implementation will be conducted by the Provincial Forestry Service and FMUs.

Training on RIL, SFM, and HCV management will be provided to concessionaires. DG PHPL together with DG PPI, the Forestry Training Center, and partners will collaborate to develop the official RIL/RIL-C training module. The Forestry Training Center will conduct a series of trainings on RIL/RIL-C practices and monitoring to forest managers of logging concessions and to FMU field officers. The workshop and training will be conducted at the national level or in East Kalimantan. There will be 26 trainings provided by the Forestry Training Center by 2024. Training on HCV management will be provided to FMUs and to timber plantation companies. 26 trainings on HCV management will be provided by 2024.

4.1.2 Implementation of Reduced Impact Logging

The RIL/RIL-C implementation on the ground will be monitored by DG PHPL and its partners, to make sure all the processes on the ground are in line with the RIL/RIL-C module. In the initial phase, 11 logging concessions and 4 KPHs would implement RIL/RIL-C. FMUs will monitor the implementation of RIL/RIL-C in logging concessions. They will conduct field measurements and will share field data and estimates of emission reductions with the MRV task force.

4.2 Protecting remaining forests within timber plantation concessions

4.2.1 Ensuring the adoption and implementation of HCV policies by timber plantation companies

The Provincial Forestry Service and FMUs will monitor and facilitate the implementation of HCV protection by timber plantation companies. Under the ER program, by 2024, 40 timber plantation companies (IUPHHK-HT) will identify and manage HCV forests inside their concessions.

4.3 Incentives for sustainable forest management

4.3.1 Development of an incentives mechanism for RIL and HCV implementation

To further support the adoption of RIL and HCV policies, the ER Program will develop a mechanism to provide monetary and nonmonetary incentives. This will be developed through a consultative process with private and public-sector stakeholders and will be linked to the REDD+ Benefit Sharing Mechanism.

Expected Outcomes of Component 4

- The area of sustainably managed forest is increased
- Forest concessionaires adopt Sustainable Forest Management practices
- Forest management concessions carry out improved forest management practices (Reduced Impact Logging)
- Timber plantations implement policies to protect remaining High Conservation Value (HCV) Forests within their concessions

Component 5: Reducing Encroachment by Providing Sustainable Alternatives to Communities and Green Village Planning

5.1 Social forestry

5.1.1 Facilitating Social Forestry licenses

The acceleration of social forestry licenses will be facilitated by MoEF through the Directorate General for Social Forestry. Social forestry programs include Village Forest (Hutan desa), community forestry, and other community initiatives inside forest areas. Once a license is issued, the Forestry Service will invite academia from local universities, and local NGOs as resource persons to discuss the implementation of the social forestry program as an alternative option for dispute resolution. The target of the social forestry program is 341 licenses delivered by 2024. In order to minimize tenure conflicts in existing concession areas, social forestry programs will be introduced giving communities rights to utilize land for their livelihood activities.

Village forests (*Hutan Desa*), community forests (*Hutan Kemasyarakatan*), community-based timber plantations (*Hutan Tanaman Rakyat*), customary forests (*hutan adat*), private forests (*hutan rakyat*), and forest partnerships (*kemitraan*) are examples of social forestry programs that will be promoted. The ER program will target 85 villages. This will include empowerment of village institutions (village forest management agencies) and capacity building of community businesses. The target is 70 business plans developed by 2024. This also includes formulation and facilitation of the community and village program. The targeted area for social forestry is based on indicative maps for social forestry programs developed by MoEF (PIAPS). It is expected that by 2024 there will be 341 licenses issued by MoEF on social forestry. The facilitation will be supported by the Provincial Forestry Service through the working group of social forestry, and by the FMUs.

5.1.2 Community capacity building for social forestry

Training will be conducted in 50 villages and will focus on the development of social forestry work plans (RKU), business plan development and forestry management. The implementation of Social Forestry schemes will be further supported through training and technical support. This will include coaching and mentoring programs, and will focus on the implementation of work plans and business plans.

5.2. Community partnerships in and around conservation forest areas

5.2.1 Building community commitment and partnership in conservation forest area management

The partnership on forest conservation is regulated under Ministry Decree No P.83/2016 on Social Forestry. The regulation aims to reduce conflict areas between communities and

concession owners. Communities are allowed to partner with national parks, FMUs, conservation areas, forest parks, or forested areas for specific purpose. The regulation said that the area to be a basis for partnership is a conflict area between a community and the concession owner. The area also has potential sources for community livelihoods. This activity will be led by Provincial Forestry Service. Mediation will be conducted.

5.2.2 Community capacity building in conservation areas

MoEF's DG of Forest Conservation will support training of communities in four conservation areas. Training will focus on forest protection and on the sustainable utilization of areas surrounding conservation areas for community livelihoods.

5.2.3 Facilitating the protection of conservation forests by local communities

Once partnership is established, community will be able to utilize such area for their livelihood. In addition, identification of potential business will be investigated so that both parties will gain mutual benefits from the partnerships while the forest is conserved. Provincial forestry service will also provide capacity building for community around conservation forest for their alternative livelihoods. It aims to prevent expansion of community to go further for opening lands inside natural forests. It is targeted that six conservation areas will provide trainings for 18 village communities on alternative livelihoods.

5.3. Strengthening village sustainable livelihoods

The activities in this subcomponent will be integrated into village development planning (subcomponent xxx) and will be supported by the East Kalimantan Estate Crops Service and the East Kalimantan Coastal and Fisheries Service and the DPMPD. For each of the activities a total of 30 villages will be targeted.

5.3.1 Enhancing sustainable agriculture practices with community

This activity will include support for sustainable swidden agriculture and paludiculture. Sustainable swidden-agriculture that does not use fire for land clearing will be supported. Support will be provided to communities for preparing swamp riparian land for paddy fields to avoid opening paddy field inside the forest. Rice farming on swamp riparian land can be an alternative livelihood option that can reduce pressure on forests. Under the lead of the Village and Community Empowerment Agency, training, workshops, and demonstration plots will be provided to farmers. The activity will take place in 10 villages in 2 districts.

5.3.2. Enhancing sustainable mangrove practices

- Facilitating introduction of sustainable mangrove management (ecotourism, silvofishery, etc.) to community and district governments
- Training on sustainable mangrove management (ecotourism, silvofishery, etc.)
- Facilitating alternative business in mangrove forests
- Facilitating implementation of Ecotourism in Mangrove
- Facilitating implementation of Nipah Sugar business and its marketing
- Linking the small holders with the existing small grant programs as part of the access to finance training.
- Training on microfinance to small holders

5.2.3 Developing alternative fresh-water fishery

Provincial and District Fishery and Ocean Services will provide trainings, seminars, and workshops for communities in coastal areas (Kutai Kartanegara, Berau, Paser, and Penajam Paser Utara Districts). Awareness raising on the ecological and social impacts on mangrove conversion to community livelihoods will be introduced. Other innovative management of mangrove areas such as ecotourism and research stations will be introduced. The activity will include FMU Berau Pantai, FMU Delta Mahakam, the Province and District Fishery and Ocean Service, and the Village and Community Empowerment Agency. The Provincial and District Fishery and Ocean Services will introduce and disseminate the concept of eco-friendly pond management to communities in coastal areas. Facilitation of development of pond management to the community will be provided. Training in silvofishery and aquaculture will be introduced and implemented.

Expected Outcomes of Component 5

- Reduced conflict in and around conservation forest areas
- Improved community capacity to respond to forest fires and reduced fire incidence in conservation forest areas
- Villages implement community-focused investments that lead to emissions reductions and sustainable land use
- Sustainable mangrove practices declared and adopted by coastal and peatland stakeholders
- Number of small-scale commercial producers and other parts of the value chain provided capital as a result of carbon and non-carbon benefit sharing mechanisms
- Increased establishment of social forestry groups (RKU) leading to sustainable livelihood options and reduced deforestation from encroachment in forested areas.
- An increase in social forestry licenses promotes sustainable forestry and provides alternative livelihoods to local communities

iii. Component 6: Project Management and Monitoring

Subcomponents	Key Activities	Scale of Intervention
6.1 Project coordination and management	6.1.1. Management and coordination of ER program implementation across levels: • Strengthening institutions for ER project management and coordination across sectors • Develop coordination mechanism	National and Provincial
	6.1.2. Provision of operating costs for ER program implementation: • Develop financial management system for ER program • Training on Financial management	National and Provincial
6.2 Monitoring and evaluation	6.2.1. Implementation of monitoring and evaluation for ER program implementation: • Training on SESA and ESMF • Monitoring and evaluation of SESA and ESMF implementation	National and Provincial

	• Training on monitoring (incl. safeguards) • Monitoring and evaluation of ER Program implementation • Development and implementation of HCV monitoring system	
	6.2.2. Measurement and Reporting: • Improving activity data through ground truthing • Improving emission factor data through Permanent Sampling Plots • Developing capacity on ER Measurement • Updating satellite imagery on ER Accounting Area • Developing and implementing the sub-national MMR System (including SIS)	Provincial
6.3 Program communication	6.3.1 Knowledge management: • Knowledge management database development and maintenance • Developing information, education and communication materials for shared learning	National and Provincial
	6.3.2 Information dissemination: • Establishing and maintaining ER program website • Dissemination of information, education and communication materials	National and Provincial

Annex 4.1. provides an overall summary of the results chain, including the key activities and indicators for the implementation of Components 1 to 5.

The summary of proposed timeline ER activities can be shown as follows:

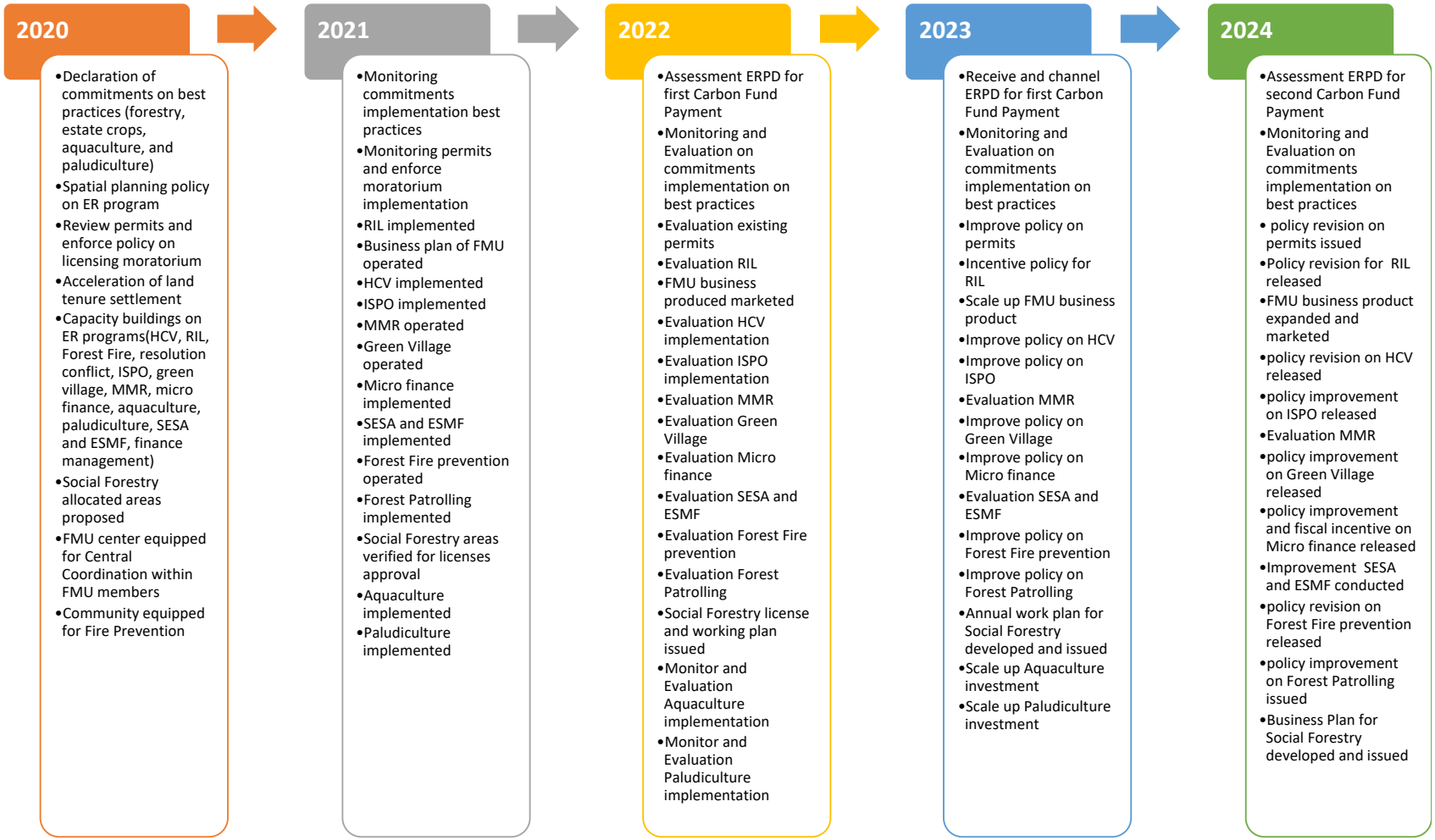


Figure 4.15 Summary of proposed timeline ER activities for East Kalimantan 2020 - 2024

Addressing Fire through the ER Program Design

Even though the ERP's carbon accounting framework does not account for most of the emissions from fires, as they mostly occur outside of areas that are defined as forests, the Program recognizes the important role that fires have in generating emissions, and includes a cross-cutting program designed to prevent and control fires. The main reduction in fires is expected to result from the policy and governance reforms that are part of Component 1. While linked to climate, a significant portion of fires are anthropogenic in the sense that fire is often used as a tool for land clearing. Given Indonesia's zero-burn policy, improved law enforcement and forest governance play an important role in addressing fires. Investment in on-the-ground forest management through the FMUs will improve the enforcement of regulations. By addressing the issue of unclear and overlapping land use boundaries and associated conflict, the ERP will also reduce fires that are linked to conflict. To complement the governance interventions, the ERP also includes a number of activities directly addressing fire within components 2, 3, 4 and 5. These are as follows:

- Supporting FMUs and communities in forest fire protection and control
- Ensuring the implementation of fire prevention and control measures by forestry concessions
- Supporting the implementation of forest fire prevention and suppression by estate crop companies
- Supporting the implementation of land fire prevention and suppression by smallholders

4.4. Assessment of land and resource tenure in the Accounting Area

4.4.1 Range of rights and categories of rights holders in East Kalimantan

Indonesia's system of land administration is regulated by constitutional law 1945 and basic agrarian law No. 5/1960. In general, land status can be divided into three groups - state land, indigenous peoples' land, and private land. On state land, rights can be allocated to private individuals or to legal entities through concessions and licenses.

State Lands

State lands include the entire area designated as Forest Estate, and lands without private title that are outside the forest estate (APL). The Forest Estate is under the jurisdiction of the Ministry of Environment and Forestry, while state lands outside the Forest Estate are managed by the Land Management Agency (*Badan Pertanahan Nasional*) at either the Province or District level.

East Kalimantan's Forest Estate covers 8.4 million hectares and is composed of the following land use zones: production forests, conservation forests, protection forests, and conversion forests. Production forests are designated for the allocation of logging concessions, timber plantation concessions, ecosystem restoration concessions, and social forestry areas. Based on Decentralization Act No. 23/2014, the Forest Estate (with the exception of forest conservation areas) is managed by the provincial government and controlled by the national government. Day-to-day management of these areas is the mandate of the Forest Management Units (KPH).

All forest conservation areas (such as Nature Reserves, Wildlife Reserves, and National Parks) are controlled and managed by the central Ministry of Environment and Forestry.

The area outside of East Kalimantan's Forest Estate covers 4.3 million hectares. State lands outside the Forest Estate are under the mandate of the district and provincial governments. These can issue licenses for agriculture (estate crops), mining, and public works. Oil palm plantations for example, will be supervised by the Estate Crops Service of the local District Government. The following table presents a breakdown, by area, of the main licenses granted by the government in East Kalimantan.

Table 4.16 Allocation of Land in East Kalimantan

Category	Licensing Authority	Area (ha)
Forest estate area		
Protection Forest (HL)	Provincial Governments	1,819,809
Ecosystem Restoration Concessions (IUPHHK RE)	Ministry of Environment and Forestry	164,151
Natural Forest Concessions (IUPHHK-HA)	Ministry of Environment and Forestry	3,213,531
Timber Plantation Concessions (IUPHHK-HT)	Ministry of Environment and Forestry	1,014,321
Social Forestry Licenses	Ministry of Environment and Forestry	69,032
Production forest zone with no licenses granted	Ministry of Environment and Forestry	1,159,323
Conservation Areas	Ministry of Environment and Forestry	245,116
Total Forest Estate Area		*8,411,680*
Area outside the forest estate (APL)		
Estate Crop Permits	District Governments	3,294,173
Other land outside the forest estate, including all privately owned land	District Governments	1,038,005
Total area outside the forest estate		*4,332,179*
Total Forest Estate and Non-Forest Estate Land		**12,743,859**

Local/Indigenous Peoples' Tenure Rights

Based on recent assessments, the land area claimed by customary communities in East Kalimantan covers around 1 million ha (UnMul PPIIG, 2017; Sulistioadi, et.al., 2017). Local communities in East Kalimantan manage land areas for settlement, cultivation, and for social facilities and worship. Local land-uses include the collection of non-timber forest products such as damar resin and rattan and various forms of agroforestry systems. Such land use systems can preserve important forest functions, including biodiversity and sequestration of greenhouse gases (van Noordwijk et al. 2012, Tata et al. 2008). Culturally important areas also include burial areas, springs, and ancestral territories.

The type of land ownership claim depends on the history of each community group. The community generally gains verbal land ownership, with physical or written evidence. Verbal recognition is the recognition of community groups to ownership and/or control of land. Generally, knowledge is owned by the Traditional Institutions (Adat), and partly owned by the Village Officials. Recognized physical evidence can be an orchard (having various local names, such as *Lembo, Rondong*/Kutai, *Munaant*/Tunjung, *Simpukng*/Benuaq) or previous evidence of

use in other forms. Documents that have been used as evidence for ownership include: Land Certificates from Village Heads, Letters of Declaration of Release of Land Rights from Heads of Sub-districts or Notaries, and individual or communal land certificates for land ownership.

4.4.2 Areas subject to disputes

Lack of clearly and formally recognized rights to customary forest areas has led to the overlap of commercial land use licenses with customary lands, often resulting in conflict or dispossession, or both. According to the Agrarian Reform Consortium there were 450 land-based conflicts across Indonesia in 2016, and these conflicts covered an area of 1.3 million ha[15]. MoEF's Law Enforcement Agency (Gakkum) lists three ongoing disputes between local people and companies in East Kalimantan. This number however does not capture the scale of overlapping land claims. According to a recent analysis 34% of customary land is located within areas that have been allocated to private companies for estate crop production, forest management, or mining (Sulistioadi, et.al., 2017). The resulting land access regimes are often the outcome of negotiated processes, where lack of clearly codified rights often places customary communities at a disadvantage to large concession holders.

Table 4.9. Initial identification of customary land in East Kalimantan

Land use designation	Customary Land (ha)	
No Permit - Non Forest	48,300	5%
Protection forest	374,558	37%
Natural Forest Concession	262,632	26%
Timber Plantation	4,475	0%
No Permit - Forest area	194,452	19%
Conservation area	4,905	0%
Estate crops	52,891	5%
Social forestry	51,558	5%
Mining	26,924	3%
Total	**1,020,696**	**100%**

Source: Sulistioadi, et.al., 2017

The government has initiated several measures to address disputes related to land ownership. National milestones include the development of special agrarian courts to resolve disputes related to land tenure, and the issuance of Presidential Decree No. 88/2017 on the settlement of forest tenure disputes. In East Kalimantan there is extensive experience in resolving conflict through conciliation, mediation, and arbitration. Also, the provincial Forestry Office has established a Forest Conflict Resolution Desk, and the provincial Plantation Office has developed an Integrated Team to resolve plantation conflict.

4.4.3 Land reforms and social forestry schemes

Since Indonesia's reform period, the issue of land rights and land distribution has taken a central place in dialogues related to addressing inequalities and rural poverty. At a conference on forest tenure in Lombok in July 2011, the GOI announced its intention to prioritize the needs of its forest communities, to "recognize, respect and protect adat rights," and to tackle the lack of

[15] http://www.kpa.or.id/news/blog/category/berita/

coordination across government agencies in addressing forest tenure policies. President Widodo has stated that land reform is a pillar of the national development program.

The Agrarian Reform Program covers 9 million hectares of land nationally. In the Agrarian Reform Program, the government targets legalizing land ownership plots of 4.5 million hectares and redistributing another 4.5 million hectares to specified citizens, such as small farmers. About half of this land is currently outside the forest estate, and the other half is non-productive or non-forested land that will be released from the forest estate.

The most significant area of reform, in terms of area, number of people affected, and impact on social equity, is related to legal developments that affect the ownership status of forests claimed by indigenous communities. In May 2013, the constitutional court issued a landmark ruling (MK 35) that excludes customary (adat) forests from the Forest Estate. The Ministry of Forestry has established a working group to follow up on this decision, and key activities include the enactment of implementing regulations and actions at the local government level to identify customary community claims.

The East Kalimantan Government has released Provincial Regulation on Guideline for the Recognition of Indigenous Peoples in East Kalimantan. Through this guideline, the recognition of indigenous and tribal peoples is done through the formation of an Indigenous People's Committee (Governor's Regulation No. 1/2015). So far, however, only four adat communities have been recognized through this process in East Kalimantan. This includes a 49 ha Hutan adat area in Hemaq Beniung village, a Hutan adat forest in Kekau covering 4,026 ha, and a wilayah adat area in Mului in which covers 7,803 ha. The total adat area that is officially recognized is currently 11,878 ha.

Social forestry licenses are agreements between the state and communities for accessing and using areas within the forest estate for specified purposes. The main social forestry schemes are Community Forests (Hutan Kemasyarakat or HKm), Village Forests (Hutan Desa or HD), and Community Plantation Forests (Hutan Tanaman Rakyat, HTR) and partnerships (kemitraan):

- The HKm social forestry program was initiated in 2001 as part of the reform period. With an HKm permit, farmer groups can continue to farm on state forestland in exchange for supporting sustainable forest management and protecting environmental services.
- Village Forests (Hutan Desa, or HD) are based on Government Regulations number 6 of 2007 and number 3 of 2008. Villages can apply for permits to manage nearby forest areas, with a focus on sustainable forest management and the application of customary management practices. While villagers are allowed to harvest timber trees, the focus is on natural forest management and small-scale agroforestry.
- The Community Plantation Forest (HTR) model was developed in 2007 to allow and encourage communities to develop timber plantations in the forest estate, to help address the supply shortfall of sustainable timber. These concessions can be allocated directly to households, to partnerships between households and other entities, and to private and public companies that agree to develop the plantation and transfer it to the local community. Plantations can consist of main timber species, with up to 30% of the area dedicated to other woody species, and with intercropping with annual plants possible in the first two to three years of plantation establishment. An important element of the HTR scheme is the offer of long-term subsidised financing through a public service delivery unit that is managed by the Ministry of Environment and Forestry.

- The Kemitraan program requires concessions companies (state-owned or private) to provide access rights to local communities. Generally, local communities get the right to harvest non-timber forest products, while the companies maintain the rights to timber. The purpose of this scheme is to facilitate collaboration between forest-based companies and community groups in the management of forest resources, and to facilitate state-sponsored community empowerment in forest estate areas in which the government has issued licenses for companies to carry out logging or to establish timber plantations.

Table 4.10. Distribution of Social Forestry Schemes in East Kalimantan (ha)

District	Village Forest (*Hutan Desa*)	Community Forest (*Hutan Kemasyarakatan*)	Community Timber Plantation (*Hutan Tanaman Rakyat*)	Partnership with concessions (*Kemitraan Kehutanan*)	Total
Balikpapan		1,400			1,400
Berau	38,616		1,096		39,712
Kutai Barat	8,476		5,790	64	14,379
Kutai Kartanegara				1,147	1,147
Kutai Timur	19,936	590	4,058	3,846	28,430
Mahakam Ulu	28,380				28,380
Total	**95,408**	**1,990**	**10,944**	**5,057**	**113,448**

4.4.4 The ER Program and land and resources tenure

The ER Program explicitly recognizes that unclear land tenure is a major underlying driver of deforestation and degradation and that it is an important barrier to REDD+. A significant portion of the ER Program is designed to address this issue, and to support relevant ongoing reform processes:

- Both sub-components of Component 1 deal specifically with tenure issues:
  - Sub-component 1.1 covers activities that support the improvement of licensing processes and will address the issue of overlapping licenses by supporting greater transparency in the allocation of licenses and by reviewing existing licenses and supporting the cancellation of licenses that are not “clean and clear”; and
  - Sub-component 1.2 deals with dispute settlement.
- Sub-component 2.1 supports capacity building for FMUs in key areas related to spatial planning (2.1.1 Demarcation of FMU and forest utilization boundaries) and social forestry (2.1.2).
- The social forestry program is supported by sub-component 5.1 which supports social forestry licensing and by sub-component 5.2, which supports community partnerships in and around conservation forest areas

As part of program preparation, a participatory assessment, involving adat communities, will be conducted. This will map existing and potential conflicts, identify existing mechanisms for settling land disputes between the government and adat communities, and assess indigenous traditions and knowledge for conflict handling and dispute resolution. The assessment will feed into the development of community-based conflict handling and resolution mechanism guidelines, produced in close consultation and with the consent from adat communities, and the Provincial and District Governments.

Conflicts will be addressed through a number of mitigation actions, such as:

- the development of joint decrees
- supporting and refining existing local conflict handling protocols
- developing the FGRM which will include a mediation mechanism
- identification of tenurial conflicts
- identification and assessment of existing conflict resolution mechanisms from national to FMU level
- enhancement of communication between community/customary leaders with company representatives related to the management of HCV areas
- capacity building of stakeholders including training for paralegals for community based conflict handling mechanisms

4.5 Analysis of laws, statutes and other regulatory frameworks

Indonesia has ratified international treaties on climate change (Law no. 6/1994, Law no. 17/2004, Law No. 16/2016). In implementing the development of land-based sectors, there is Forestry Law no. 41/1999 jo 19/2004, Plantation Law no. 39/2014, National Development Planning Law no. 25/2004, the Long-term Development Plan Law no. 17/2007, the National Spatial Planning Law no. 26/2007, and the Environmental Law no. 32/2009, which already has government regulations and implementing regulations at the ministerial level. In particular, emission reduction activities refer to Presidential Regulation no. 61/2011 and no. 71/2011. MoEF has published four ministerial regulations related to the implementation of REDD+ in Indonesia, namely as follows:

- MoEF Regulation No. P.71/Menlhk/Setjen/Kum.1/12/2017 on REDD+ Procedures
- MoEF Regulation No. P.72/Menlhk/Setjen/Kum.1/12/2017 on the National Registry System
- MoEF Regulation No. P.71/Menlhk/Setjen/Kum.1/12/2017 on MRV Implementation Guidelines, and
- MoEF Regulation No. P.71/Menlhk/Setjen/Kum.1/12/2017 on Guidelines on Inventory and Reporting on GHG Emissions.

The Government of East Kalimantan has also issued Provincial Regulations on Long Term Development Plans (Provincial Regulation No. 15/2008), Environmental Regulation no. 1/2014, Regional Regulation Spatial Plans No. 1/2016, and Local Regulations on Sustainable Plantation No. 26/2017. In relation to the recognition of indigenous peoples, it is also contained in the Regional Regulation on Spatial Planning, also issued a Provincial Regulation no. 1/2015 on Guidelines for the Identification and Recognition of Indigenous People in East Kalimantan. In the effort to prevent forest and land fires, has also issued Provincial Regulation no. 5/2009, and to implementation reclamation and post-mining supervision, there has been Provincial Regulation no. 8/2013.

Directions for regional development programs, including the land-based sectors, are contained in the Provincial Regulations on the Medium-Term Development Plan, which are issued every five years; and in the Governor's Regulations on the Annual Government Work Plan; and in the Regional Regulation on Provincial Revenue and Expenditure Budget, which is issued annually.

The Governor of East Kalimantan has issued Governor Regulation no. 17/2015 which is updated through Governor Regulation no. 1/2018. The regulation put additional requirements on plantation companies to be committed to manage high conservation value areas, to involve local

communities and to support regional economic development and food security. The regulation has suspended the issuance of permits for new coal mining and has placed additional requirements on companies that want to extend their permits. In the forestry sector, the regulation does not recommend the issuance of new permits to log natural forests. On the other hand, the regulation endorses the issuance of permits for ecosystem restoration. By inhibiting the extraction of natural forests for timber production as well as mining and by putting more requirements related to environmental sustainability and social inclusiveness, the regulation is expected to support the ER program in East Kalimantan.

Currently, a Governor's Regulation on Forest and Land Prevention, and the Governor Regulation for Social Forestry is also being prepared. Especially for Forest Management Units the Governor has established the Implementing Unit of Forest Management Unit through Governor Regulation no. 101/2016 and Governor Regulation no. 19/2011 for the Long-term Forestry Plan.

The authority on planning in the forestry sector, including forest utilization blocks and boundaries, is under MoEF. Whereas the implementation of forest management is conducted by the provincial government through FMUs, which are under the provincial Forestry Service. An exception applies to conservation forests where the management of the forest is under MoEF. The authority for licensing, including in registering the customary forests, is under the MoEF. In this regard, FMUs support the identification of customary forest. The legal definition of Forest Utilization Blocks is stipulated in the Ministerial Regulation of MoEF No P.64/ MENLHK-SETJEN/2015.

4.6 Expected lifetime of the proposed ER Program

This proposal for FCPF support is for a 5-year ERPA from 2020-2024. It is important to note however, that the ERP will help launch a much longer-term transition. The Indonesian Government is committed to a transformation to a low carbon economy as defined in its National Long-Term Development Plan (RPJPN) and its National Mid Term Strategic Plans (RPJMN). This transformation is a long-term process that will extend indefinitely. East Kalimantan is also following a transformation to a low carbon green economic development strategy that is defined in its Master Plan for the period 2015-2035.

5. STAKEHOLDER CONSULTATION, AND PARTICIPATION

5.1 Description of stakeholder consultation process

Indonesia's National REDD+ Strategy is based on an extensive stakeholder consultation process, and aims to provide for equitable involvement of stakeholders. In total, more than 300 experts representing more than 200 local, national, and international organizations participated in the 7 regional and national REDD+ strategy public consultations. The process produced three public drafts ahead of the strategy being launched by the REDD+ Task Force in September 2012.

Other major national REDD+ mechanisms that are based on extensive consultation processes, and that are linked to the ER Program, include the FREL, the SIS-REDD+, and the NDC (Table 5.1). The National FREL is the result of a process involving a series of initial technical analyses followed by public multi-stakeholder consultation. The SIS-REDD+ consultation process was intensively carried out over the course of 2011 to 2012, involving multiple stakeholders, including community representatives. The consultative process resulted in several revisions to the initial design. The ongoing consultative process to develop the NDC began in 2015 and covers all 34 provinces.

The proposed ER Program is closely linked to East Kalimantan's REDD+ Strategy and Regional Action Plan for Reducing Greenhouse Gas Emissions (RAD GRK), which is the outcome of a comprehensive consultation process involving key forest stakeholders. Stakeholders' inputs and concerns related to the East Kalimantan REDD+ Strategy, have been collected in a participatory manner, involving a series of national and sub-national consultative workshops, Focus Group Discussions (FGDs), informal discussions with target communities and document reviews. This process began in 2011. The SRAP and RAD GRK were developed through consultation processes, reaching out to communities, NGOs, universities and the government (provincial and district). In addition, the FCPF Readiness Program has sponsored numerous outreach events both at the national and subnational levels on REDD+ in general. Outreach and communication material from various programs and development partners have been published on-line, in print, through workshops, trainings, and other means. These consultations have aimed to involve a diverse range of stakeholders in the REDD+ planning process. Other key documents and plans that were developed with inputs from provincial and local stakeholders include the East Kalimantan Environmentally Sustainable Development Strategy, and the Green Growth Compact.

Identification of stakeholders has been mainly through self-selection. At the national level, the MoEF coordinates with other ministries and agencies to conduct a self-selection process to determine the relevant stakeholders for consultations. At the subnational level, the self-selection process has been supported by local agencies. Indigenous peoples have been engaged through CSOs as well as through indigenous peoples' institutions at the village level.

Various channels have been used to reach targeted entities, and media types have included: film, printed material, radio, and online publications. Information has been shared and stakeholders have been consulted through seminars, workshops, and focus group discussions. Strategies to reach local stakeholders including vulnerable groups have included: coordinating with local government agencies and NGOs, establishing provincial and district REDD+ working groups, and creating climate change networks at the local level.

Table 5. 8 Consultations on the National REDD+ Framework

Activity	Period of consultation process	Target regions involved
REDD+ Strategy Development	2011-2012	34 Provinces
FREL Development	2014-2016	National level only
SIS-REDD+ Development	2011-2016	East Kalimantan, South Sumatra, West Kalimantan
NDC Development	2015-now	34 Provinces

The development of the province-level REDD+ framework involved further multi-stakeholder engagement processes. Key documents and plans that were developed with inputs from provincial and local stakeholders include the East Kalimantan REDD+ Strategy and Action Plan (*SRAP REDD+*), the East Kalimantan Greenhouse Gas Emission Reduction Action Plan (*RAD GRK*), the East Kalimantan Environmentally Sustainable Development Strategy, and the Green Growth Compact.

The Regional Council on Climate Change (DDPI) in East Kalimantan, which is a key partner in the implementation of the ER Program and represents the interests of the regional and local governments, university and civil society organizations, has been closely involved with the development of the East Kalimantan Environmentally Sustainable Development Strategy, the SRAP and the East Kalimantan Master Plan for Climate Change (2015-2035). Under the SES-REDD+ process, which is a provincial extension of the SIS-REDD+, the East Kalimantan Taskforce, under the leadership of DDPI, undertook a participatory multi- stakeholders process to adjust the national-level PCIs to fit into the province-specific context. A writing workshop on SESA and ESMF was conducted in Kutai Kartanegara District. The workshop aimed to define proposed ER activities that might have environmental and social impacts. Strategies to mitigate those impacts were consulted with relevant stakeholders at the district level.

The ER program itself was also developed through a participative process involving all relevant stakeholders. Initial discussions were held with GOI and with development partners to gauge interest and capacity in participating in the ER Program. This was followed by a process aimed at identifying suitable jurisdictions for the program. The ER-PIN was then developed with inputs gathered from stakeholders at the national and subnational levels through workshops and focus group discussions. In early 2017, consultations and discussions with relevant stakeholders to develop the ER-PD were launched. Early meetings aimed to gather inputs from the provincial government on the institutional arrangements for the ER Program. Consultations with the key sectors were held to gather inputs to the program design and relevant stakeholders were consulted on the ER Program's logframe in July 2017. On 20 November 2017, a focus group discussion was conducted to define high priority areas for proposed ER activities within East Kalimantan. Drivers of degradation and deforestation, ER Program activities, and the benefit sharing mechanism were discussed with the key stakeholders in East Kalimantan in November 2017. A full description of the process is included as Annex 5.

Stakeholders in East Kalimantan helped identify the local drivers of deforestation, which are the basis of the ER activities proposed by this program. Qualitative data on drivers of deforestation were collected through a series of consultative meetings, conducted with local stakeholders between May 2017 and March 2018. These meetings confirmed the findings from the

quantitative analysis, and identified additional drivers of deforestation as well as drivers of degradation and underlying causes, that were not picked up by the spatial analysis. For example, the threat to remaining mangrove areas from the expansion of aquaculture was identified only through consultations with local stakeholders.

Feedback from the stakeholders was properly addressed and ways to mitigate the potential impact of the ER program were discussed and consulted. The process involved the provincial government (BAPPEDA, the Office of the Environment, and Government offices responsible for the relevant land-based sectors), district governments (BAPPEDA, Environmental agencies, and estate crop agencies), local and international NGOs in East Kalimantan, an Indigenous Peoples Organization (AMAN Kaltim), Academics (Unmul, Widya Gama University, UNTAG, STMIK SPB), and Employers' Associations (including some forestry and plantation companies). All inputs were compiled by DDPI East Kalimantan, and discussed with the East Kalimantan Secretary, FOERDIA and DGCC.
The Benefit Sharing Mechanism will be designed through a consultative process involving the key stakeholders. The system for benefit sharing including non-carbon benefits have been discussed at national level. Further arrangement on financial management and benefit sharing will be discussed with stakeholders, including CSOs and NGOs at the district, provincial, and national level levels.

The ongoing SESA, which is in the process of finalization, seeks, among other things, to strengthen local stakeholder engagement, including potentially affected communities. The SESA also aims to look at potential opportunities and key challenges for the operationalization of the FGRM under the program, particularly with regards to people's access to information and ability to provide feedback as well as raise complaints and necessary resources for managing potential grievances. The final SESA report and ESMF will be disclosed and approved by the World Bank prior to the World Bank's appraisal of the program.

Table 5.9 Summary Stakeholder consultation process for ERPD development

No	Activities	Number of workshop/consultation/ meetings	Number of Participants (Persons)
1	Workshop at national level	3	131
2	Workshop at province level	6	361
3	Public consultation at national level	1	58
4	Public consultation at province level	2	88
5	Meetings at national level	11	325
6	Meetings at province level	15	570

5.2 Summary of the comments received and how these views have been taken into account in the design and implementation of the ER Program

Table 5.10 Compilation of comments from stakeholders

Institutions	Issues Raised	Integration of input in ERPD
MoEF	• Harmonization with the national REDD+ framework	• MRV, Safeguards, Registry System and FGRM, were aligned with the national mechanism

Institutions	Issues Raised	Integration of input in ERPD
	• Synchronization with NDC	• FCPF-CF contributes to NDC
Provincial and District Government	• Integration with development program, both national, provincial and district/city • Not interfere with development program and investment	• The ER Program based on the analysis of Development plan • The ER Program based on SESA analysis
Academics	• Program design directly aimed at reducing GHG emission • Considered increasing the economy of local community • Clarity of roles and responsibilities of stakeholders	• ER Program based on Climate Risk Index • The ER Program based on SESA analysis • Institutional arrangements adopt roles and responsibilities of stakeholders
Association of companies or companies	• The cost of RIL-C is a concern for companies and subsidies may be needed. • Guarantee on continue running the business	• Business still can run with new economics model • FGRM which are accountable and transparent has been prepared
AMAN Kaltim (Indigenous communities)	• Social and environmental safeguards must be implemented • Tenurial conflict must be resolved • Guarantee of benefit sharing for communities	• ER Program based on SESA • Safeguards put in ESMF and will be implemented and monitored • FGRM which are accountable and transparent has been prepared
NGOs	• Social and environmental safeguards must be implemented • Guarantee of benefit sharing for communities • Transparency and accountability in the implementation	• ER Program based on SESA • Safeguards put in ESMF and will be implemented and monitored • FGRM for REDD+ which are accountable and transparent is being developed

The detail summary of public consultations can be found on Annex 5.3.

5.3 Consultations as part of ERP implementation

A significant portion of the ER Program relies on the commitment of local stakeholders for adopting sustainable management practices, making consultations and outreach a necessary and integral part of the program. For example, the ER Program will work with key actors to support them in adopting and implementing sustainability approaches. This will include the adoption of certified sustainability standards, such as RSPO or ISPO for oil palm[16], and FSC for the timber sector. These standards themselves, include robust consultation processes. Also, the Provincial Environment Service will seek commitments from different stakeholders to protect and restore mangrove forest. The resolution of land tenure disputes is an important goal of the ERP, and one that can only be achieved through engagement with the affected parties. The Provincial Forestry Service will conduct focus group discussions and consultations with relevant stakeholders, advancing and resolving disputes where possible. The ER Program will support

[16] 100 estate crop companies and 50 small holders for 5 years will be facilitated through technical assistances directly to the companies in order to comply criteria and indicators of ISPO

activities designed to improve community livelihoods, and these activities will need to be designed through consultations with local stakeholders.

At the village level, the ER program is expected to integrate with village development plans (RPJMDes), and these are based on consultations with local villagers. The Village Law clearly states that meetings on village planning and budgeting must involve community representatives including religious leaders, farmers, fishermen, women groups, and marginalized people.

The Directorate General of Sustainable Production Forest Management (DG PHPL) will support the formulation of the RIL policy by, among other activities, supporting focus group discussions and public consultations. To further support the adoption of RIL and HCV policies, the ER Program will develop a mechanism to provide incentives, which also will be developed through a consultative process with private and public sector stakeholders.

SIS-REDD+ has been designed to be open to inputs from various stakeholders and allows SIS management bodies at sub-national and national levels to work with independent third parties through the establishment of a Multi-Stakeholder Forum. The Multi-Stakeholder Forum can be established as necessary with members including representatives from the government, indigenous peoples, the private sector, NGOs, universities, and community leaders. The Multi-Stakeholder Forum serves as a point of communication and coordination between related agencies, provides regulatory recommendations, becomes the contact center for complaints related to the implementation of REDD+ safeguards, and conducts information, education and communication program and activities for awareness-raising and capacity building. SIS REDD+ will be based on consultations with target stakeholders such as local ethnic groups, women, and other vulnerable persons, and this can be compared to the baseline information collected as part of the safeguard, SESA qualitative and quantitative socio–economic information.

6. OPERATIONAL AND FINANCIAL PLANNING

6.1. Institutional and implementation arrangements

The Constitution of Indonesia (UUD 1945 with new amendment) describes the Republic as a *Unitary State*. Under current arrangements for Regional Autonomy set out in Law 23 of 2014 and supporting laws and regulations, the President is the Head of Government. Law No. 23/2014 has shifted the autonomy domain from the district/city government to the province government. The province government, under the leadership of the Governor, is a representative of the central government. Actually, there are four vertically integrated strata of government: the Central/Nation, the Provinces, the Districts/Cities and Villages. Villages were given a formal and special status in government in the Law 6 of 2014 regarding Villages. Each level of government makes local laws and regulations that must be consistent with, and in line with, existing national laws and policies.

Under this system of governance, the arrangements for the FCPF-supported Jurisdictional REDD+ program are authorized by the National Government through its Executing Agency, the Forestry and Environmental Research and Development and Innovation Agency (FOERDIA) within the Ministry of Environment and Forestry. Thus, the FCPF Program is a national program and implemented by the Center for Socio-Economic, Policy and Climate Change R&D (P3SEKPI) and the DG of Climate Change Control (Dirjen PPI). This system of governance is a critical point as similar programs under the FCPF have been in states such as Mexico, which is a Federation in which Governors have much greater autonomy than is the case in Indonesia.

At the central level, the ER Program is under the responsibility of the MoEF. The Secretary General of MoEF signed and submitted the ERPIN and the draft ERPD to the World Bank. MoEF has a mandate to assist the President in the coordination, planning, management, monitoring, and supervision of REDD+ activities. The Ministry, in accordance with Law No 5/1990, Law No. 41/1999, and Law No. 32/2009, has the legitimacy and capacity to manage and implement REDD+ programs. The ER Program also provides an important role for the provincial and district/city governments in implementing the Indonesian approach to REDD+, which is based on national accounting and sub-national implementation. In addition, FMUs provide forest services at the provincial and district levels. The FOERDIA would be a technical advisor for the MoEF in the implementation of the ER Program at the national level.

MoEF will be the primary managing agency. It will provide guidance and perform supervision of the ER Program through FORDIA the Research, Development and Innovation Agency, Centre for Socio-Economics, Policy and Climate Change (P3SEKPI). The Director- General for Climate Change (DGCC) will be the main partner with FORDIA in implementing the ER Program. P3SEKPI is tasked to conduct research on the socio-economic aspects of forestry, climate change policy and the implementation of REDD+ programs, including Indonesia's FCPF Readiness Program.

The Ministry of Finance (MoF) will sign the ERPA because the ER Program involves a financial and benefit sharing mechanism in its implementation. This arrangement is standard practice in Indonesia, where MoF signs multilateral and bilateral loan and grant agreements that are often executed by other line ministries. MoF is responsible for managing the flow of funding from the national budget (APBN) and, given that much of the ERP implementation will be undertaken by government agencies, this represents a significant portion of ERP funding. MoF also plays an important role in ERP Implementation, as it is responsible for establishing the benefit sharing mechanism. For this purpose, MoF will establish and oversee a public service agency (Badan

Layanan Umum-BLU), the BPDLH, for managing the carbon funds and the benefit sharing mechanism.

Table 6. 11 National agencies involved in the implementation of the FCPF – ER Program

Naitonal Agency	Status	Roles
Secretary General of Ministry of Environment and Forestry	MoEF Representative	• Submission of ERPIN and ERPD • Chairman of Steering Committee
Head of FORDIA (MoEF)/P3SEKPI	Technical Advisory	▪ Program Design ▪ Consultation for Methodologies (technical assistance) ▪ Preparation for agencies for field implementation ▪ Consultation and Communication with Facility Management Team ▪ A member of Steering Committee
Director General Climate Change (MoEF)	National Focal Point of REDD+	▪ Management of the National Registry ▪ Development and management of the FREL ▪ Management of the MMR ▪ Finalization and implementation of safeguards plans ▪ Finalization and implementation of the FGRM ▪ Technical Assistance ▪ Recommendation for Payment (BSM) ▪ A member of Steering Committee
Ministry of Finance (DG BLU)	Financial Authority	▪ Signing ERPA ▪ Oversees the BPDLH (BSM) ▪ Channels funds to the BPDLH and government agencies (BSM) ▪ A member of Steering Committee

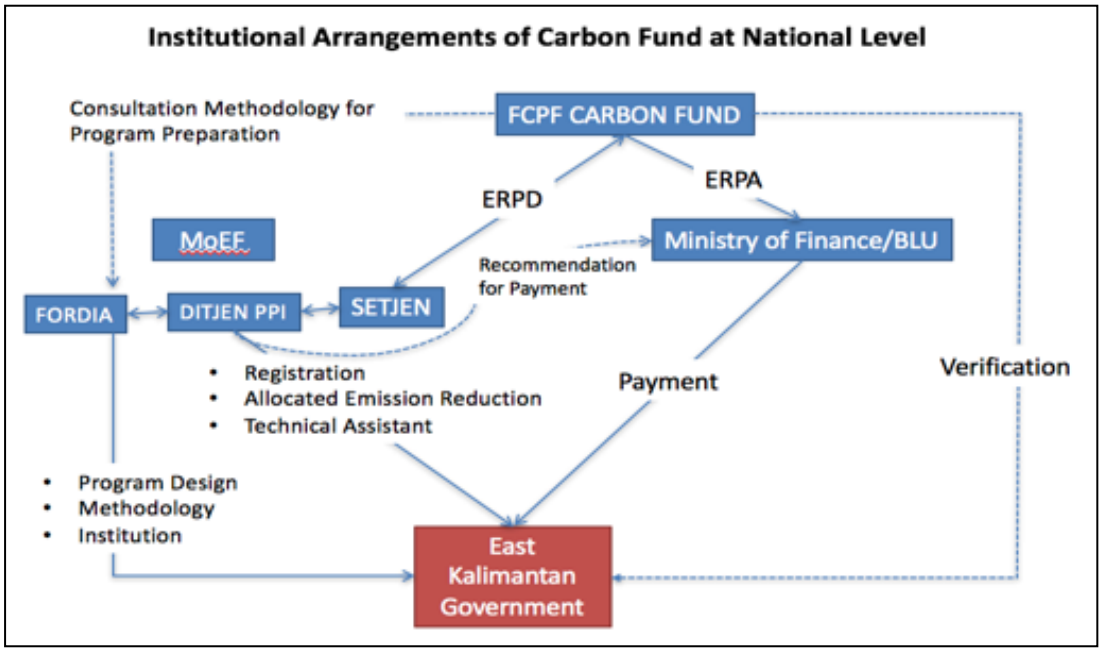


Figure 6.3 Institutional arrangement of ER Program at National Level

At the provincial level, the responsible party for ER Program implementation is the Provincial Secretary (Sekda Provinsi Kaltim), with the Provincial Environmental Service (Dinas Lingkungan Hidup) acting as coordinator or undertaking the day-to-day management of the ER Program. During the implementation of the ER Program, the Sekda will be advised by the Provincial Climate Change Council (Dewan Daerah Perubahan Iklim-DDPI).

The Regional Council on Climate Change (DDPI) in East Kalimantan Province is a key partner in the implementation of the ER Program. DDPI is a multi-stakeholder organization that has coordinated the planning and implementation of low emission development in East Kalimantan Province. It has significant experience (as well as operational infrastructure) in the management of donor development funding.

Table 6. 12 The Sub-National Agencies and Organizations involved in the Implementation of the East Kalimantan ER Program

Agency	Status	Role
Provincial Secretary (SEKDA)	Executing Agency at Province Level	• Responsible for Implementation and achievement of ER Program in the Province • A member of Steering Committee
The Regional Council on Climate Change (DDPI)	Advisory	• Providing advice and inputs to local government in relation to ER Program • A Member of Steering Committee
East Kalimantan Environment Service (Dinas Lingkungan Hidup)	Implementing agency	• Local responsibility for FREL and MMR • ER Program implementation
Other Provincial Government Services (OPD)	Implementing Agencies	• ER Program implementation • Leading consultation processes within their respective jurisdictions
Provincial Planning Board (BAPPEDA) East Kalimantan Province	Coordinative implementation at provincial level	• Coordinate all activities done by OPD in relation to ER program
Development Partners (Prov. & Kab/Kota)	Partner	• Provide supporting funds and technical advice to DDPI or District/City Government
University/NGOs (Prov. & Kab/Kota)	Partner	• Provide scientific supports and facilitation to DDPI and District/City Government • A Member of Steering Committee (observer)
District/City Secretary	Executing Agency at District/City Level and Feld Site	• Responsible for Implementation and achievement of ER Program in the District and Field Site

BAPPEDA District/City	Coordinative implementation at district/city level and field site	• Coordinate all activities done by OPD in relation to ER program at District/City level
OPD District/City	Implementing Agencies	• Implementing ER Program at District/City and Field Site
Village Government	Implementing Agencies	• Implementing ER Program at District/City and Field Site

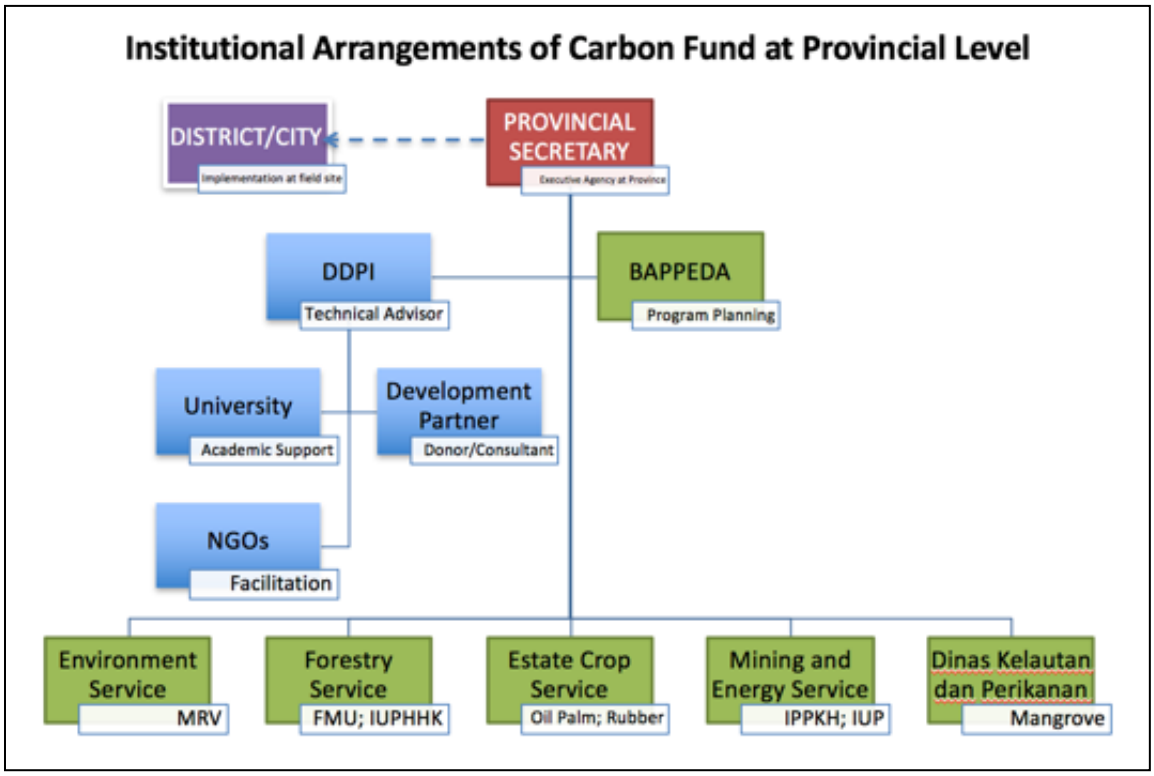


Figure 6.4 Institutional arrangements of ER Program at Provincial Level

At the district/city level, the ER Program will be carried out by the District Environmental Service (Dinas Lingkungan Hidup). Each respective district/city government will be responsible for the implementation of the ER Program in its region. The detailed institutional arrangements for the ER Program at the district/city level can be seen in Figure 6.3. At the village level, the village government, including the local community, is responsible for the emission reductions in their village region.

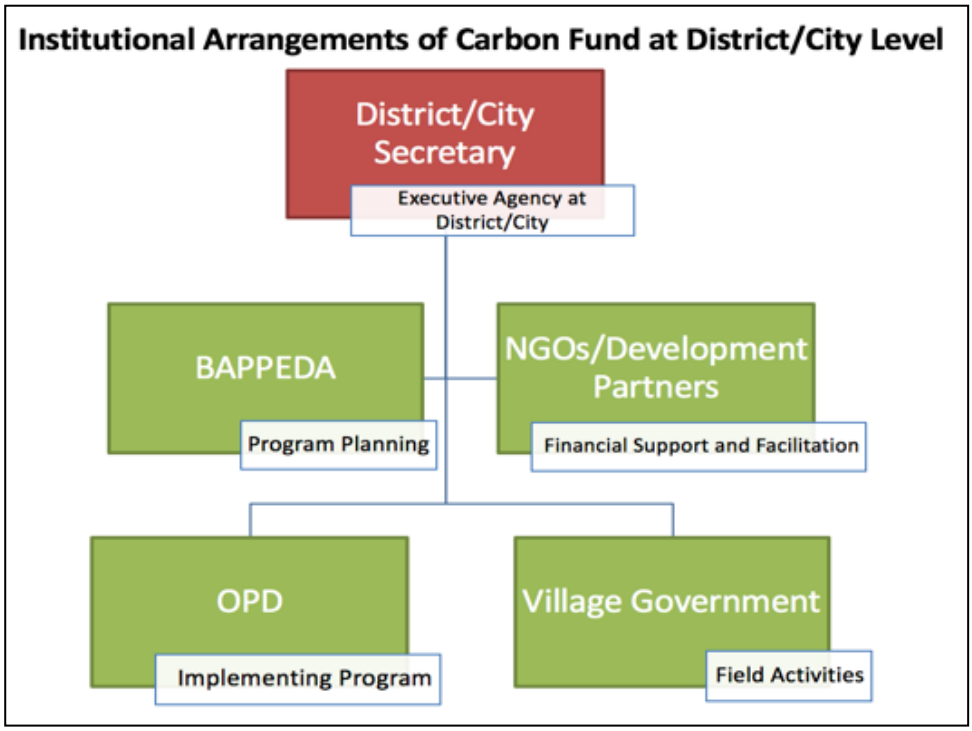


Figure 6.5 Institutional arrangements of ER Program at District/City Level

To ensure effective coordination among the various implementing agencies, a Steering Committee will be established to represent the interests of the relevant Ministries of the National Government and the Governor of East Kalimantan. Other members of the Steering Committee will represent development partners and civil society. This high-level committee (Directorates-General) will be chaired by the MoEF. The World Bank and selected partner agencies will be given observer status. Steering Committee meetings will be held every 6 months to evaluate activities and progress. Technical coordination meetings, will be held as required.

As noted above, accountability for program implementation, at least for the public agencies, is facilitated through the national governance system, where district institutions are accountable to the province, and the province is accountable to the Center. It is important to note, however, that the ERP is not a top-down program. Program activities are largely based on policies and commitments that have come from the province and district levels. This includes East Kalimantan's GHG reduction commitments, the Governor's moratorium on issuing licenses in primary forests, district-level commitments to sustainable estate crop development, and ongoing sustainability efforts by the private sector. The ERP, places these efforts into the national REDD+ framework (which is based on national accounting and sub-national implementation) and provides performance-based incentives for successful implementation.

6.2. ER Program Budget

6.2.1 ER Program Costs

The total program cost over the period 2020-2025 is estimated at **USD 90,701,740**. The breakdown of costs by activity components, by land use, and by classification is presented in the following three tables:

Table 6. 13 The estimated total ER Program cost 2020 – 2025

COMPONENT	BUDGET (USD) COMPONENT	BUDGET (IDR) COMPONENT	Share
1: Improving land governance	903.995	12.203.927.980	1,0%
2: Strengthening Government Capacity for Forest Administration	9.228.881	124.589.900.167	10,2%
3: Reducing Deforestation Linked to Oil Palm Expansion	10.912.599	147.320.087.727	12,0%
4: Reducing Deforestation Linked to Overlogging and Timber Plantations	14.204.906	191.766.237.673	15,7%
5: Reducing Encroachment by Providing Sustainable Alternatives	48.260.119	651.511.609.651	53,2%
6. Program Management and Monitoring and Evaluation	7.191.239	97.081.720.922	7,9%
TOTAL	**90.701.740**	**1.224.473.484.120**	**100%**

Table 6. 14 Estimated total ER Program cost by Land Use/Driver 2020-2025

DRIVER	USD	%
Oil Palm	11.314.871	12,47%
Timber plantation	9.414.121	10,38%
Mining	2.370	0,00%
Overlogging/ Poor Concession Management	8.353.407	9,21%
Illegal Logging	3.408.381	3,76%
Agriculture	5.782.942	6,38%
Unlicensed land clearing	43.900.193	48,40%
Aquaculture	1.334.215	1,47%
Cost for Project Management (not driver)	7.191.239	7,93%
TOTAL	**90.701.740**	**100%**

Table 6. 15 Summary of the total ER-Program costs (expected uses of funds)

COMPONENT	BUDGET (USD)	BUDGET (IDR)	2020 (Component)	2021 (Component)	2022 (Component)	2023 (Component)	2024 (Component)	2025 (Component)
1: Improving land governance	903.995	12.203.927.980	2.110.700.000	1.767.722.295	1.966.982.063	1.954.739.381	2.177.738.621	2.226.045.621
2: Strengthening Government Capacity for Forest Administration	9.228.881	124.589.900.167	13.424.770.000	11.785.937.576	18.253.809.912	18.332.727.140	35.052.701.885	27.739.953.654
3: Reducing Deforestation Linked to Oil Palm Expansion	10.912.599	147.320.087.727	7.860.991.000	10.910.871.821	19.851.429.811	24.972.861.975	41.522.515.954	42.201.417.167
4: Reducing Deforestation Linked to Overlogging and Timber Plantations	14.204.906	191.766.237.673	15.758.776.000	19.504.794.885	24.563.913.422	36.598.542.282	43.800.704.837	51.539.506.248
5: Reducing Encroachment by Providing Sustainable Alternatives	48.260.119	651.511.609.651	52.836.203.000	26.475.540.168	102.385.202.279	41.397.281.023	181.702.031.753	246.715.351.429
6. Program Management and Monitoring and Evaluation	7.191.239	97.081.720.922	14.287.502.000	2.914.625.642	55.396.478.250	3.319.158.406	17.384.118.706	3.779.837.920
TOTAL	**90.701.740**	**1.224.473.484.120**	**106.278.942.000**	**73.359.492.385**	**170.032.764.532**	**123.256.151.800**	**307.685.088.322**	**370.422.274.118**

6.2.2 Financing strategy

The main source of funding for the ER Program is the Government of Indonesia, through its national, province, district and village budgets. The Government of Indonesia and the Government of East Kalimantan are committed to the successful implementation of the ER Program, and they will integrate the Program into their development and budget plans. For example, the East Kalimantan Representative Council is preparing a Provincial Regulation that will lead to ER activities being included in the Provincial Kalimantan Medium Term Development Plan 2018-2023. The largest share of the domestic budget will be from the village budget which will support activities at the village level. Programs under the MoEF and the Ministry of Agriculture will be funded by the respective ministry budgets. The total government budget support to the ERP will be **USD 69,518,306.**

The second largest source of funding for the ER Program is the private sector, which has committed **USD 20,258,132 to the Program.**

A number of development partners have committed support for the ER Program. Commitments so far total USD 3,528,590 and are from:

- WWF Indonesia, which will support activities related to peat land management, SFM, sustainable plantations, and village development);
- The Nature Conservancy, which will provide support through its terrestrial and blue carbon programs;
- The Global Green Growth Institute which will support activities linked to green economy and to strengthen FMUs;
- The Governors' Climate and Forests (GCF) Task Force;
- Belantara which will support HCV management and village activities; and
- GIZ

Total identified funding from the budget, the private sector, and development partners, so far is **93,305,028.**

It is expected that the program will generate around 32.2 million tonnes of CO2e in (after 8% uncertainty) Emission Reductions (see Section 13). Of this, 27.2 million tonnes will be offered to the Carbon Fund, of which 5.2 million tonnes (26%) will be set aside as a buffer. For the remaining 22 million tonnes the ERP assumes a value of USD 5 per tonne, generating USD 110 million in payment from the Carbon Fund, with the first share of the payment expected in 2023 and the second share expected in 2025.

The financing sources of the program are summarized in Figure 6.4, and in Table 6.7.

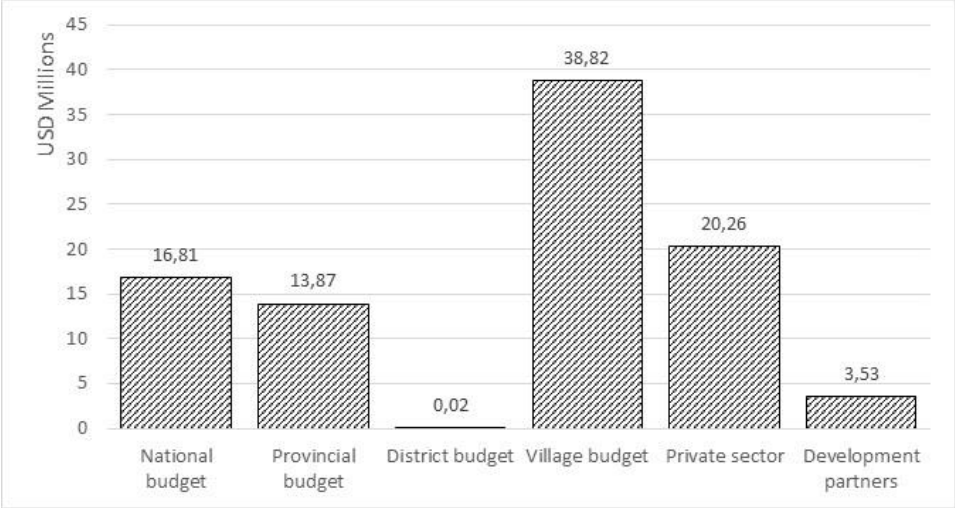


Figure 6.6 Financing sources for the ER-P implementation

Table 6. 16 Financing sources by years (Sources of funds)

SOURCES OF FINANCING	2020	2021	2022	2023	2024	2025	SUBTOTAL (USD)
GOVERNMENT							
National budget	2.120.407	2.276.764	2.993.767	2.823.233	3.112.872	3.483.739	16.810.782
Provincial budget	1.673.759	1.887.950	2.170.304	2.460.796	2.696.047	2.981.627	13.870.483
District budget	7.544	0	0	9.168	0	0	16.713
Village budget	1.896.415	2.867.728	3.938.899	6.976.674	9.937.650	13.202.963	38.820.328
PRIVATE SECTOR							
Private sector	1.008.256	1.698.331	2.389.033	3.883.398	4.874.883	6.404.232	20.258.132
DEVELOPMENT PARTNERS							
Belantara	17.567	21.953	22.681	27.162	31.695	36.283	157.341
GCFTask	14.815	15.810	16.871	18.004	19.213	20.503	105.214
GGGI	46.667	46.638	49.770	56.712	56.677	60.483	316.946
GIZ	169.470	149.367	161.226	192.580	186.757	200.512	1.059.913
TNC	229.904	224.446	250.852	278.061	306.127	335.108	1.624.497
WWF	46.815	38.101	40.659	43.389	46.302	49.411	264.678
Total Sources of Budget	**7.231.618**	**9.227.088**	**12.034.061**	**16.769.177**	**21.268.223**	**26.774.860**	**93.305.028**
Total Cost	**7.872.514**	**5.434.036**	**12.595.020**	**9.130.085**	**22.791.488**	**27.438.687**	**90.701.740**

7. CARBON POOLS, SOURCES AND SINKS

Table 7.1 illustrates the REDD+ activities (adopted by 1/CP.16, paragraph 70) selected by the ER-Program and the associated emission sources and sinks.

7.1. Description of Sources and Sinks Selected

Table *7.1*. Sources and Sinks Selected

Sources/Sinks	Included?	Justification / Explanation
Emissions from deforestation	Yes	Emissions from deforestation are identified as GHG emissions from the IPCC Land Use Change category forest land to non-forest land, plus emissions from peat decomposition, peat fire, and mangrove soils that are linked to deforestation. Deforestation in this context is defined as a conversion of natural forest to other land uses (non-natural forest; see section 8.2). In the period 2007 to 2016 deforestation contributed 80% of total emissions in East Kalimantan. Conversion to agriculture, particularly to oil palm plantations, was the major cause of the deforestation, while conversion to monoculture timber plantations also contributed significantly.
Emissions from forest degradation	Yes	Emissions from forest degradation include: -Emissions due to the degradation of primary forest into secondary forest - Emissions due to degradation of secondary forest caused by fire - Emission from peat decomposition - Emissions from logging Forest degradation in the national FREL is defined as a change of a primary forest class to a secondary forest class. Primary forest classes, include primary dryland, primary mangrove and primary swamp forests (see Table 8.1). However, the use of the definition excludes losses of carbon in the secondary forest due to further disturbance. Identifying the degree of forest degradation within secondary forests is not a simple task, especially not on a routine basis with the currently used medium-resolution satellite imagery (Landsat); and at present, Indonesia has no capacity and data available to assess different levels of degradation occurring within secondary forests. However, the loss of carbon in the secondary forest due to fire as well as due to logging activities by the concessionaires is included as a proxy. Further disturbance of secondary forest that leads to the change of secondary forest into shrubs is considered deforestation. Thus emission due to loss of carbon from the conversion of secondary forest to shrubs is reported under deforestation (see Appendix 7.1 for further

		explanation).
Emissions and removals from conservation of carbon stocks	No	The national REDD+ framework does not define activities for the conservation of carbon stocks.
Emissions and removals from sustainable management of forest	No	This activity is not included due to limited data and information.
Removals from enhancement of carbon stocks	No	The national FREL does not account for removals from the enhancement of carbon stocks. Also, there is limited data and information, especially on relevant emission factors. Inclusion of this activity would not be in line with the national REDD+ framework and would result in a higher uncertainty level.

7.2 Description of Carbon Pools and greenhouse gases selected

The following table explains which pools were recorded in the FREL for each activity.

Carbon Pools

Table 7.2. Carbon Pools

Carbon Pools	Selected?	Justification / Explanation
Above Ground Biomass (AGB)	Yes	According to Indonesia's FREL document, emissions from AGB accounted for around 70% of total emissions from biomass, making AGB the largest pool of emissions. Moreover, many studies for estimating above-ground tree biomass in Indonesia are available, enabling Tier 2 or Tier 3 approaches. AGB data are widely available and can be estimated from forest inventory or sample plot data (Appendix 7.2).
Below Ground Biomass (BGB)	Yes	Based on research conducted at sites in Sumatra and Kalimantan, this pool accounts for an average of 13.6% of total biomass (MoEF, 2016). This pool is estimated using shoot-root ratios, following IPCC (2014).
Dead Wood	No	Based on research conducted at sites in Sumatra and Kalimantan, this pool accounts for an average of 14.3% of total biomass emissions. In spite of being significant, this carbon pool is excluded due to lack of sampling data.
Litter	No	Emissions from litter are excluded as per Indonesia's FREL document. It was estimated that emissions from litter accounted for only 1% of total emissions from biomass, and the pool is therefore considered insignificant.
Soil Carbon	Yes for organic Soils No for mineral soils	The ERP accounts for losses of carbon from peat and mangrove soils due to decomposition (gradual loss) and fire. Emissions from soil carbon in mineral soils is excluded, since they are not significant.

Type of Gases

Greenhouse gases	Selected?	Justification / Explanation
CO_2	Yes	The ER Program shall always account for CO_2 emissions and removals
CH_4	No/Yes	Excluded for peat drainage due to insufficient data in estimating methane emissions and included for peat and forest fire following the IPCC (2014)
N_2O	Yes	Included only for forest fire following the IPCC (2014)

8. REFERENCE LEVEL

8.1 Reference Period

Following the Criteria 11 of the FCPF Methodological Framework (2016), the end-date for the Reference Period should be the most recent date prior to two years before the TAP starts the independent assessment of the draft ER Program Document (i.e. 2018-2 years = 2016) and for which forest-cover data is available to enable IPCC Approach 3 and the start date of for the Reference Period is about 10 years before the end-date. Considering this criterion, the reference period selected for the ERPD is from 2007 to 2016. To ensure consistency with the national framework, the land use/cover data for the development of the FREL for the ER Program are the same as the data used in the development of the national FREL supplied by the Ministry of Environment and Forestry, i.e. data of year 2006, 2009, 2011, 2012, 2013, 2014, 2015 and 2016.

8.2 Forest definition used in the construction of the Reference Level

In accordance with UNFCCC decision 12/CP.17, forest in Indonesia is defined as a land area of more than 6.25 ha with trees higher than 5 meters at maturity and a canopy cover of more than 30 percent. This is a formal definition of forest in which it is used as guidance principal definition and mostly based on forest ecology. For the construction of the national FREL for REDD, Indonesia used different definition considering the limitation of methods and data used in generating the Indonesia forest data. The term "working definition" of forest was used to produce land-cover maps through visual interpretation of satellite images at a scale that minimum area for polygon delineation is 0.25 cm2 at 1: 50,000 of scale which equals to 6.25 ha. This definition is in accordance with the Indonesian National Standard (SNI) 8033:2014 on "Method for calculating forest cover change based on results of visual interpretation of optical satellite remote sensing image" (http://sni.bsn.go.id/product/detail/22270).

The SNI defined forest based on satellite data features including color, texture and brightness. Forests were classified into 7 classes based on forest types and degradation or succession level, while non-forests were classified into 15 classes with one being cloud data (Table 8.1). The first six classes are natural forests, and the seventh class is plantation forest. These 23 land cover classes are based on physiognomy and biophysical appearance that is captured by remote sensing (Landsat at 30 meter spatial resolution). However, the object identification is purely based on the appearance in the imagery. Manual-visual classification through an on-screen digitizing technique based on key elements of image/photo-interpretation was applied as a classification method. Several ancillary data sets (including concession boundaries of logging and plantation, forest area boundaries) were utilized during the process of delineation, to integrate additional information valuable for classification. The process for analyzing satellite data to monitor the land/forest cover change can be accessed from the following link http://webgis.dephut.go.id:8080/kemenhut/index.php/id/fitur/unduhan and Margono et al. (2016)[17].

For the construction of the national FREL, Indonesia only included natural forest in its forest definition. The submitted national FREL has successfully undergone technical assessment by the UNFCCC. In the construction of the FREL for the ER Program, the same definition has been adopted, which excludes plantation forests. The use of this definition is in line with the spirit of REDD+ activities as defined in paragraph 2e in the Appendix 1 of Decision 1/CP.16 that REDD activities should not be used for the

[17] Margono, B.A., Usman, A.B., Budiharto and Sugardiman, R.A. 2016. Indonesia's Forest Resource Monitoring. Indonesian Journal of Geography 48:7-20 (https://jurnal.ugm.ac.id/ijg/article/view/12496/9041)

conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests.

Table 8. 17 Characterization of natural forests in Indonesia used in national land cover mapping.

No	Land cover type	Code	Description
	Forests		
1	Primary dry land forest	2001	Natural tropical forests grow on non-wet habitat including lowland, upland, and montane forests with no signs of logging activities. The forest includes heath forest and forest on ultramafic and lime-stone, as well as coniferous, deciduous and mist or cloud forest, which is not (or low) influenced by human activities or logging.
2	Secondary dry land forest / logged forest	2002	Natural tropical forests grow on non-wet habitat including lowland, upland, and montane forests that exhibit signs of logging activities indicated by patterns and spotting of logging (appearance road and patches of logged-over). The forest includes heath forest and forest on ultramafic and lime-stone, as well as coniferous, deciduous and mist or cloud forest.
3	Primary swamp forest	2005	Natural tropical forests grow on the wet habitat in swamp form, including, brackish swamp, marshes, sago and peat swamp, which is not or low influenced by human activities or logging.
4	Secondary swamp forest / logged forest	20051	Natural tropical forests grow on wet habitat in swamp form, including brackish swamp, marshes, sago and peat swamp that exhibit signs of logging activities indicated by patterns and spotting of logging (appearance road and patches of logged-over).
5	Primary mangrove forest	2004	Wetland forests in coastal areas such as plains that are still influenced by the tides, muddy and brackish water and dominated by species of mangrove and Nipa (Nipafrutescens), which is not or low influenced by human activities or logging.
6	Secondary mangrove forest / logged forest	20041	Wetland forests in coastal areas such as plains that are still influenced by the tides, muddy and brackish water and dominated by species of mangrove and Nipa (Nipa frutescens), and exhibit signs of logging activities, indicated by patterns and spotting of logging activities.
7	Plantation forest	2006	The appearance of the structural composition of the forest vegetation in large areas, dominated by homogeneous trees species, and planted for specific purposes. Planted forest including areas of reforestation, industrial plantation forest and community plantation forest.

	Non-Forests		
8	Dry shrub	2007	Highly degraded logged over areas on non-wet habitat that are ongoing process of succession but not yet reach stable forest ecosystem, having natural scattered trees or shrubs.
9	Wet shrub	20071	Highly degraded logged over areas on wet habitat that are ongoing process of succession but not yet reach stable forest ecosystem, having natural scattered trees or shrubs.
10	Savanna and Grasses	3000	Areas with grasses and scattered natural trees and shrubs. This is typical of natural ecosystem and appearance on Sulawesi Tenggara, Nusa Tenggara Timur, and south part of Papua island. This type of cover could be on wet or non-wet habitat.
11	Pure dry agriculture	20091	All land covers associated with agriculture activities on dry/non-wet land, such as tegalan (moor), mixed garden and ladang (agriculture fields).
12	Mixed dry agriculture	20092	All land covers associated with agriculture activities on dry/non-wet land that is mixed with shrubs, thickets, and log over forest. This cover type often results of shifting cultivation and its rotation, including on karts.
13	Estate crop	2010	Estate areas that has been planted, mostly with perennials crops or other agriculture trees commodities.
14	Paddy field	20093	Agriculture areas on wet habitat, especially for paddy, that typically exhibit dyke patterns (pola pematang). This cover type includes rainfed, seasonal paddy field, and irrigated paddy fields.
15	Transmigration areas	20122	Kind of unique settlement areas that exhibit association of houses and agroforestry and/or garden at surrounding.
16	Fish pond/aquaculture	20094	Areas exhibit aquaculture activities including fish ponds, shrimp ponds or salt ponds.
17	Bare ground	2014	Bare grounds and areas with no vegetation cover yet, including open exposure areas, craters, sandbanks, sediments, and areas post fire that has not yet exhibit regrowth.
18	Mining areas	20141	Mining areas exhibit open mining activities such as open-pit mining including tailing ground.
19	Settlement areas	2012	Settlement areas including rural, urban, industrial and other settlements with typical appearance.
20	Port and harbor	20121	Sighting of port and harbor that big enough to independently delineated as independent object.
21	Open water	5001	Sighting of open water including ocean, rivers, lakes, and ponds.
22	Open swamps	50011	Sighting of open swamp with few vegetation.
23	Clouds and no-data		Sighting of clouds and clouds shadow with size more than 4 cm2 at 100.000 scales display.

8.3 Average annual historical emissions over the Reference Period

8.3.1. *Description of method used for calculating the average annual historical emissions over the Reference Period*

Deforestation

As described in the previous section, the carbon pools used to measure emissions for the REL depend on the land type. For deforestation on mineral soils AGB and BGB are included. For deforestation on organic soils (peat forests and mangroves) soil carbon is also included. The methods for calculating emissions from deforestation are described below.

A. Above Ground Biomass

The method used for the calculation of average annual historical emissions follows the national method (MoEF, 2015) that is consistent with the IPCC. Emissions from deforestation at a given period were calculated by aggregating CO2 emissions resulting from newly identified deforested areas within that period. Deforestation was monitored in the area that was forested in 2006 and counted only once for deforestation that occurs at one particular area. This is defined as gross deforestation (see Appendix A8.1 for further explanation).

As there was no sequential annual data of land cover between 2006 and 2009, the annual average used in the analysis was a proxy of annual rates of deforestation. From 2006-2016, the land cover data sets were averaged to attain annual rates of deforestation. The data analysis process for deriving activity data for deforestation is depicted in Figure 8.1.

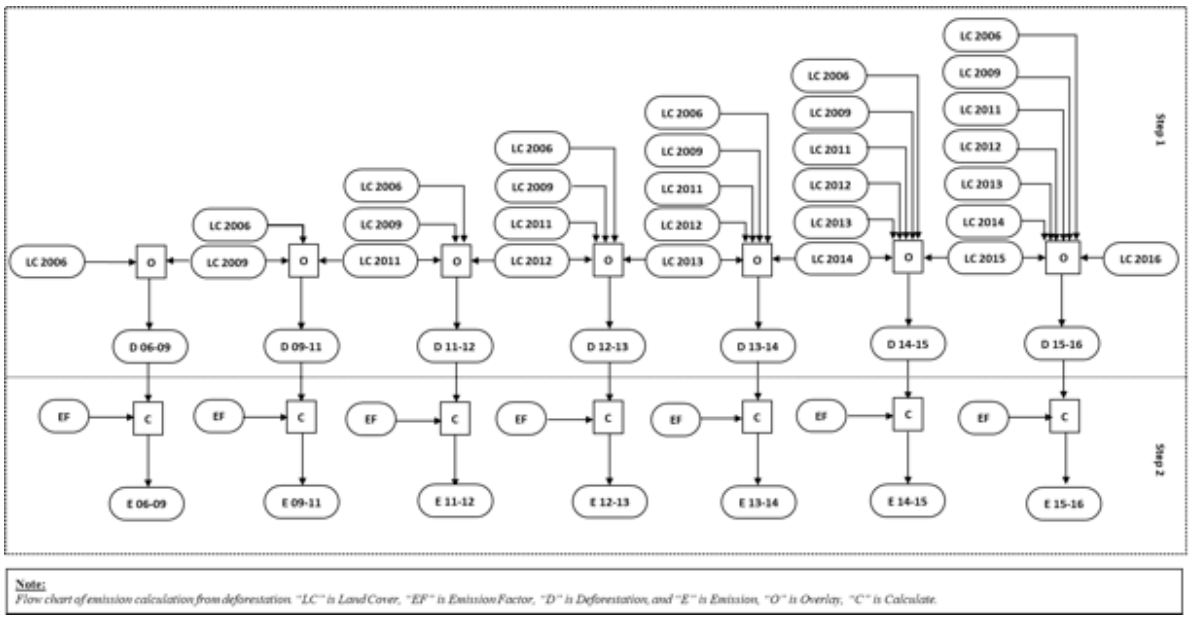


Figure 8. 17. Flow chart for calculation of emissions from deforestation and forest degradation

There were two steps for calculating emissions from the loss of above ground biomass (AGB) due to deforestation. The first was generating deforestation area for each interval period, i.e. 2006 – 2009, 2009 – 2011, 2011 -2012, 2012-2013, 2013-2014, 2014-2015 and 2015-2016. For example, the forest cover maps of 2006 and 2009 were overlaid to create deforestation areas. The second step was generating deforestation polygons which then were multiplied by associated emission factors to calculate emissions from deforestation and forest degradation for each interval period. Later the result was divided by the number of years for each interval period, to generate annual emissions from deforestation.
The calculation of CO2 emissions from deforested areas used the following equation:

$$GE_{ijk=} = A_{ijk} \times EF_{jk} \times (44/12) \qquad \text{(Equation 1)}$$

GE_{ijk} = CO2 emissions from deforested area-i at forest change class-j to non-forest class-k, in tCO2e
A_{ijk} = Deforested area-i in forest change class-j to non-forest class-k, in hectare (ha)
EF_j = Emission Factor which is calculated as the difference between carbon stock of forest class-j and carbon stock of non-forest class-k, in ton carbon per ha (tC ha-1).
(44/12) is conversion factor from tC to tCO2e

Carbon stock of the lands after the conversion used in the calculation of the emission from the deforestation is the lifetime average carbon stock. It is assumed that land-cover types after deforestation will not change. This assumption is adopted since it is not practical to track the changes of land cover after deforestation, and it is unlikely that the natural forest that have been converted to non-forest lands will change back to natural forest .

The emission from gross deforestation at period t (GEt), was estimated using equation below,

$$GE_t \sum_{i=1}^{N} \sum_{j=1}^{P} GE_{ijk} \qquad \text{(Equation 2)}$$

GE_t = total emission at period t from deforested area-i in forest class-j to non-forest class-k, expressed in tCO2
N = number of deforested area units at period t (from t0 to t1), expressed without unit
P = number of forest classes which meet natural forest criterion.

Further, average emissions from deforestation from all period were calculated as follows:

$$MGE_P = \frac{1}{T} \sum_{t=1}^{p} GE_t \qquad \text{(Equation 3)}$$

MGEP = mean or average emissions from deforestation from all period P (expressed in tCO2yr-1)
T = number of years in period P

B. Soil Carbon

B1. Peat decomposition

Calculation of historical emissions from peat decomposition used the same basis as emissions from deforestation. This is due to the fact that once deforestation occurs in peat forest, there will be emissions from removal of the ABG at the time of conversion as describe above, and plus from peat decomposition subsequently. The formula for estimating the emission from peat decomposition is

the following:

$$PDE_{ijt} = A_{ijt} \times EF_j \qquad \text{(Equation 4)}$$

PDE = CO2 emission (tCO2yr-1) from peat decomposition in peat forest area-i changed into land cover type-j within time period-t
A = area-i of peat forest changed into land cover type-j within time period-t
EF = the emission factor from peat decomposition of peat forest changed into land cover class-j (tCO2 ha yr-1)

The inherited emission from previous activities occurs within subsequent land cover (e.g. Agus et al., 2011; see Appendix 8.2 for detail). This means that total emissions from peat decomposition is defined as accumulation of peat emissions from the base year of 2006 onward plus emission from the removal of AGB. The procedures of calculating peat decomposition from deforestation follow three steps as shown in Figure 8.2. First is defining natural forest in 2006 over peat land, and then step 2 is generating land cover change from each interval year to define a transition area matrix for the associated year of interval. The third step is calculating total annual emissions by multiplying the transition matrix of both areas and associated emission factors[18].

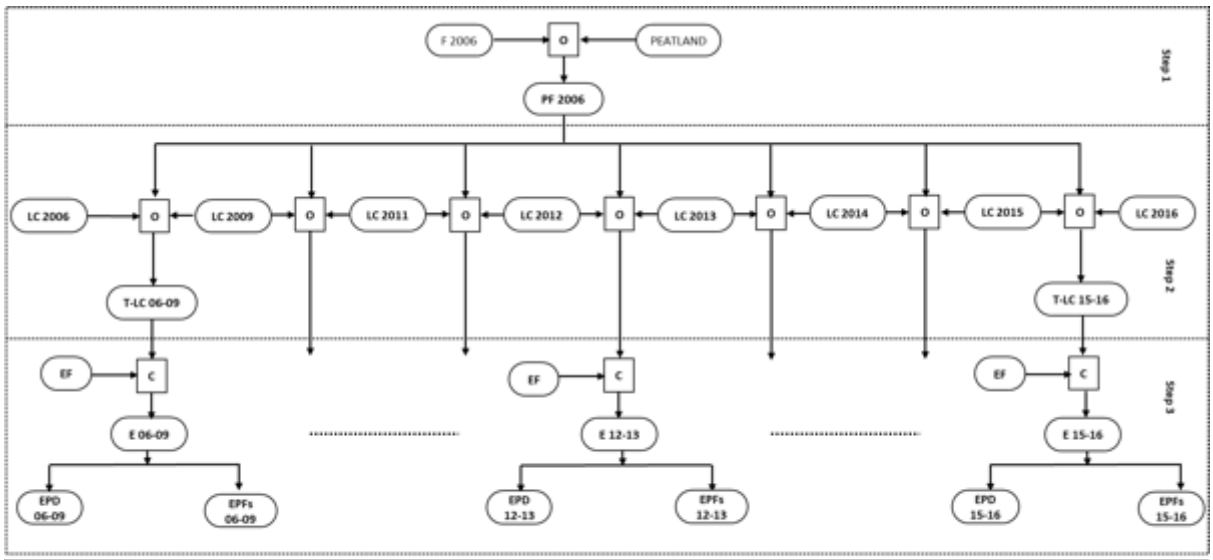


Figure 8. 18. Flow chart for calculation of emissions from peat decomposition

The emissions from peat decomposition do not continue indefinitely, as they cease when the peat has completely decomposed or reached the water table. For the purpose of the ER Program, the time frame ends in 2024 by which time the peat will not be completely decomposed and should not thus affect the calculation. On average, the rate of loss of peat due to decomposition after drainage is about

[18] Emission factor for an area of change is an average of the emission factors of the respective land cover before and after. This reflects the assumption that conversion of land cover on peatland between two time periods gradually affects the peat water table implying a gradual peat decomposition emission. For example, the emission factor of secondary forest is 19 tCO2 ha-1 y-1 and the emission factor of bare ground is 51 tCO2 ha-1 y-1, so that the average emission factor for an area changing from secondary forest to bare ground is 35 tCO2 ha-1 y-1.

5.6 cm per year in secondary forest[19]. After a period of 5 years of drainage in acacia and oil palm plantations, the rates appear to stabilize at around 5 cm per year[20]. With an average peat depth of more than 2 m, it will thus take about 40 years to decompose the peat. By reference to the existing data on peat depth in Sumatra and Kalimantan, it appears that peat depth of deforested areas in Indonesia is generally more than 2 m.[21] A refinement of the peat depth map particularly in deforested areas is required for the development of the Reference Level beyond 2024.

B2. Peat Fire

Calculation of historical emissions from peat fire in the deforested area (L_{fire}) is calculated using the following formula (IPCC, 2014):

$$L_{fire} = A * M_B * C_f * G_{ef} * 10^{-3} \qquad \text{(Equation 5)}$$

L_{fire} = amount of greenhouse gas emissions from fire, tonnes of each GHG e.g., CH_4, N_2O, etc.
A = area burnt, ha
M_B = mass of fuel available for combustion, tonnes ha^{-1}.
C_f = combustion factor, dimensionless (default values in Table 2.6)
G_{ef} = emission factor, g kg^{-1} dry matter burnt (default values in Table 2.5)

The M_B for the peat is 353 tons dry matter per hectare following IPCC default (Table 2.6 of the 2013 Supplement to the 2006 IPCC). The M_B depends on depth of peat and bulk density of the peat. Based on measurement in Central Kalimantan, the M_B is about 505 tons dry matter per hectare with assumption that the average depth of peat burn is 0.33 m and bulk density 0.153 t/m^3 (MRI 2013). However, we adopt the IPCC default as the default considering the data was based on measurement from multiple locations that may represent the general condition better. The C_f and G_{ef} are taken from the IPCC defaults (Tables 2.5 and 2.6 of 2006 IPCC Vol. 2 Chapter 4). The G_{EF} for CO_2 is 1,701 g/kg dry matter burnt (Table 2.7 of the 2013 Supplement) and for CH_4 is 21 g/kg dry matter burnt.

The estimation of peat burn area follows the method developed by MRI (2013)[22] that was applied by the REDD+ demonstration activity project in Central Kalimantan. There are three steps of the analysis to estimate the burnt area from the hotspot data (Figure 8.3). **First**, MODIS hotspot data are compiled annually and data with a confidence level of more than 80% are selected. **Second**, a raster map with 1×1 km grid (pixel size) is generated and overlaid on top of the hotspot data. Pixels without hotspots are considered as not burned and excluded from the activity data. Each 1km ×1 km pixel with at least one hotspot is considered as burned but with the assumption that the burned area is **76.9% of the pixel area (7,500 ha).** This rule applies for each pixel regardless of the number of hotspots within a particular pixel. **Third,** these burned areas were overlaid with the land cover and peat land map (produced by MoA) to identify the type of land cover being affected by the fire.

[19] Maswar and Agus, 2014
[20] Hooijer et al, 2012
[21] Ritung et al. 2011
[22] MRI (2013). *Green House Gas Reduction Project through Forest Conservation in Peat land in Central Kalimantan*: Mitsubishi Research Institute, Inc.

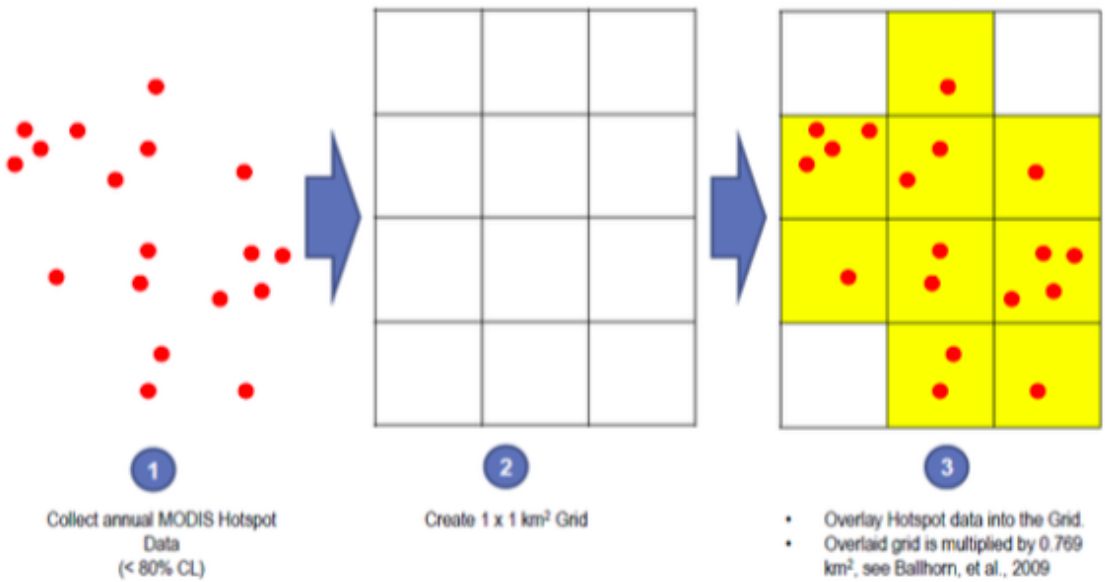


Figure 8. 19. Method for estimating burnt area from hotspot data (MoEF, 2016)

The Ministry of Environment and Forestry is developing a new approach for estimating the burned area for the improvement of the current MRI method. This improved method has been applied for estimation of the burn scar, i.e. by combining the hotspot data with the Landsat image (quick look original with composite band 645) that is able to delineate the burn area. This new approach will be used for the development of the reference level beyond 2024.

B3. *Mangrove Soil*

Considering that soil mangrove has very high organic content (Kauffman et al, 2017 and Murdiyarso et al, 2015), conversion of mangroves will result in a significant amount of CO2 emissions.

Calculation of emissions from mangrove soil in the ER program is considered only for conversion to aquaculture. Emissions released are calculated as potential emissions assuming that emissions from organic soil removed from the floor of the aquaculture system are emitted once at the time of the conversion. Thus, the calculation of the emissions from conversion of mangrove to aquaculture (E_{MS}) used the following formula:

$$E_{MS} = A_{MA} \times EF_{MA} \qquad \text{(Equation 6)}$$

A_{MA} is area of mangrove converted to aquaculture, EF_{MA} is emission factor, i.e. the difference between amount of carbon in the mangrove soil (C_M) and amount of carbon in soil on the floor of the aquaculture system (C_{AQ}). Based on measurement in 20 locations in East Kalimantan, the value of C_M is 902.91 tC/ha and the value of C_{AQ} is 487.31 tC/ha, thus the EF for conversion of mangrove soil to aquaculture system is 415.6 tC/ha (Kauffman, 2017).

If the conversion is to non-aquaculture, there will be no removal of the organic soil from the system, thus the emissions from the soil after conversion will occur slowly through decomposition process similar to the decomposition of peat land (IPCC, 2014).

Emissions from soil carbon due to deforestation may also come from peat fires. However, since satellite data for the reference period is not always available on an annual basis, it is difficult to determine which part of the deforested area are experiencing peat fires in a particular year within the period. Therefore, the estimation of the peat fire emission for the years between the period is estimated using the proxy data (estimated burnt area from the hotspot of these corresponding years).

Forest Degradation

The emission from degradation of natural forest include:

1. *Emissions due to the degradation of primary forest into secondary forest*
2. *Emissions due to degradation of secondary forest caused by fire*
3. *Emissions from peat decomposition*
4. *Emissions from logging*

The assessment of changes of primary forest to secondary forest and the estimation of emissions from the removal of the living biomass (AGB and BGB) and decomposition of organic soils follows a similar procedure as that of the deforestation (equations 1-4).

As described in section 7, further degradation in the secondary forest due to disturbances cannot be easily detected using the used medium-resolution satellite imagery (Landsat). However, the disturbance of secondary forest by fire can be monitored using the current system (see Figure 8.3). Thus, emission from the fire of the secondary forest is estimated using Equation 5 above. In years where the land-cover map data are not available, i.e. 2007, 2008, and 2010, the emissions from degradation of secondary forest due to fire are estimated using a regression equation that related the emission estimates from the available years (Y in ton CO_2e) with the corresponding burnt area derived from the hotspot (X in ha) as described in Figure 8.3. The resulting equation is the following:

$$Y = 29.34*X+38,636;\ R^2 = 96\% \qquad \text{(Equation 7)}$$

Further degradation of secondary forest due to logging activities cannot be detected through remote sensing data that is used by the NFMS. Therefore, emissions from this activity are estimated by using actual logging area (activity data) that is accessible in provincial forestry agencies, and the emission factors from Griscom, 2014. The actual logged forest area in East Kalimantan is taken from the logging concession's annual work plan document, which is regularly reported to the provincial forestry agency. There are 41 active logging concessions in East Kalimantan encompassing 2.6 million ha of forest, or 36% of the province's total. The reported actual logged forest area still needs to be adjusted using a correction factor (0.69) based on Ellis, 2016. The emission factor for selective logging activities is derived from field measurement conducted at 9 logging concessions in East Kalimantan.

$$E_{log} = A_{log} \times EF_{log} \qquad \textit{(Equation 8)}$$

A_{log} is actual logged area multiplied by correction factor 0.69, EF_{log} is emission factor of selective logging activities as a result of felling, skidding, and hauling operations, 51.12 t C/ha (Griscom et al., 2014).

8.3.2. Activity Data and Emission Factors used for calculating the Average Annual Historical Emission Over the Reference Period

Activity Data

<table>
<tr><td>Description of the parameter including the time period covered (e.g. forest-cover change between 2007-2016 or transitions between forest categories X and Y between 2003-2006):</td><td>Area of forest cover change between 2006-2009, 2009-2011, 2011-2012, 2012-2013, 2013-2014, 2014-2015, and 2015-2016</td></tr>
<tr><td>Explanation for which sources or sinks the parameter is used (e.g deforestation or forest degradation):</td><td>Deforestation</td></tr>
<tr><td>Data unit (e.g. ha/yr):</td><td>Ha/yr</td></tr>
<tr><td>Value for the parameter:</td><td>This data is an aggregation of the deforestation of the six natural forest classes

<table><tr><td>Period</td><td>Deforestation area (ha/year)</td></tr><tr><td>2006-2009</td><td>188,768</td></tr><tr><td>2009-2011</td><td>57,751</td></tr><tr><td>2011-2012</td><td>99,908</td></tr><tr><td>2012-2013</td><td>71,930</td></tr><tr><td>2013-2014</td><td>33,525</td></tr><tr><td>2014-2015</td><td>61,332</td></tr><tr><td>2015-2016</td><td>199,069</td></tr></table></td></tr>
<tr><td>Source of data (e.g. official statistics) or description of the method for developing the data, including (pre-) processing methods for data derived from remote sensing images (including the type of sensors and the details of the images used):</td><td>National Forest Monitoring System (NFMS) named Simontana (Sistem Monitoring Hutan Nasional) (MoFor, 2014).
It is available online at http://nfms.dephut.go.id/ipsdh/, which coupled with webGIS at http://webgis.dephut.go.id/ for display and viewing. The two websites are part of geospatial portal under the one map policy.</td></tr>
<tr><td>Spatial level (local, regional, national or international):</td><td>Regional (Province)</td></tr>
<tr><td>Discussion of key uncertainties for this parameter:</td><td>Two main sources of uncertainties are from image processing and interpretation of land cover types from the image (depend on quality of satellite images, method of land cover map generation process; uncertainty of land cover) and from land cover changes (uncertainty of land cover changes) .</td></tr>
<tr><td>Estimation of accuracy, precision, and/or confidence level, as applicable and an</td><td>The estimation of uncertainty follows the method presented by Olofsson et al.. The uncertainty of the land cover is estimated as 28%. The uncertainty of land cover</td></tr>
</table>

explanation of assumptions/methodology in the estimation:	changes has not been calculated yet.

Description of the parameter including the time period covered (e.g. forest-cover change between 2007-2016 or transitions between forest categories X and Y between 2003-2006):	Area of degradation, change of primary forest into secondary forests between 2006-2009, 2009-2011, 2011-2012, 2012-2013, 2013-2014, 2014-2015, and 2015-2016
Explanation for which sources or sinks the parameter is used (e.g deforestation or forest degradation):	Degradation
Data unit (e.g. ha/yr):	Ha/yr
Value for the parameter:	This data is an aggregation of the degradation of the three natural forest classes (Dry land forest, swamp forest and mangrove forest) Period / Degradation (ha/year): 2006-2009: 14,034 2009-2011: 628 2011-2012: 136 2012-2013: 767 2013-2014: 882 2014-2015: 8,823 2015-2016: 2,958
Source of data (e.g. official statistics) or description of the method for developing the data, including (pre-) processing methods for data derived from remote sensing images (including the type of sensors and the details of the images used):	National Forest Monitoring System (NFMS) named Simontana (*Sistem Monitoring Hutan Nasional*) (MoFor, 2014). It is available online at http://nfms.dephut.go.id/ipsdh/, which coupled with webGIS at http://webgis.dephut.go.id/ for display and viewing. The two websites are part of the geospatial portal under the one map policy.
Spatial level (local, regional, national or international):	Regional (Province)
Discussion of key uncertainties for this parameter:	Two main sources of uncertainties are from image processing and interpretation of land cover types from the image (depend on quality of satellite images, method of land cover map generation process; uncertainty of land cover) and from land cover changes (uncertainty of land cover changes) .

Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	The estimation of the uncertainty follows the method proposed by Olofsson *et al.*. The uncertainty of the land cover was estimated as 28%. The uncertainty of land cover changes has not been calculated yet. Appendix 8.3 provides the method for the estimation of the uncertainty of land cover analysis.

Description of the parameter including the time period covered (e.g. forest-cover change between 2007-2016 or transitions between forest categories X and Y between 2003-2006):	Area of secondary forest affected by fires in 2006, 2009, 2011, 2012, 2013, 2014, 2015, and 2016. Burnt area estimated from Hotspot data, derived from NASA FIRMS (https://earthdata.nasa.gov/firms)
Explanation for which sources or sinks the parameter is used (e.g deforestation or forest degradation):	Degradation of secondary forest due to fire
Data unit (e.g. ha/yr):	Ha
Value for the parameter:	This data is aggregation of the three secondary forest classes (Dry land forest, swamp forest and mangrove forest)
Source of data (e.g. official statistics) or description of the method for developing the data, including (pre-) processing methods for data derived from remote sensing images (including the type of sensors and the details of the images used):	Hotspot data, derived from NASA FIRMS (https://earthdata.nasa.gov/firms). Method for estimating the burnt area follows the method adapted from MRI (2013).
Spatial level (local, regional, national or international):	Regional (Province)

Period	Secondary forest affected by fire (ha)
2006	110,434
2009	97,856
2011	32,144
2012	43,644
2013	33,840
2014	90,227
2015	90,227
2016	25,992

Discussion of key uncertainties for this parameter:	Key uncertainty comes from the processing of Hotspot data and selection of confidence level of the Hotspot data for this analysis, which is >80% and assumption of the burnt area for grid (1x1 km).
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	Uncertainty level 30%. This uncertainty is estimated based on correction factor of the burnt area of the grid, error from land cover classification (Margono, 2012)

Description of the parameter including the time period covered (e.g. forest-cover change between 2000 – 2005 or transitions between forest categories X and Y between 2003-2006):	Actual selective logging area was derived from the annual logging plan document from natural forest logging concessions. This document can be accessed from the East Kalimantan province forestry agency
Explanation for which sources or sinks the parameter is used (e.g deforestation or forest degradation):	Degradation (logging)
Data unit (e.g. ha/yr):	Ha/yr
Value for the parameter:	
Source of data (e.g. official statistics) or description of the method for developing the data, including (pre-) processing methods for data derived from remote sensing images (including the type of sensors and the details of the images used):	Annual logging plan of the East Kalimantan province forestry agency. The logging data is reported annually by the forest concession company as mandated by Ministerial Regulation No. 62/2008 regarding Annual Working Plan.
Spatial level (local, regional, national or international):	Regional (Province)

Year	Actual logging area (ha)
2007	23,157
2008	24,508
2009	24,591
2010	28,509
2011	28,179
2012	31,386
2013	23,627
2014	46,299
2015	42,201
2016	32,621

Discussion of key uncertainties for this parameter:	Key uncertainty for this data is coming from the assumption on affected area by logging activities (Ellis *et al.* 2016)[23] and the process of data management in the forestry agency. The archiving data system is still manual (conventional) thus there are possibilities for loss of data.
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	31% (Ellis *et al.* 2016)

Emission Factors

Description of the parameter including the forest class if applicable:	Emission Factor for deforestation, i.e. living biomass (AGB+BGB) of the six forest classes, primary and secondary dryland forests; primary and secondary swamp forests; primary and secondary mangrove forests; and non-forest lands
Data unit (e.g. t CO_2/ha):	Ton C/ha
Value for the parameter:	**Forest lands**

Land cover	Code	C stock (t C/ha)
Primary dryland forest	2001	153
Secondary dryland forest	2002	116
Primary mangrove forest	2004	150
Primary swamp forest	2005	157
Secondary mangrove forest	20041	115
Secondary swamp forest	20051	97

Non-forest lands

Land cover	Code	C stock (t C/ha)
Plantation forest	2006	62.6
Dry shrub	2007	20.2
Wet shrub	20071	18.1
Savanna and Grasses	3000	2.8
Pure dry agriculture	20091	7.5
Mixed dry agriculture	20092	22.5
Estate crop	2010	49.7
Paddy field	20093	4.4
Transmigration areas	20122	10.0

[23] Ellis, P., Griscom, B., Walker, W., Gonçalves, F. & Cormier, T. Mapping selective logging impacts in Borneo with GPS and airborne lidar. For. Ecol. Manage. 365, 184–196 (2016).

	Fish pond/aquaculture	20094	0.0
	Bare ground	2014	2.5
	Mining areas	20141	0.0
	Settlement	2012	4.0
	Port and harbor	20121	0.0
	Open water	5001	0.0
	Open swamps	50011	0.0

Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:

The primary data source for the carbon stock of natural forests is derived from the National Forest Inventory (NFI). The carbon stock data used are total of above ground (AGB) and below ground biomass (BGB). The estimation of AGB used allometric equation (See Appendix A7.2 for details). The below ground biomass (BGB) is estimated using root-shoot ratio which was developed based on available data from field measurements from a number of locations in Central Kalimantan (Krisnawati *et al.* 2014)[24]. The value of the ratio is 0.21 (See Appendix A7.2 for details).

The data source for the carbon stock of non-forest lands is derived from mainly Indonesian literature. The below ground biomass (BGB) is also estimated using root-shoot ratio based on IPCC default values. The value of the ratio for forest plantation and estate crops is assumed to be 0.21, while for the others (shrubs, dry land agricultures, savanna etc.) is 0.60.

Spatial level (local, regional, national or international):

Regional (Kalimantan island)

Discussion of key uncertainties for this parameter:

Key uncertainty comes from (1) tree measurement error (DBH), (2) allometric model (19.5%)[6], (3) wood density (9.8% for dryland forest; 6.2% mangrove; 3.7% swamp forest)[25], (4) biomass conversion factor to carbon (5.3% Table 4.3 of the 2006 IPCC) and (5) root:shoot ratio (20%; based on the 2006 IPCC and Krisnawati et al. 2014)[9]

Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:

Method to estimate the uncertainty of the living biomass is using error propagation: sqrt(U_1^2+ U_2^2+ U_3^2+ U_4^2+ U_5^2), the subscript 1, 2, 3, 4 , and 5 are uncertainties for tree measurement error (Calculated), allometric model, wood density, biomass conversion to carbon, and root-shoot ration respectively.

Landcover	Code	Uncertainty (%)

[24] Krisnawati, H., Adinugroho, W. C., Imanuddin, R., & Hutabarat, S. (2014). Estimation of forest biomass for quantifying CO2 emissions in Central Kalimantan: A comprehensive approach in determining forest carbon emissions factors. Research and Development Center for Conservation and Rehabilitation, Forestry Research and Development Agency, Bogor, Indonesia.

[25] http://db.worldagroforestry.org

	Primary dryland forest	2001	30.4
	Secondary dryland forest	2002	30.3
	Primary mangrove forest	2004	35.8
	Primary swamp forest	2005	29.2
	Secondary mangrove forest	20041	43.9
	Secondary swamp forest	20051	29.5

For non-forest lands, the uncertainty is assumed to be about 30%. Thus the uncertainty of the emission factors for deforestation, i.e. conversion of 2001, 2002, 2004, 2005, 20041 and 20051 to non forest lands are 43%, 43%, 47%, 42%, 53% and 42% respectively.

Description of the parameter including the forest class if applicable:	Emission Factor for peat decomposition
Data unit (e.g. t CO_2/ha):	Ton CO2/ha/year
Value for the parameter:	

Land cover	**EF (t CO_2/ha/yr)**
Primary forest	0
Secondary forest	19
Plantation forest	73
Estate crop	40
Pure dry agriculture	51
Mixed dry agriculture	51
Dry shrub	19
Wet shrub	19
Savanna and Grasses	35
Paddy Field	35
Open swamp	0
Fish pond/aquaculture	0
Transmigration areas	51
Settlement areas	35
Port and harbor	0
Mining areas	51
Bare ground	51
Open water	0
Clouds and no-data	Nd

Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:	Paciornik and Rypdal (2006)[26] and Hiraishi et al (2014)[27]. These emission factors are reported in 2013 Supplement Guideline to 2006 IPCC Guidelines for National GHG Inventory: Wetlands. Most of the data reported in this guideline come from Indonesian sites.
Spatial level (local, regional, national or international):	National
Discussion of key uncertainties for this parameter:	Key uncertainty comes from sampling error (number of sampling, timing of sampling, length of the time between sampling taken to processing in laboratory).
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	The uncertainty is taken from the 2013 supplement for 2006 IPCC Guideline (Hiraishi et al. 2014)

Land cover	Uncertainty (%)
Primary forest	0
Secondary forest	79.2
Plantation forest	50.0
Estate crop	54.5
Pure dry agriculture	85.7
Mixed dry agriculture	85.7
Dry shrub	79.2
Wet shrub	79.2
Savanna and Grasses	112.8
Paddy Field	112.8
Open swamp	0
Fish pond/aquaculture	0
Transmigration areas	87.5
Settlement areas	112.8
Port and harbor	0
Mining areas	85,7
Bare ground	85.7
Open water	0
Clouds and no-data	Nd

Description of the parameter including the forest class if applicable:	Emission Factor for mangrove soil and abandoned shrimp pond

[26] Paciornik, N., Rypdal, K. (2006). 2006 *International Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories.* Chapter 4. Forest Land: IPCC, Switzerland.
[27] Hiraishi, T., Krug, T., Tanabe, K., Srivastava, N., Baasansuren, J., Fukuda, M. and Troxler, T.G. (2014). *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*: *Wetlands* (p. 354). Intergovernmental Panel on Climate Change: (IPPC), Switzerland.

Data unit (e.g. t CO_2/ha):	Ton C/ha
Value for the parameter:	902.91 (mangrove) 487.31 (abandoned shrimp pond) EF = 415.6
Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:	Data on the soil carbon of mangrove and abandoned pond is taken from Kauffman *et al.* (2017)[28] based on measurement from the 20 locations in East Kalimantan. The procedure for the sampling is described in Kauffman et al. (2016)[29]
Spatial level (local, regional, national or international):	National
Discussion of key uncertainties for this parameter:	Key uncertainty comes from sampling error.
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	Uncertainty level 33%. The estimation of uncertainty is provided in Appendix A12.2.

Description of the parameter including the forest class if applicable:	Emission Factor for logging
Data unit (e.g. t CO_2/ha):	Tonne C/ha
Value for the parameter:	

Emissions Source	**Emissions (tC/Ha Area Accessed)**
Felling - Harvest Tree	19.59
Felling - Collateral	10.73
Skid Trails	12.51
Haul Roads	7.05
Yards	1.26
Total	*51.12*

[28] Kauffman, JB., Arifanti VB, Trejo HH., García MCJ., Norfolk J., Cifuentes M., Hadriyanto D., & Murdiyarso D. 2017. The jumbo carbon footprint of a shrimp: carbon losses from mangrove deforestation. *Front Ecol Environ.* DOI:10.1002/fee.1482

[29] Kauffman JB, Arifanti VB, Basuki I, Kurnianto S, Novita N, Murdiyarso D, Donato DC and Warren MW. 2016. *Protocols for the measurement, monitoring, and reporting of structure, biomass, carbon stocks and greenhouse gas emissions in tropical peat swamp forests.* Working Paper 221. Bogor, Indonesia: CIFOR.

Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:	Griscom et al (2014). The emission factor is derived from field measurement in nine logging concessions in East Kalimantan.
Spatial level (local, regional, national or international):	Regional (Kalimantan island)
Discussion of key uncertainties for this parameter:	Key uncertainty comes from human error in identifying the death trees by logging practices and different types of hollowness of felled trees.
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	Uncertainty level 14.3% (Griscom et al 2014)[30].

Calculation of the Average Annual Historical emission over Reference Periods

The calculation of the annual historical emission over the reference period is given in two files, i.e. '*FREL Ekal 2006-2017_August.xlsx*' and '*Fire Emission of ESKAL 2006-2016-August.xlsx*'.

The average historical emission during the reference period from deforestation and forest degradation reached 22,180,607 and 6,716,006 tonnes CO_2 per year respectively (Table 8,2 and 8.3; Figure 8.4) below. The emission from deforestation is relatively constant between 2007 and 2015, and it increased significantly in 2016 (Figure 8.5).

Table 8. 18 The average historical emission from deforestation (tonnes CO2e)

YEAR	Emission from Deforestation				
	Living Biomass	Peat Decomposition	Peat fire in deforested area	Mangrove Soil	**TOTAL**
2007	18,632,655	-	-	405,396	19,038,051
2008	18,632,655	-	-	405,396	19,038,051
2009	18,632,655	-	-	405,396	19,038,051
2010	9,546,282	-	-	40,122	9,586,404
2011	9,546,282	-	-	40,122	9,586,404
2012	25,392,565	-	-	606,175	25,998,740
2013	22,725,908	21,613	279,483	1,037,724	24,064,727
2014	8,725,104	22,780	-	-	8,747,884
2015	21,978,129	55,667	38,569	2,521,156	24,593,521
2016	60,716,374	97,131	17,505	1,283,230	62,114,240

[30] Griscom, B., Ellis, P., Putz, F., 2014. Carbon emissions performance of commercial logging in East and North Kalimantan, Indonesia. *Global Change Biology* 20: 923-937. DOI: 10.1111/GCB.12386

Average	21,452,861	19,719	33,556	674,472	22,180,607

Table 8. 19 The average historical emission from forest degradation (ton CO2e)

	Emission from Forest Degradation				
	Living Biomass PF-SF	Peat Decomposition	Fire-AGB_SF	Logging in SF	TOTAL
2007	516,311	969,733	938,878	2,995,210	5,420,132
2008	516,311	969,733	625,260	3,169,916	5,281,220
2009	516,311	969,733	2,752,571	3,180,660	7,419,275
2010	42,906	969,733	814,785	3,687,428	5,514,852
2011	42,906	969,733	1,083,517	3,644,761	5,740,918
2012	10,908	969,733	1,569,431	4,059,621	6,609,693
2013	167,739	948,121	1,090,534	3,056,031	5,262,425
2014	128,234	947,487	2,831,419	5,988,496	9,895,636
2015	1,107,604	929,893	2,486,020	5,458,427	9,981,944
2016	407,682	915,136	491,856	4,219,287	6,033,960
Average	345,691	955,904	1,468,427	3,945,984	6,716,006

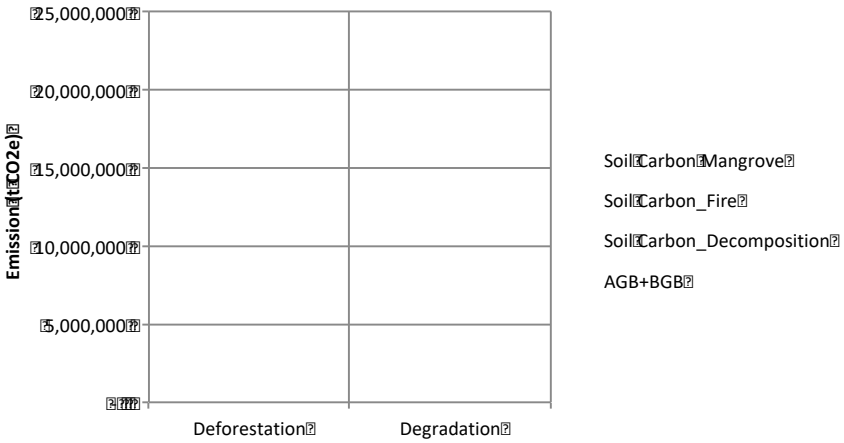


Figure 8. 20. Estimated average CO_2 emission from deforestation and forest degradation during the reference period (2007-2016)

Table 8. 20 Share of emissions by source, 2006 - 2016

Source	Average Annual Emissions (tCO2e)	Share of Total
Deforestation	21,452,861	74.2%
Degradation	345,691	1.2%
Logging	3,945,984	13.7%

Fire	1,501,983	5.2%
Peat Decomposition	975,622	3.4%
Mangrove Soil	674,472	2.3%
Total:	28,999,020	100%

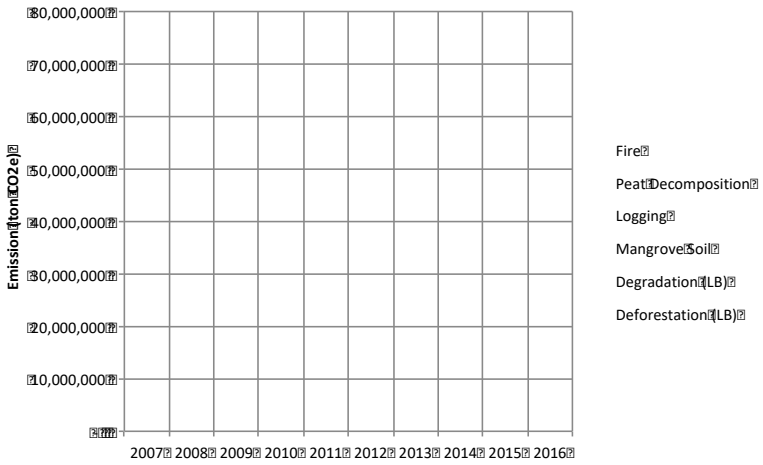


Figure 8.21. Estimated annual CO_2 emission from deforestation and forest degradation during the reference period (2007-2016)

8.4. Upward or downward adjustments to the average annual historical emissions over the reference period

Not applicable

8.5. Estimated Reference Emission Level

In the case of peat decomposition, the reference emission level was not estimated using historical average since the nature of emission from peat decomposition is different from others in which there is inherited emissions as described above (see Appendix A8.2 for further explanation). The forested peatland converted into other land covers is normally drained and cause the peat to be oxidized aerobically and emit CO_2e. The decomposition will occur gradually meaning that the emission will continue after the time of conversion until the peat all decomposed. The duration of the decomposition may take years depending on the depth of the peat. Thus emissions from peat decomposition will never decrease unless the conversion of the forested peatland is ceased and the degraded peatlands are changed into forests and its natural ecosystem. Taking this nature of emissions into consideration, the development of reference emission level from peat decomposition should be done by taking into account the trend and adding the trend into the rate of emission that already occur at the end of the reference year. This method was used in the submitted national FREL that has been technically assessed by UNFCCC. Following the criteria 10 of the Methodological Framework, this RL of the ERPD should be consistent and in line with the submitted national FREL.

Following the Criteria 13 of the MF, the Reference Level cannot exceed the average annual historical emissions over the Reference Period, except for the countries that '*Long-term historical deforestation has been minimal across the entirety of the country, and the country has high forest cover; and National circumstances have changed such that rates of deforestation and forest degradation during the historical Reference Period likely underestimate future rates of deforestation and forest degradation during the Term of the ERPA*'. By applying the method that is consistent with the national

FREL, the RL will be slightly higher than the average of emission during the reference period. The development of the methodological framework did not consider countries in their circumstance have peat land. To be in conformity with the MF, the future emission from the peat decomposition is set to be constant at a rate of similar with the rate of at the end of the reference year. This means that under the reference condition no deforestation is allowed to occur in the peat forest even during the reference period deforestation still occur at a low rate compare to the one in mineral land.

Table 8.21 Estimated Reference Emission Level

Year	Defores-tation	Degra-dation	Mangrove	Logging	Peat decom-position	Fire	Total
2017	21,452,861	345,691	674,472	3,945,984	1,012,266	1,501,983	28,933,256
2018	21,452,861	345,691	674,472	3,945,984	1,012,266	1,501,983	28,933,256
2019	21,452,861	345,691	674,472	3,945,984	1,012,266	1,501,983	28,933,256
2020	21,452,861	345,691	674,472	3,945,984	1,012,266	1,501,983	28,933,256
2021	21,452,861	345,691	674,472	3,945,984	1,012,266	1,501,983	28,933,256
2022	21,452,861	345,691	674,472	3,945,984	1,012,266	1,501,983	28,933,256
2023	21,452,861	345,691	674,472	3,945,984	1,012,266	1,501,983	28,933,256
2024	21,452,861	345,691	674,472	3,945,984	1,012,266	1,501,983	28,933,256

8.6. Relation between the Reference Level, the development of a FREL/FRL for the UNFCCC and the country's existing or emerging greenhouse gas inventory

The RL for the ER Program was developed using the same approach as that used for the national FREL which Indonesia submitted to the UNFCCC in 2016 (http://unfccc.int/resource/docs/2016/tar/idn.pdf). The National FREL is the result of a process involving a series of initial technical analyses followed by public multi-stakeholder consultation. The procedure follows FCCC guidelines as detailed in the annex of FCCC/CP/2013/10/Add.1 The two REDD+ activities included in the national FREL were *Deforestation* and *Forest Degradation*, consistent with Decision 1/CP.16, paragraph 70 and covering national forest. The reference period used in the National FREL is 1990 to 2012 (22 years; MoEF, 2015). The use of this long reference period is to better capture the dynamic land policies in Indonesia[31].

The ERP's FREL uses a reference period of 10 years (2007-2016) in order to conformity with the Carbon Funds Methodological Framework. However, the activity data and emission factors used in the development of the reference level are consistent with the national data, except for particular activities which are not included in the national REL, namely reduced impact logging activity (RIL) and the inclusion of below ground biomass and soil carbon for mangroves. In addition, the carbon stock after the conversion is taken into account in the calculation of emission from deforestation. It is expected that the ER Program will generate lessons that will contribute to the next submission of the national FRL/FREL, e.g. the addition of REDD+ activities, or the improvement of activity data and emission factors.

Indonesia's GHG Inventory is managed by the Directorate for GHG Inventory and MRV, which also maintains the national registry system. The ER Program (through the local Environmental

[31] MoEF, 2015, National Forest Reference Emission Level for REDD+ In the Context of Decision 1/CP.16 Paragraph 70, Directorate General of Climate Change. The Ministry of Environment and Forestry. Indonesia

Agency) will report on the emission reductions generated by the implementation of the ER Program to the national registry system (see Section 9 for details). Therefore, the implementation of the ER Program will also provide inputs to the development of the national GHG Inventory.

9. APPROACH FOR MEASUREMENT, MONITORING AND REPORTING

The Ministry of Environment and Forestry regulation No.70/2017 includes guidance on MRV REDD+. For example, the regulation states that measurement should take place at least twice a year (Article 10), that an independent verifier shall be used (Article 12), and that the system shall include a registry (Article 13). The ER Program's MRV design will conform to the regulation, and will involve an independent verifier in addition to verification by the Ministry of Environment and Forestry.

9.1. Measurement, monitoring and reporting approach for estimating emissions occurring under the ER Program within the Accounting Area

9.1.1. Method for monitoring activity data and emission factors

The ER Program will apply methods for monitoring activity data and for estimating emission factors that are aligned with the approach used in developing Indonesia's FREL and that comply with established standards for the measurement of satellite imagery (LANDSAT) interpretation to estimate forest cover changes (SNI 8033:2014).[32] These standards have been defined in the Annex of the Regulation of the Director General of Forest Planology Number P.1/VII- IPSDH/2015[33].

The images were first classified following land classification for forest and non-forested land as described in Table 8.1. Classified images of the observed year (t1) were then overlaid with the classified images of the previous year (t0) to identify and calculate changes in land cover (Figure 9.1). Since deforestation in the ER Program involves only conversion of natural forest (NF) to non-natural forest (NNF), and, specifically for mangroves, conversion to aquaculture areas (i.e. shrimp ponds), the calculation of forest changes will only take into account these types of changes. Thus, forest cover changes in a year can be estimated with the following formula:

FC = (A1-A0)/(t1-t0), where:

FC = forest cover change (ha/yr)
A1 = natural forest (NF) land in the year (ha)
A0 = natural forest (NF) previous year (ha)
t1 = observed year
t0 = previous year

Land cover is classified manually using an on-screen digitizing technique based on key elements of the image (Landsat 30 meters resolution)/photo-interpretation (MoF 2003[34], Margono et.al 2016[35]). MoFor staff from district and provincial levels bring local knowledge to bear on the process of visual interpretation and digitization. The classification of land covers is based on physiognomy or biophysical appearance that are sensed by Landsat at 30 meter spatial resolution. In practice, identification is based purely on the appearance of the imagery. Several sets of ancillary data (including concession boundaries and forestland-use boundaries) were utilized during the process of delineation, to capture additional valuable information (Figure 9.1). Some images of the forest classes are provided in Table

[32] Standar Nasional Indonesia (Indonesia National Standard) No. 8033 year 2014 regarding Method for Estimation of Forest Cover Changes based on Result of Visual Interpretation of Optical Remote Sensing Imagery.
[33] Perdirjen Planologi (2015). Pedoman pemantauan penutupan lahan (guidance for monitoring land cover change). http://appgis.dephut.go.id/appgis/download/1.%20Buku%20REKALKULASI%20PENUTUPAN%20LAHAN%20INDONESIA/
[34] MoF. 2003. Rekalkulasi penutupan lahan Indonesia tahun 2002. Direktorat Inventarisasi dan Pemantauan Sumber Daya Hutan. Ditjend Planologi Kehutanan. Kementerian Kehutanan. http://appgis.dephut.go.id/appgis/download/
[35] Margono B.A., Usman, A.B., Budiharto & Sugardiman, R.A. 2016. Indonesia's forest resource monitoring. Indonesian Journal of Geography 48:7-20 (https://jurnal.ugm.ac.id/ijg/article/view/12496/9041)

9.1[36]. For differentiating plantation forest and natural forest cover, additional supporting information, such as maps of concession boundaries and land rehabilitation programs, is used.

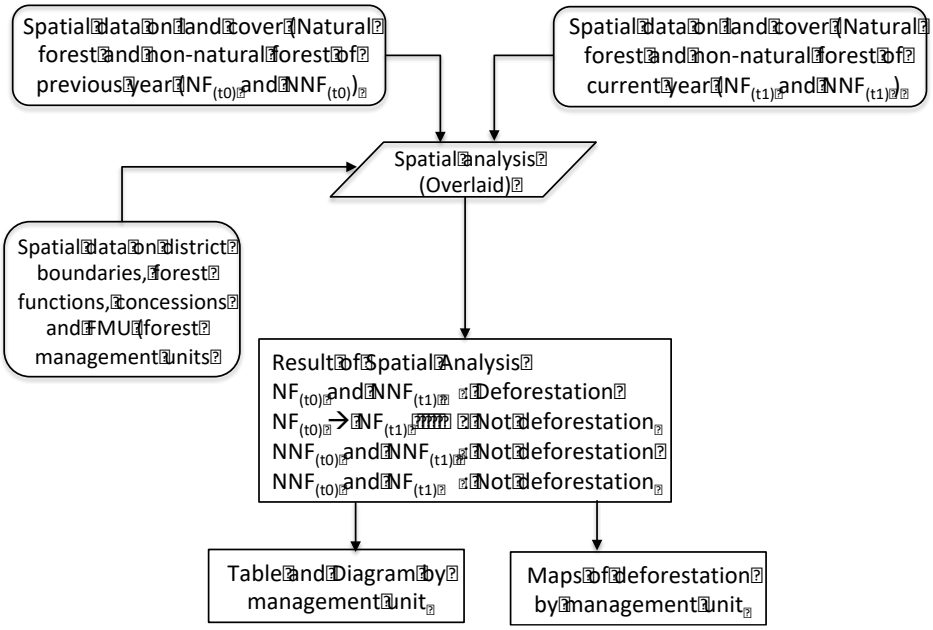


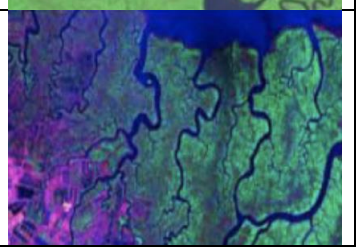
Figure 9.7 Method for the estimation of deforestation

The activity data to estimate emissions from forest cover change (deforestation) is generated by the National Forest monitoring System (NFMS) managed by Directorate General for Forest Planning and Environment Management (DG Plan) of the Ministry of Environment and Forestry. The agency responsible for processing the satellite data is the Regional Office for the Management of Forest Area (BPKH) in East Kalimantan Province. BPKH works under the direction of the Directorate of Forest Resources Inventory and Monitoring (IPSDH), which is under the Directorate General of Forestry Planning and Environmental Arrangement (BAPLAN; see section 9.2).

Table 9. 22 Appearance of forest classes in the landsat image

Class	Forest	Appearance on screen
2001	Primary Dryland Forest. All appearances of this forest in lowland, hill or mountain that do not show any evidence of logging (such as logging roads or slash and burn area)	
2002	Secondary Dry land forest. All appearances of this forest in lowland, hill or mountain that show evidence of logging (such as logging roads or slash and burn area)	

[36] Pemantauan sumber daya hutan Indonesia 2015.
http://appgis.dephut.go.id/appgis/download/1.%20Buku%20REKALKULASI%20PENUTUPAN%20LAHAN%20INDONESIA/PEMANTAUAN%20SUMBER%20DAYA%20HUTAN%20INDONESIA%202015.pdf

2005	Primary swamp forest. All appearances of forest cover in swamp area that do not show any sign of logging activities	
20051	Secondary swamp forest. All appearances of forest cover in swamp area that show signs of logging.	
2004	Primary mangrove forest. All forest appearances near the coast with typical pattern that do not show signs of logging.	
20041	Secondary mangrove forest. All forest appearances near the coast that show signs of logging.	

Source: MoEF (2015). Pemantuan sumberdaya hutan Indonesia. Direktorat Inventarisasi dan Pemantauan Sumber Daya Hutan, Ditjen Planologi Kehutanan dan Tata Lingkungan. http://appgis.dephut.go.id/appgis/download and Margono B.A., Usman, A.B., Budiharto & Sugardiman, R.A. 2016. Indonesia's forest resource monitoring. Indonesian Journal of Geography 48:7-20 (https://jurnal.ugm.ac.id/ijg/article/view/12496/9041).

9.1.2 Parameters to be monitored

During the ERPA term (2020-2024), activity data (AD) and emission factors (EF) will be monitored in the Accounting Area to measure deforestation. Monitoring will follow the procedures defined in the NFMS (national forest monitoring system) and in the National Forest Inventory (NFI). For measuring degradation from logging, activity data (AD) and emission factors (EF) will be monitored following the procedures defined in the *Protocol on Auditing of Logging Performance (TNC, 2015) and VCS methodology VMD0047 respectively.* The following tables provide information on the monitored parameters.

9.1.2.1. Deforestation and Degradation

Parameter:	Area of forest cover change to estimate emissions from deforestation and degradation
Description:	Applicable to all transitions, including forest remaining forest (degradation, i.e. from primary to secondary forest) and forest to non-forest (Deforestation)
Data unit:	Ha/yr
Source of data or measurement/calculation methods and procedures to be	Remote sensing data is processed by the National Forest Monitoring System (NFMS) named Simontana (*Sistem Monitoring Hutan Nasional*) (MoFor, 2014).

applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the ERPA	It is available online at http://nfms.dephut.go.id/ipsdh/, which coupled with webGIS at http://webgis.dephut.go.id/ for display and viewing. The two websites are part of the geospatial portal under the one map policy (http://tanahair.indonesia.go.id/portal). The detailed explanation of the methods for monitoring the forest resource can be seen in Margono et al. (2016; https://jurnal.ugm.ac.id/ijg/article/view/12496/9041) Field observations to check the accuracy of the interpretation of land cover change are also conducted as part of the NFMS, with the involvement of ER Program Entities that include local communities.
Frequency of monitoring/recording:	*Annually*
Monitoring equipment:	National Forest Monitoring System (NFMS)
Quality Assurance/Quality Control procedures to be applied:	*Following the Standard Operating Procedure on QA/QC developed by the IPSDH (Inventory and Monitoring of Forest Resources) unit under the Directorate General of Forest Planology, Ministry of Environment and Forestry.*
Identification of sources of uncertainty for this parameter	Uncertainty comes from the quality of satellite images used, land cover map generation process, and the number of ground truth points.
Process for managing and reducing uncertainty associated with this parameter	- *Increase the number of ground checking* - *Provide additional training for the interpreters* - *Refine the selection of Landsat and other supported images (Hi-res)*
Any comment:	

Parameter:	Above ground biomass (AGB)
Description:	The above ground biomass is estimated based on the DBH (Diameter at Breast Height) and wood density that is measured from trees in the permanent sampling plots (PSP) using similar allometric equation to the national one, i.e. Chave *et al.* (2005).
Data unit:	Tonne of carbon per hectare
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and	Field measurement from the permanent sampling plot (PSP) of the National Forest Inventory (NFI) system. For East Kalimantan Province, 159 permanent sampling plots were established in 2016 and 160 in 2017. The locations of the PSPs established for East Kalimantan Province in 2016 and 2017 are provided in Appendix A9.1

how the data or methods will be approved during the Term of the ERPA	
Frequency of monitoring/recording:	***During the ERPA monitoring and recording will be carried out at minimum in 2022 and 2024.*** *In the ER Program, the new data from the PSP will be used to improve the accuracy. In the case the improvement is significant, the recalculation of the Reference Level will be performed.*
Monitoring equipment:	
Quality Assurance/Quality Control procedures to be applied:	Following the standard methods that have been developed for the NFI (SNI 7724:2011)
Identification of sources of uncertainty for this parameter	Sources of uncertainty for this parameter are due to: 1. Limited number of permanent sampling plots 2. Allometric equation 3. Root:shoot ratio 4. Biomass density 5. Human error in measuring tree diameters
Process for managing and reducing uncertainty associated with this parameter	*Increasing number of PSP. It is planned that for 2018 there will be an additional 160 PSPs established for East Kalimantan Province. Based on the NFI, the coefficient of variation of AGB of East Kalimantan Forest is about 65%. With an expectation of error of about 5%, the required number of PSPs is* $(65/5*1.96)^2$ *= 650 PSPs. To meet this number, the additional data from PSPs established by the FOERDA supported by FCPF-CF will be added.*
Any comment:	

Emission Factors for peat decomposition and mangrove will not be monitored to maintain consistency with the EF used in the development of REL. Above ground biomass of forest lands will be monitored as part of the NFI program in which the number of PSPs will be increased in East Kalimantan to reduce the uncertainties mentioned above, while for those of non-forest lands will not be monitored to maintain consistency with the EF used in the development of the Reference Level.

9.1.2.2. Forest Degradation (Logging)

Parameter:	Selective logging area to estimate emissions from logging
Description:	The selective logging area will be assessed in concessions implementing RIL. An adjustment factor of 69% of affected area will be applied to the reported logging area. This adjustment factor is used as, on average, the total area actually logged is less than the area reported.
Data unit:	Ha/yr

Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the ERPA	The annual logging plans reported by logging companies implementing RIL. These are accessible at the East Kalimantan province forestry agency.
Frequency of monitoring/recording:	*Annually*
Monitoring equipment:	*VCS methodology VMD0047, Protocol on Auditing of Logging Performance (TNC, 2015)*
Quality Assurance/Quality Control procedures to be applied:	Following the procedure defined in the *Protocol on Auditing of Logging Performance (TNC, 2015)*[37]
Identification of sources of uncertainty for this parameter	Sources of uncertainty for this parameter are due to: - Assumptions of the area affected by logging activities (69%; Ellis et al, 2016); - Human error in recognizing tree mortality and area affected due to logging practices such as felling, skidding, and hauling; and - Process of data management in the forestry agency. The archiving data system is still manual (conventional) thus there are possibilities for loss of data.
Process for managing and reducing uncertainty associated with this parameter	- *Provide training for auditors to better recognize* tree mortality and area affected due to logging practices - Upgrade archiving in forestry agency into computerized system
Any comment:	

Parameter:	Impact of selective logging (FELL1)
Description:	Percent felled trees abandoned in annual harvest block from year *t,* as the number of felled trees from which no discernible volume has been extracted (ie , abandoned felled trees) divided by the total tally of all felled trees sampled or censused (ie , abandoned felled trees plus

[37] http://database.v-c-s.org/sites/vcs.benfredaconsulting.com/files/VMD0047%20RIL-C%20Performance%20Method%20for%20East%20and%20North%20Kalimantan%2028%20April%202016_0.pdf

	felled and harvested trees).
Data unit:	Percent
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the ERPA	Monitored via random or systematic sampling, or census, of ≥200 felled trees within areas accessed by skid trail sections sampled for monitoring parameter *SKID*
Frequency of monitoring/recording:	Throughout the project crediting period, monitoring must be conducted within two years after each harvest
Monitoring equipment:	*VCS methodology VMD0047, Protocol on Auditing of Logging Performance (TNC, 2015):* http://database.v-c-s.org/sites/vcs.benfredaconsulting.com/files/VMD0047%20RIL-C%20Performance%20Method%20for%20East%20and%20North%20Kalimantan%2028%20April%202016_0.pdf
Quality Assurance/Quality Control procedures to be applied:	Following the procedure defined in the *Protocol on Auditing of Logging Performance (TNC, 2015)*
Identification of sources of uncertainty for this parameter	Sources of uncertainty for this parameter are due to: - Skill of field staff to do the monitoring (human error) - Sampling error
Process for managing and reducing uncertainty associated with this parameter	- *Provide training for auditors to better recognize* tree mortality and area affected due to logging practices - Upgrade archiving in forestry agency into computerized system - Develop SOP
Any comment:	

Parameter:	Impact of selective logging (FELL2)
Description:	Average percentage of felled log length left in the forest from trees felled and harvested (with some volume extracted) in annual harvest block from year *t (as* average percent of harvested tree (felled trees with some discernible volume extracted) log length left in the forest in annual harvest block from year *t* is monitored via the

	same sampling of felled trees as for *FELL1)*
Data unit:	Percent
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the ERPA	Visual assessments of sampled felled trees with log section extracted.
Frequency of monitoring/recording:	Throughout the project crediting period, monitoring must be conducted within two years after each harvest
Monitoring equipment:	*VCS methodology VMD0047, Protocol on Auditing of Logging Performance (TNC, 2015):* http://database.v-c-s.org/sites/vcs.benfredaconsulting.com/files/VMD0047%20RIL-C%20Performance%20Method%20for%20East%20and%20North%20Kalimantan%2028%20April%202016_0.pdf
Quality Assurance/Quality Control procedures to be applied:	Following *the procedure defined in the Protocol on Auditing of Logging Performance (TNC, 2015)*
Identification of sources of uncertainty for this parameter	Sources of uncertainty for this parameter are due to: - Skill of field staff to do the monitoring (human error) - Sampling error
Process for managing and reducing uncertainty associated with this parameter	- *Provide training for auditors to better recognize* tree mortality and area affected due to logging practices - Upgrade archiving in forestry agency into computerized system - Develop SOP
Any comment:	

Parameter:	Impact of selective logging (*SKIDdens*)
Description:	Average meters length of skid trails per hectare in annual harvest block from year *t* (m/ha)
Data unit:	m/ha

Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the ERPA	Field observation through GPS track of >=5 km skid trail length
Frequency of monitoring/recording:	Throughout the project crediting period, monitoring must be conducted within two years after each harvest
Monitoring equipment:	*VCS methodology VMD0047, Protocol on Auditing of Logging Performance (TNC, 2015):* http://database.v-c-s.org/sites/vcs.benfredaconsulting.com/files/VMD0047%20RIL-C%20Performance%20Method%20for%20East%20and%20North%20Kalimantan%2028%20April%202016_0.pdf
Quality Assurance/Quality Control procedures to be applied:	Following the procedure defined in the *Protocol on Auditing of Logging Performance (TNC, 2015)*
Identification of sources of uncertainty for this parameter	Sources of uncertainty for this parameter are due to: - Skill of field staff to do the monitoring (human error) - Sampling error
Process for managing and reducing uncertainty associated with this parameter	- *Provide training for auditors to better recognize* tree mortality and area affected due to logging practices - Upgrade archiving in forestry agency into computerized system - Develop SOP
Any comment:	

Parameter:	Impact of selective logging (*SKIDdam*)
Description:	A verage number of trees > 20 cm DBH killed trees per m skid trail in annual harvest block from year *t*
Data unit:	Number/m
Source of data or measurement/calculation methods and procedures to be applied (e.g.	Tally all trees >=20 cm DBH killed along >=5 km skid trail length

field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the ERPA	
Frequency of monitoring/recording:	Throughout the project crediting period, monitoring must be conducted within two years after each harvest
Monitoring equipment:	*VCS methodology VMD0047, Protocol on Auditing of Logging Performance (TNC, 2015):* http://database.v-c-s.org/sites/vcs.benfredaconsulting.com/files/VMD0047%20RIL-C%20Performance%20Method%20for%20East%20and%20North%20Kalimantan%2028%20April%202016_0.pdf
Quality Assurance/Quality Control procedures to be applied:	Following the procedure defined in the *Protocol on Auditing of Logging Performance (TNC, 2015)*
Identification of sources of uncertainty for this parameter	Sources of uncertainty for this parameter are due to: - Skill of field staff to do the monitoring (human error) - Sampling error
Process for managing and reducing uncertainty associated with this parameter	- *Provide training for auditors to better recognize* tree mortality and area affected due to logging practices - Upgrade archiving in forestry agency into computerized system - Develop SOP
Any comment:	

Parameter:	Impact of selective logging (*HAUL*)
Description:	Haul road corridor area (include log yard)
Data unit:	m^2 ha^{-1}
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional,	Haul road length: GPS tracts of centering of all haul road corridors within an annual cutting block; Haul road corridor width: 30 width measurement or alternatively remote sensing data to directly map haul road corridor area within annual cutting block

national, international) and if and how the data or methods will be approved during the Term of the ERPA	
Frequency of monitoring/recording:	Throughout the project crediting period, monitoring must be conducted within two years after each harvest
Monitoring equipment:	*VCS methodology VMD0047, Protocol on Auditing of Logging Performance (TNC, 2015):* http://database.v-c-s.org/sites/vcs.benfredaconsulting.com/files/VMD0047%20RIL-C%20Performance%20Method%20for%20East%20and%20North%20Kalimantan%2028%20April%202016_0.pdf
Quality Assurance/Quality Control procedures to be applied:	Following the procedure defined in the *Protocol on Auditing of Logging Performance (TNC, 2015)*
Identification of sources of uncertainty for this parameter	Sources of uncertainty for this parameter are due to: - Skill of field staff to do the monitoring (human error) - Sampling error
Process for managing and reducing uncertainty associated with this parameter	- *Provide training for auditors to better recognize* tree mortality and area affected due to logging practices - Upgrade archiving in forestry agency into computerized system - Develop SOP
Any comment:	

9.1.2.3. Peat and Forest Fires

Parameter:	Area of secondary forest affected by fire

Description:	Secondary forest affected by fire is monitored based on hotspot data
Data unit:	Ha/yr
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the ERPA	Hotspot data will be acquired from NASA FIRMS (https://earthdata.nasa.gov/firms). The method for estimating the burnt area follows the method adapted from MRI (2013) where a peat gridded map at 1x1 km resolution is generated and overlaid with selected hotspots (those with more than 80% confidence level). The result is multiplied by a correction factor of 0.769 to generate an estimate of burnt area.
Frequency of monitoring/recording:	*Annually*
Monitoring equipment:	National Forest Monitoring System (NFMS)
Quality Assurance/Quality Control procedures to be applied:	QA/QC are directed to ensure the consistency of the method and approach adopted for estimating burnt area with the one used in the FREL development. Result of the estimation of burnt area will be verified by BAPLAN
Identification of sources of uncertainty for this parameter	Sources of uncertainty for this parameter are: (i) processing of Hotspot data; (ii) selection of confidence level of the Hotspot data for this analysis, which is >80%; and (iii) selection of correction factor of the burnt area for grid (1x1 km).
Process for managing and reducing uncertainty associated with this parameter	*Validation of the estimate of burnt area from hotspot with ground data that can be used to improve the correction factor*
Any comment:	At the moment, the Government of Indonesia is developing a new approach for the estimation of burnt area using satellite images (Landsat 7/8) in combination with hotspots and verified with observed burnt area data on the ground. This new approach might be adopted in the future as this approach will have higher certainty.

Emission Factors for peat and forest fire will not be monitored to maintain consistency with the EF used in the development of RL (using the IPCC default values).

9.2. Organizational structure for measurement, monitoring and reporting

The ER Program has two sets of organizational structures for measurement, monitoring and reporting of emissions estimates as presented in Figure 9.2

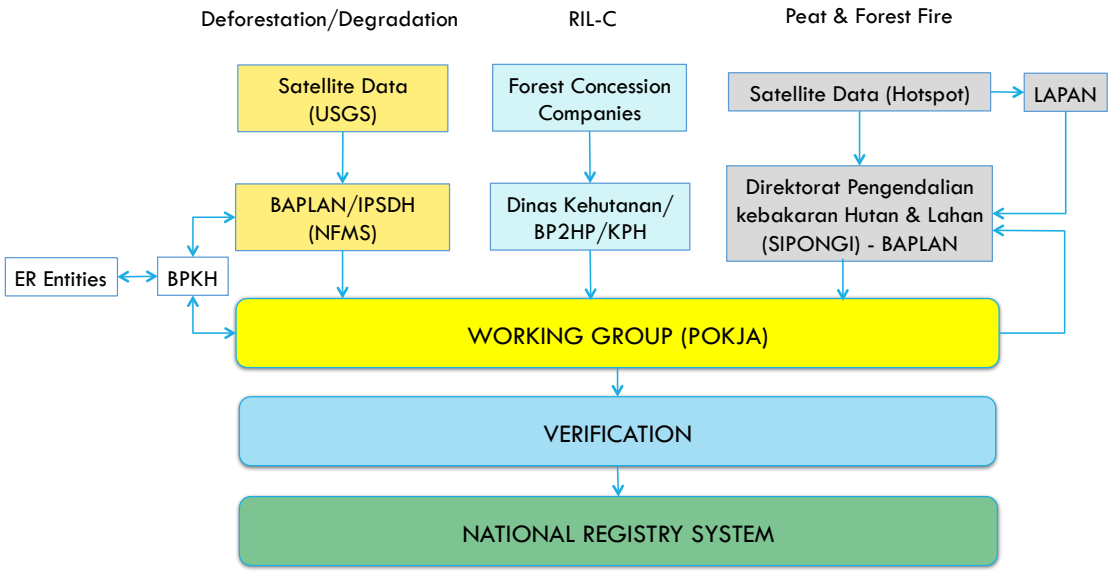


Figure 9.22 Organizational Structure for measurement, monitoring and reporting of the implementation of ER Program

Organizational Structure for measurement, monitoring and reporting of emissions from deforestation

The MMR system of the ER Program will be institutionally integrated with the national forest monitoring system (NFMS; Figure 9.3) as described in Regulation of Director General of Forest Planology Number P.1/VII- IPSDH/2015. The generation of national forest and land cover change data from satellite images is conducted by the Regional Office for the Management of Forest Area (BPKH) in East Kalimantan Province under the direction of the Directorate of Forest Resources Inventory and Monitoring (IPSDH), which is under the Directorate General of Forestry Planning and Environmental Arrangement (BAPLAN). The BPKH will receive satellite data from ISPDH. The satellite data are first acquired by LAPAN, which also does pre-processing of data up to mosaicking before sending the data to the respective institutions (including ISPDH). The visual interpretation is conducted by the BPKH using a standard methodology for land cover mapping (Margono *et al*, 2014, 2016). Results of the processing and ground check by BPKHs are sent back to ISPDH for validation by ISPDH including some necessary edge-matching as appropriate, as part of the QA/QC process. Finally, the accuracy of the interpretation is assessed by comparing the land cover maps to field data from the ground check using a contingency matrix (MoFor, 2012, Margono *et al.*, 2012). There are about 300 points for ground checking in East Kalimantan (MoEF, 2017), which are determined randomly by land cover classes. All the data from the BPKH will be consolidated to generate data on forest cover change.

The ER Program (through the Working Group) will analyze the data from the BPKH to estimate emissions from deforestation and degradation, peat decomposition, and loss of mangrove soil from the conversion of mangrove to aquaculture. Results of the estimation are then submitted to the Environmental Agency for internal verification. The Environmental Agency will then submit the results of the verified estimation to the national registry and verification system.

To facilitate the work of the Working Group, the Government of East Kalimantan has developed a web portal for the sub-national MRV system for managing all the processed data from the national and also

from local governments. The system can perform calculations of the emissions using the national data. The system is to be operated by the Provincial Environmental Office (DLH) as the East Kalimantan MRV Focal Point. The system at present is still using the temporary server of WWF Indonesia (http://mims.wwf.id/kaltim/index.php). The system will be migrated to East Kalimantan Province soon after the infrastructure for the server is ready. This MRV web portal will increase public participation of OPD to village communities or indigenous people to participate in monitoring the condition of forests and changes in the forest/land that occurs.

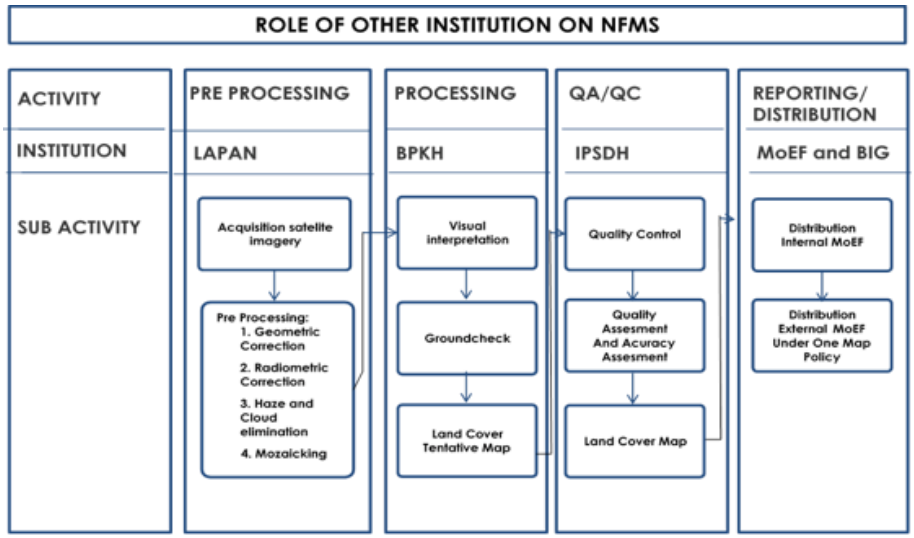


Figure 9.23. Related institutions on NFMS management (MoEF, 2017)

The process of the production of land cover maps will be on an annual basis as defined in the Regulation of Director General of Forest Planology Number P.1/VII- IPSDH/2015. The timeline of the process is shown in Table 9.2. The collection of the LANDSAT image is conducted throughout the year by LAPAN and the pre-processing of the image is conducted as the data available for producing the mosaic. The mosaic will be available by June to be distributed to IPSDH and to BPKH. BPKH under the supervision of IPSDH will do manual interpretation of the image during the period July-October, while land cover data from field visit (with defined coordinate) are collected in the period March-September. In October, all the results of the interpretation conducted by BPKH will be compile to the national by IPSDH for QA/QC and accuracy assessment. By December the result of the interpretation is finalized and reported.

Table 9. 23 Timeline of land cover change analysis under the current NFMS

No	Activity	Year (n-1)						Year (n)											
		J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
A	**LAPAN**																		
	Collecting Landsat Satelite Image																		
	Finalization of Mozaik (M)													M					
B	**IPSDH**																		
	Technical evaluation																		
	Supervision																		
	Quality Control																		
	Data finalization (DF)																		DF
	Reporting																		R
C	**IPSDH/BPKH**																		
	Data distribution (DD)																		
	Interpretation																		
	Ground Checking																		
	National Compilation of results (NC)																NC		

As shown in Figure 9.2, the ER entities (village governments, community groups, concessions), will participate in monitoring deforestation (see section 4 for the entities in the accounting areas). The ER entities will be involved in conducting ground checking and in monitoring and reporting the occurrence of deforestation in the accounting area to the Working Group. The mobile application for this has been developed (Figure 9.4) which is connected to the MRV web-portal.

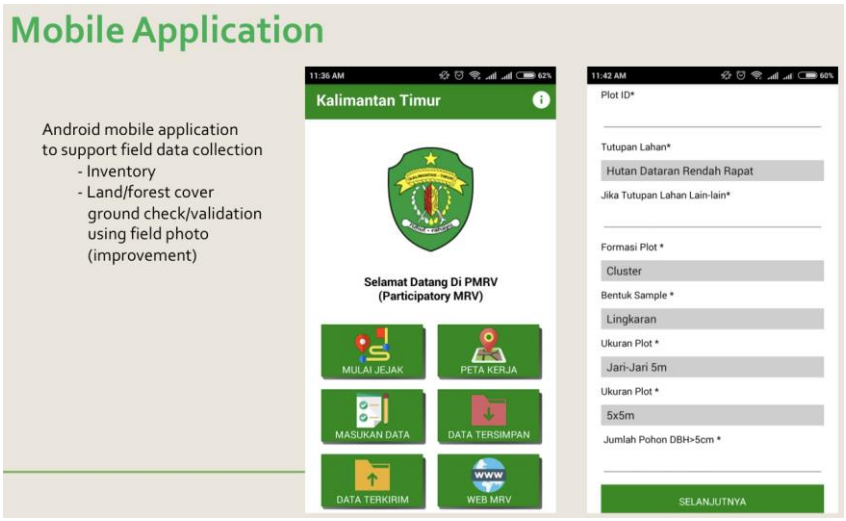


Figure 9.4. Mobile application for ER entities for supporting the MRV activities

Organizational Structure for measurement, monitoring and reporting of emissions from logging activities

As depicted in Figure 9.2, reports on logging area are submitted by the logging companies to the Province Forest Agency, and BP2HP (Agency for Production Forest Management) and also to the KPH (Forest Management Unit) as a unit responsible to manage forest at the site level. From these institutions, the ER Program (through the Working Group) will analyze data only from logging companies implementing RIL to estimate emission reductions from logging. Results of the estimation are then submitted to the Environmental Agency for internal verification. The Environmental Agency will then submit the results of the verified estimation to the national registry and verification system.

Most local agencies to be involved in the MRV process have not yet established procedures to implement their MRV tasks, thus the ER Program will also include assistance in capacity building for monitoring and reporting for these agencies.

Organizational Structure for measurement, monitoring and reporting of emissions from peat and forest fires

As seen in Figure 9.1, estimation of peat burnt area will use data derived from hotspots sourced from NASA. The processing of the hotspot data is conducted by LAPAN for the Directorate for Forest and Land Fire Control, of the Ministry of Environment and Forestry. The ER Program (through the Working Group) will access and analyze the hotspot data to estimate burnt area and greenhouse gas emission. Results of the estimation are then submitted to BAPLAN for internal verification. The Environmental Agency will then submit the results of the verified estimation to the national registry and verification system.

9.3. Relation and consistency with the National Forest Monitoring System

As mentioned above, the ER Program will use the data generated by the NFMS and the National Forest Inventory (NFI). The system provides continuous information on activity data and emission factors that can ensure the sustainability of activity data supply needed for estimating emission reductions from the implementation of the ER Program, thus ensuring consistency.

In addition, the ER Program will also include ground checking activities, as mentioned above, to increase the number of points required for the accuracy assessment. At present, due to limited budget BPKH can only do ground check in a small number of observation points. Through the ER Program, it is planned for ER Entities, as shown in Figure 9.2. This implies an urgent need for capacity building and technical assistance for ER entities.

With regard to logging, the activity data will be derived not from the NFMS but it is directly collected from the companies implementing RIL activity. However, the process of data acquisition is conducted through the existing institutional mechanism as shown in Figure 9.3.

For the development of capacity of ER entities in the implementation of monitoring and evaluation activities, the ER program will implement a number of capacity building activities. The budget plan is 418,513 USD for the capacity building on monitoring and evaluation and 6,924,317 USD for measurement and reporting of the ER Program (Table 9.3).

Table 9.24 Cost for the implementation of capacity building for monitoring, evaluation, measurement and reporting activities

Year	Implementation of monitoring and evaluation for ER program implementation (USD)	Measurement and Reporting (USD)
2020	63,654	556,415
2021	62,060	593,774
2022	66,226	3,606,316
2023	70,673	676,187
2024	75,418	721,588
2025	80,482	770,037
Total	**418,513**	**6,924,317**

10. Displacement

10.1. Identification of risk of Displacement

Table 10. 25 Risks of displacement

Driver	Risk of Displace-ment	Explanation / justification of risk assessment
Conversion of natural forest to industrial timber plantations	Low	The Program will promote the protection of remaining HCV areas within existing industrial timber concessions, thereby reducing the potential planted area. While this may create demand for new plantation concession areas, the expansion of timber plantations, unlike palm oil plantations which are associated with small scale encroachment, is tightly regulated through the concession system. Some limited displacement to other regions is possible.
Conversion of forest to estate crops	*Medium*	*The program aims to reduce conversion of forest to oil palm plantations by promoting the protection of HCV areas in concessions, and by preventing the allocation of forested land to agricultural purposes.* Oil palm plantations produce fresh fruit bunches (FFB), which need to be processed within forty-eight hours of harvest, limiting the geographic scope of direct impacts of reducing the oil palm area; i.e. reducing FFB production in East Kalimantan, will not have a direct impact on existing palm oil mills in other provinces. *While the current supply of oil palm fresh fruit bunches mostly matches local palm oil processing capacity, high profits in the sector create incentives for continued expansion. Successes in reducing the allocation of forested land to agriculture thus face some risk of being undone, but this is a risk of reversal, not of displacement.* In the long term though, more stringent policies linked to plantations and estate crops in East Kalimantan could lead industries to shift expansion to neighboring provinces. However, in that time frame, governance improvements in East Kalimantan, if successful, may well have spread to other provinces.
Forest clearing for mining	*High*	*Successes in reducing the mining industry's impacts on forests in East Kalimantan could lead some actors to shift operations to other provinces. As long as the national governance framework on mining in forested areas remains weak, the risk of displacement is high.*
Destruction of mangrove for aquaculture	*High*	*A reduction in supply of aquaculture products from participating communities, without a commensurate reduction in market demand, may be substituted by supply from other regions, leading to increased pressure on mangroves there.*
Forest clearing for subsistence agriculture	*Low*	*Forest clearing for subsistence agriculture tends to be localized in the sense that forest clearing is linked to local livelihood demands. Where forest clearing in discrete areas is controlled through regulation or through enforcement, clearing can shift to neighboring areas. The focus of the program, however, is on province-wide governance so that the risk of displacement only occurs along the province border. Also, the ERP's main approach to dealing with this driver is through the provision of alternative livelihoods, through social forestry.*
Peat fires	*Low*	Underlying causes of peat fires tend to be localized, and fires will be addressed mainly through fire prevention and control. There is no

		apparent risk of these activities leading to increased deforestation elsewhere.
Unsustainable forest harvesting (incl. illegal logging)	*Medium*	Reducing unsustainable forest harvesting may lead to reduced timber supplies in the short term, and this could lead to illegal logging being displaced to other regions. However, the implementation of RIL and other SFM practices is expected to lead to increased harvests in the long term, with reduced damage to remaining stands and improved forest conditions.

10.2. ER Program design features to prevent and minimize potential Displacement

The risk of displacement as described in Table 10.1 above indicates that risk of displacement is quite high when the REDD activities replaced the conversion of forest for the livelihood, and the risks increase if the activities being replaced provides high economic revenue such as from mining, and estate crop plantations, and aquaculture. To manage this risk, the strategy to be implemented is to accelerate and to expand the alternative economic activities particularly in areas exposed to high risk of emission (deforestation). One of the key programs is through the implementation of Social Forestry Programs to manage the risk in forest area.

As mentioned in Section 3, East Kalimantan Provincial Government has established a Working Group on Social Forestry Acceleration, which identifies, verifies and strengthens community groups, including indigenous peoples, to manage their forests. The result of identification of social forestry area is 660 thousand hectares. Community involvement around conservation forest and protected forest is done through partnership program in managing non-timber forest products and protecting forests.

Implementation of the TORA (Agrarian Reform) that will grant communities with legal right on lands will also be accelerated. Communities who already have legal status on land right will have opportunities to gain access to supporting facilities (credits, assistances, etc.) that can improve productivity of the lands. By increasing the productivity, there will be less pressure for expansion of lands to forest area. Coordination with the Ministry of Environment and Forestry will be established in realizing this program.

With regard to risk of displacement from activities conducted by private companies, the strategies to be applied is through enforcement of the existing policies such as forest and peat moratorium policies and also more stringent procedure for licensing of activities in forest areas, especially for mining and estate crops. Provincial regulation on sustainable plantation has been issued which regulate the obligation to increased productivity of plantation, utilization of low carbon stock land and/or critical land for plantation, and to conserve high conservation value areas. Regulation related to the abandoned land definition will be solved and incentive policy for the implementation of green development will also be designed.

In addition, East Kalimantan's Spatial Plan has prohibited the issuance of new coal mining licenses which is expected to reduce the threat of forest loss in the mining area. Moreover, post-mining commissions to supervise mining plans and to strengthen reclamation will be implemented as well as community participation programs through the development of community development and empowerment blueprints.

With regard to fire risks, the ER Program will empower community on responding to forest and land fire. It will also develop a model partnership between community and large companies in controlling forest and land fires. This partnership will facilitate development of community group especially in areas vulnerable to fires and provide training in community-based fire management.

The Program’s design minimizes the impact on the respective commodity sectors. The Program

supports governance improvements related to land, which are expected to improve the land-based investment climate, especially for environmentally conscious producers. Reduced social conflict and resolution of overlapping land claims is likely to open up non-forested areas to planting and mining which will partly offset any foregone production from protected HCV areas. In line with East Kalimantan's development goals, the Program supports sustainable production through certification in the oil palm and timber sectors, and RIL in natural forests. The social forestry program, for example, could lead to increased timber production. These approaches will lead to long-term increases of production of the respective commodities on a sustainable basis.

The Program is designed to support improvements beyond the accounting area, reducing the risk of displacement outside of the accounting area. As the first jurisdictional REDD+ program in Indonesia, the Program will provide important lessons to the national REDD+ framework and will support the extension of jurisdictional REDD+ programs to other provinces, including to East Kalimantan's neighboring forest-rich provinces. This is facilitated by the Program's management structure, which includes a prominent role for the central Ministry of Environment and Forestry which is managing the national REDD+ framework. Furthermore, Component 6 includes activities aimed at disseminating lessons from the program.

11. REVERSALS

11.1. Identification of risk of Reversals and
11.2. ER Program design features to prevent and mitigate Reversals

Table 11. 26 Result of the assessment of risk of reversal and mitigation actions

Risk Factor A: Lack of comprehensive and sustained support of the relevant stakeholders	
Indicators	**Mitigation Actions**
The ER program was developed through a participative process involving all relevant stakeholders as described in Section 5. Feedback from the stakeholders was properly addressed and ways to mitigate the potential impact of the ER program were also consulted and overall the participation of stakeholders during the process of the ER Program's development was high. However more consultation are needed to ensure continued buy in from local participants.	The ER Program includes activities designed to improve community livelihood Also, consultative processes are a key part of ER Program implementation and these will help to build continued ownership of the program.
There is some risk of reversals linked to unclear tenure and overlapping claims, within forested areas. While the ERP is designed to support reforms linked to forest access, it is unlikely that all conflicts will be settled during the ERPA period.	The ERP includes a number of measures for recognizing and managing conflict, as described in Section 4.4. These include supporting and refining existing local conflict handling protocols and developing the FGRM which will include a mediation mechanism.
There is some risk from issues related to benefit sharing. In East Kalimantan, benefit sharing has been implemented in several areas and standard procedures are being developed. However, there is little experience with performance-based benefits, and it will be important to manage the expectations of beneficiaries to avoid dissatisfaction with the Program, which could potentially lead to reversals.	The benefit sharing system will be prepared through a participative process at the local level with inclusion of the owners and inhabitants of forest land.
RISK RATING: MEDIUM	

Risk Factor B: Lack of institutional capacities and/or ineffective vertical/inter-sectoral coordination	
Indicators	**Mitigation Actions**
There is some risk of ineffective inter-sectoral coordination. Significant progress has been made in developing inter-sectoral coordination mechanisms; however, coordination across sectors remains a challenge in Indonesia, especially for the land-based sectors as separate ministries are responsible for mining, agriculture, and forestry.	Implementation of the ER Program is facilitated by a working group comprised of inter-sectoral and cross level (national and sub-national) components A focal point for the ER Program will be established in each relevant sectoral agency to assist in coordinating inputs from all sectors.
RISK RATING: MEDIUM	

Risk Factor C: Lack of long-term effectiveness in addressing the underlying causes	
Indicators	**Mitigation Actions**
Given the complexity of the underlying drivers of deforestation in East Kalimantan, there is some risk that these cannot be fully addressed within the ERPA timeframe.	The ERP is designed to support significant policy reforms which are supported by legal decrees and long-term planning document. The ERP will integrate REDD+ programs in regional and district development planning at provincial, district/city and village levels.
RISK RATING: MEDIUM	

Risk Factor D: Exposure and vulnerability to natural phenomena	
Indicators	**Mitigation Actions**
Most fires occur on land that is not classified as forest, and such fires would not lead to reversals.	The following activities (described in Section 4) will mitigate the risk of reversal from fire: • Expand and empower community fire brigades in managing fire risk as well as facilitate education for farmers in land clearing method without fires • Increase the capacity of local government in utilizing fire early warning system to better anticipate the fire hazards • Design measures to inform the public on ways to prevent forest fires Develop monitoring system for various types of disasters, making it possible for community to report any the occurrence of disaster event as quickly as possible
RISK RATING: MEDIUM	

11.3. Reversal management mechanism

Selection of Reversal management mechanism

Reversal management mechanism	**Selected (Yes/No)**
Option 1: The ER Program has in place a Reversal management mechanism that is substantially equivalent to the Reversal risk mitigation assurance provided by the ER Program CF Buffer approach	No

Option 2: ERs from the ER Program are deposited in an ER Program -specific buffer, managed by the Carbon Fund (ER Program CF Buffer), based on a Reversal risk assessment.	**Yes**

The ER Program will deposit 26% of the emissions reductions generated by the Emissions Reduction Program in the buffer reserve managed by the Carbon Fund (Table 11.2).

Table 11. 27 Estimation of the required ER buffer

Risk Factors	Risk Assessment	Reversal Risk Set-Aside
Default Risk		10%
A. Lack of broad and sustained stakeholder support	Medium	5%
B. Lack of Institutional Capacities and/or ineffective vertical/cross sectoral coordination	Medium	5%
C. Lack of long term effectiveness in addressing underlying drivers	Medium	3%
D. Exposure and vulnerability to natural disturbances	Medium	3%
Total Reversal Risk Set-Aside		**26%**

11.4. Monitoring and reporting of major emissions that could lead to Reversals of ERs

The ER Program's MMR system, as described in Section 9, will continue to operate beyond the lifetime of the ER Program as part of the national REDD+ framework. The MMR system will thus be able to monitor and report reversals of ERs. In the event that reversals are detected, the Carbon Fund will be notified within a time period of no greater than ninety days.

The detection of the reversals will be monitored through the MRV Web portal. The forest areas that have been saved by the ER Program in the accounting area will be delineated and monitored by the Working Group and by ER Entities. The Working Group will develop the standard operating procedure for the detection of the reversal.

12. UNCERTAINTIES OF THE CALCULATION OF EMISSION REDUCTIONS

Process for addressing uncertainty related to the REL and the calculation of emission reductions follows a stepwise process. The process involves the identification of sources of uncertainty, the minimization of uncertainty where feasible and cost effective, and the quantification of the remaining uncertainty. The ER Program uses the 2006 IPCC Guideline in estimating average annual GHG emissions in the reference period, i.e. multiplication of Activity Data with Emission Factors (AD x EF) as described in Section 8.3.1. Therefore, uncertainty in the emission estimates is linked to the uncertainties of the AD and EF inputs.

Identification of sources of uncertainty of AD

The activity data used to estimate the emissions of deforestation, forest degradation, peat decomposition, and mangrove soil came from the national land cover maps produced by MoEF. The land cover map consists of 23 land cover classes derived by remote sensing data analysis (Landsat at 30-meter spatial resolution). The object identification is purely based on the appearance on the images. Manual-visual classification through an on-screen digitizing technique based on key elements of image/photo-interpretation was applied as the interpretation/classification method. Several ancillary data sets (including concession boundaries of logging and plantation, forest area boundaries) were utilized during the process of delineation, to integrate additional information valuable for classification.

Manual classification is time-consuming and labor intensive (Margono et al., 2012, Margono et al., 2014). It involves staff from district and provincial levels to manually interpret and digitize the satellite images, to exploit their local knowledge. Data validation was carried out by comparing the land cover maps with field data. Stratified random sampling is the selected approach to verify the classification map to the field reality. Compilation of several field visit data within a specific year interval was exercised for accuracy assessment. Comparison results performed on a table of accuracy (contingency matrix), yielding an overall accuracy of 88% for all 23 classes, and 98% for aggregated classes of forest and non-forest (MoFor, 2012, Margono et al., 2012).

Emissions from peat decomposition is estimated using the activity data derived from peat land map, which is separated from land cover maps produced by MoFOR. The development of peat land map in Indonesia are closely related to soil mapping projects for agricultural development programs, conducted by the Ministry of Agriculture. Indonesia has developed a procedure for peatland mapping based on remote sensing at a scale of 1:50,000 (SNI 7925:2013). The map of Indonesia's peat land has been updated and released several times due to the dynamics of data availability. The latest Peatland Map version 2011 at a scale of 1:250,000 (national scale) is used for the emission estimation.

Estimation of emissions from logging is limited to logging data reported by the government. Annually, the logging concessions submit the annual working plan document that contain of actual logged area in previous years to provincial forestry agency and to BPHP. We used 41 concession documents to define the annual logged area in East Kalimantan. The annual logged reported in the report still need to be adjusted, since not all of forest that has been reported is logged or affected by logging practices. In addition, Ellis (2016) also found that only 69% of reported logged forests are affected by logging practices.

Based on the above practices, there are a number of main sources of uncertainty of the activities data used for estimating the emission from deforestation, degradation, peat decomposition, mangrove soil, and logging. The AD for forest cover and forest cover changes used in estimation of emission from

deforestation, degradation, peat decomposition and mangrove soils have at least three source of uncertainties namely quality of the satellite images, interpretation procedure, and sampling error that is related to the process checking the result of interpretation with ground truth or ground check. While for logging area, the main source of uncertainty related to the selection of correction factors for deriving the activity data from the reported and processed data. The description of sources of the uncertainty is presented in Table 12.1.

Table 12. 28 Source of uncertainty of Activity Data

No	Source of uncertainty	Descriptions
1	**Quality of the satellite images**	The national forest monitoring system (NFMS) in Indonesia is managed by Ministry of Environment and Forestry (MoEF). This monitoring system provides the land cover maps periodically by processing Landsat satellite images. The Landsat satellite images are suitable for land cover and land cover change interpretation in terms of spatial, spectral and temporal resolution. However, there are two sources of error related to the Landsat images. First stripping problem that makes some data from the images lost and need to be manipulated using different images. Second, Indonesia is tropical country that has a lot of cloud almost all the time. The cloud's shadows and cloud coverage will affect the quality of the images as it generates data gaps. These constraints affect the image interpretation process.
2	**Cartographic, image interpretation processes, and Land cover maps generation. (Knowledge and capacity for satellite interpretation**)	Interpretation of satellite images to produce land cover maps is done by trained interpreters who use manual or visual interpretation digitation technique. Standard Operating Procedures (SOPs) and manuals are provided to guide the interpreters do the satellite image interpretation. Manual interpretation is time-consuming and labor intensive. It involves the staff from district and provincial levels. They are expected to be able to use their local knowledge. Validation of the data is conducted through comparison of land cover types from the interpretation with ground truth. The ground truth uses stratified random sampling. Compilation of several ground truth results within a specific year interval was used for accuracy assessment that will provide level of accuracy of the land cover classes interpretation.
3	**Ground truth points (sampling error)**	Number of points to represent land cover categories will determine the level of accuracy of the assessment. Ground truth will reflect the accuracy of the interpretation with real condition. It helps to determine the accuracy of the satellite interpretation results. Therefore, number of points of ground check will significantly affect the level of uncertainty.
4	**Actual selective Logging area**	Actual selective logging area is derived from the annual logging plan document of natural logging concessions. These documents can be accessed from East Kalimantan provincial forestry agencies, but the data is managed conventionally. Currently, there is no good database management system in place. The data is often get lost therefore the logging data reported may be underestimation. In addition, the use of assumption on real affected logging area of 69% may not be accurate as this factor is generated from limited number of study areas (small sampling). Thus number of sampling contributes to the uncertainty of this data.

Steps to minimize uncertainty

The minimization of error of interpretation that normally results systematic error, as required by Indicator 8.1 of MF of the FCPF, is through the implementation of a consistent and comprehensive set of standard operating procedures (SOP), including a set of quality assessment and quality control processes, and that of sampling error is through an increased sampling. The implementation of QA/QC procedure will be enhanced, through the consistency used of the SOPs for the interpretation and training procedures. The consistency checks will be conducted by interpreters that were not involved in the original classification. Following the provisions on verification provided in Chapter 3 – Volume 1 of the 2006 IPCC GL, QA/QC measures will be complemented with verification, i.e. through an accuracy assessment. The verification will be conducted by a third party and which will serve to confirm the acceptable quality of the estimates and will enable to correct biases and respective uncertainties.

Identification of sources of uncertainty of EF

As described in Indonesian FREL document Chapter 8.3.1, the emission factors used for the estimation of emission from deforestation and forest degradation are the average estimates of carbon density of six different types of the primary and secondary forests, average emission rate from peat decomposition of different land uses.

The primary source of data used to derive emission factors was the National Forest Inventory (NFI) Plots – a national program initiated by the Ministry of Forestry in 1989 and supported by the Food and Agriculture Organization of the United Nations (FAO) and the World Bank through the NFI Project. From 1989 until 2013, more than 3,900 cluster of sample plots, have been developed and distributed on a 20x20 km, 10x10 km and 5x5 km grids across the country (Ditjen Planologi Kehutanan, 2014). Each cluster consists of 1ha size permanent sample plot (PSP) and surrounding by 8 temporary sample plots (TSP).

The majority of the plots were established in areas below 1000 m altitude. Individual trees within the 1-ha PSP were measured within 16 recording unit (RU) numbered 25x25m sub-plots. All trees with a minimum diameter of 5 cm were measured for DBH, and a sub-set measured for total tree height. Trees were also classified by local species name, crown characteristics, damage, and infestation. Site information, including observations on disturbance and regeneration, and non-tree data (bamboo, rattan, etc) was also recorded. The plots are classified under a range of types/conditions which include land system, altitude in 100 m class, land use, forest type, stand condition and plantation status, terrain, slope, and aspect. The protocols used in field sampling and system design for plot data processing for the NFI in Indonesia are described in Revilla (1992).

A total of 4,450 measurements of PSPs from NFI (1990-2013) across the country were available for data processing and analysis. All individual trees in the plot were examined and plots' information was checked for each plot to ensure correct information, as part of the quality assurance process. The data validation included: (i) checking the location of the plots overlaid with MoFor land cover map, (ii) checking the number of recording units (sub-plots) in each plot, (iii) checking measurement data through abnormality filtering of DBH and species name of individual trees in the plots, (iv) checking information on basal area, stand density, etc.

Of the 4,450 measurement data available from NFI PSPs, 80% was located in forested lands while the remaining data were located in shrubs or other lands. From PSPs located in the forestland, the data validation process reduced the usable number of measurement data to 2,622 (74.1%) for analysis. These PSPs were located in dryland forest and swamp forest. Additional forest research data especially for mangrove forests in Indonesia were included since there was no PSP record has been found in this forest type.

The AGB of individual trees in the plots were estimated using allometric models developed for pan tropical forest (Chave et al., 2005), which used diameter at breast height (DBH) and wood density (WD) of the species as the key parameters. Several other allometric models were also tested, including some local allometric models as compiled in Krisnawati et al. (2012). However, the availability of local allometric models specific for six forest types were not all represented in seven main islands of Indonesia so this generalized allometric model of Chave et al. (2005) was selected, instead. This model has been found to perform equally well as local models in the Indonesian tropical forests (Rutishauser et al., 2013; Manuri et al., 2014).

Source of uncertainty of emission factors for logging may link to skill of knowledge of the field staff in recognizing the mortality of threes that suffered by felling and skidding practices in measuring the area of haul roads and log yards and also the variation of tree hollowness.

Based on the practices used in deriving the carbon stock data, source of uncertainty for the EF on carbon density of forest types will come from tree measurement, allometric model error, sampling error, and conversion factor for biomass to carbon, and including skill and knowledge of field staff. Analysis on the source of uncertainty for the emission factors is presented in Table 12.2.

Table 12. 29 Source of uncertainty of Emission Factors (EF)

No	Source of uncertainty	Descriptions
1	**Tree Measurement errors**	The tree is measured by assessing the Diameter of breast high (DBH) of tree. It contains systematic or random error. The systematic error commonly occurs when SOP is not inappropriate for measuring the DBH. While the random error may occur due to human error which may vary from one to another.
2	**Allometric model error**	To estimate total tree biomass (carbon), an allometric equation was applied using field measurement data (DBH and tree species). Equation from Chave et al. (2015) was selected and applied for east Kalimantan. The allometric model error can be divided in the following sources: a) the error due to the uncertainty of the model's coefficients; b) error linked to the residual model error; c) the selection of the allometric model. Errors linked to the allometric equation could vary from 5 and 35% depending on the model selected (Van Breugel et al. 2011). Regarding the first and second errors, these are expected to be negligible as the parameter's uncertainty and the residual model error of Chave et al. (2014) are very low. Therefore, it is expected that the main source of error will be the selection of the allometric equation, which is relevant for East Kalimantan.
3	**Sampling error**	A sampling error might occur when the analyst does not select a sample that represents the entire population of data. In the case of forest classification, sampling is an analysis performed by selecting specific forest area of observations from a larger forest area, and this work can produce sampling errors. From the NFI, it is indicated that number of sampling for mangrove forest is very minimum. This source of error is also considered to be dominant for soil carbon for mangrove and for emission factors for peat decomposition. The soil carbon for mangrove is limited only 10 samples, similarly also soil carbon for mangrove forest converted to aquaculture. Emission factors for peat decomposition derived from a number of limited location in Indonesia.

4	**Biomass conversion factor to carbon**	To estimate the amount of carbon © in each forest type, information on carbon fraction is needed. The carbon fraction of biomass (dry weight) was assumed to be 47% (1 ton biomass = 0.47 tons C) following IPCC 2006 Guideline. Conversion of C-stock into carbon dioxide equivalent (CO2e) was then obtained by multiplying C-stock with a factor of 3.67 (44/12)
5	**Skill and knowledge to recognize the mortality of trees that suffered by felling and skidding practice, and measure the area of haul roads and log yards.**	The emission factor for the logging emission is derived from field measurements in 9 forest concessions in East Kalimantan and North Kalimantan. The key source of errors might be coming from the human error when assessor measures the suffered trees and area by logging activities. The assessor should have a good skill in recognizing the death trees due to skidding process, and measure the remaining felled trees in the forest.
6	**Different type of Hollowness of Logs**	Different type of hollowness might affect the estimation of carbon emission from the felled hollowed trees that left in the forest. The variation of tree hollowness is quite high.
7	**Mangrove soil Measurement**	Analysis of carbon stock on mangrove soil requires more effort compare to mineral soil. The condition on mangrove soil is relatively challenging because of the soil characteristic, this creates potency of measurements error. The quality/type of equipment used to take the soil sample in the belowground also produces measurement error. Using the qualified/certified equipment will reduce the error.

Steps to minimize uncertainty

Similar to activity data, the effort to minimize uncertainty in through strengthening the consistency use of SOP including trainings and increasing number of sampling. In the case EF for logging, as the national forest inventory system has not include this type of EF, efforts to reduce uncertainty will be done through the following activities:

- Developing and improving the monitoring audit protocol,
- Integrating the monitoring audit protocol into curriculum of national forest training center, to produce skilled auditor within KPH units in east Kalimantan. The training center should be conducted periodically by inviting key related field staff from KPH Units,
- Providing proper supporting tools/equipment to make the monitoring/auditing processes more efficient

12.2. Quantification of Uncertainty in REL

Quantification of uncertainty in REL is conducted using 'simple error propagation' method (IPCC 2006). We calculate the uncertainties of all activity data and emission factors before they are aggregated into estimate average uncertainty of annual GHG emissions. The estimates of the uncertainty of the AD and EF for deforestation, degradation, peat decomposition and soil mangrove were taken from National FREL and other sources including use of expert judgment as described in Section 8.

The uncertainty from activity data and emission factors attributed to ER activities (deforestation and

forest degradation, etc.) were combined using following equation:

$$Uij = \sqrt{EAij^2 + EEij^2}$$

where, U is combined Uncertainty, EA and EE is Uncertainty of AD and EF respectively, and *i* and *j* refer to forest cover class-*i* and activity-*j*.

Total uncertainty of emission estimates from all activities, is calculated using the following formula:

$$U_{total} = \frac{\sqrt{(U_1 \bullet x_1)^2 + (U_2 \bullet x_2)^2 + \ldots + (U_n \bullet x_n)^2}}{|x_1 + x_2 + \ldots + x_n|}$$

where, U_1, U_2, ... are combined uncertainty of activity-1, 2, etc., x_2, x_2 etc. are estimate of emission from activity-1, 2, etc.

The uncertainties of AD and EF related to REDD activities are presented in Table 12.3.

Table 12. 30 Uncertainties of AD and EF of REDD Activities

No	Activates	Uncertainty (%)	Notes
1	**Deforestation**		
	Activity Data	28	The uncertainty of the land cover data interpreted from the satellite for East Kalimantan is estimated following the procedure developed by the Olofsson et al. (2013). The estimation of uncertainty of the land cover map is given in Appendix 12.1.
	Emission Factor	42-53	Method to estimate the uncertainty of the emission factor for the calculating emission from deforestation is by combining the uncertainty for the emission factor of the forest lands and that of the non-forest lands (see section 8; see Appendix 12.1 for detail).
2	**Degradation**		
	Activity Data	28	The uncertainty of the land cover data interpreted from the satellite for East Kalimantan is estimated following the procedure developed by the Olofsson et al. (2013)
	Emission Factor	41-57	Method to estimate the uncertainty of the living biomass is using error propagation: sqrt(U_1^2+ U_2^2), the subscript 1, and 2 are uncertainties of EF of the primary forest and secondary forest respectively.
3	**Peat Decomposition**		
	Activity Data	20	The source of uncertainty derives from satellite images' poor quality, human error on the interpretation processes, and the insufficient number of ground truth used for accuracy assessment (Ritung et al., 2011).

	Emission Factor	50-112	Method to estimate the uncertainty of the emission factor is using error propagation: sqrt(U_1^2+ U_2^2), the subscript 1, and 2 are uncertainties of EF of land cover before and after conversion respectively.
4	**Logging**		
	Activity Data	30	The error is coming potentially from human error when the logged forest area is calculated and reported to the annual report. Another source of error also comes from insufficient data management in the provincial forest agency.
	Emission Factor	17	The error value is taken from study Griscom 2014. It is coming from the human error in recognizing the death trees and affected area due to logging operations, and from the used *allometric* model. This value might be underestimate as sampling error as number of sample is relatively limited
5	**Mangrove soil**		
	Activity Data	28	The source of uncertainty for this parameter is the same with the activity data parameter for deforestation and forest degradation above
	Emission Factor	47	The value is calculated from data collected by Kauffman et.al. (2017) in east Kalimantan from samples from 20 locations. Of the 20, 10 locations for measuring the soil carbon of the mangrove and the other 10 locations from the floor of aquaculture (abandoned shrimps ponds). The uncertainty is calculated as standard deviation of soil carbon divided by the average of the soil carbon of the 10 locations (See Appendix A12.2)
6	**Peat and Forest Fire**		
	Activity Data	50	Activity data is derived from global hot spot datasets with insufficient accuracy assessment, and from the assumption used to determine the burnt area. The error for this parameter is high.
	Emission Factors	75	The error from this parameter was taken from the study by MRI (2013) in central Kalimantan.

With the use of these data in Table 12.3, the uncertainty of the estimate of historical emission used for construction of FREL ranged between 28% and 43% with mean of about 35% (Figure 12.1; see Appendix A12.3). The uncertainty of land cover changes has not been included. This uncertainty will be underestimate.

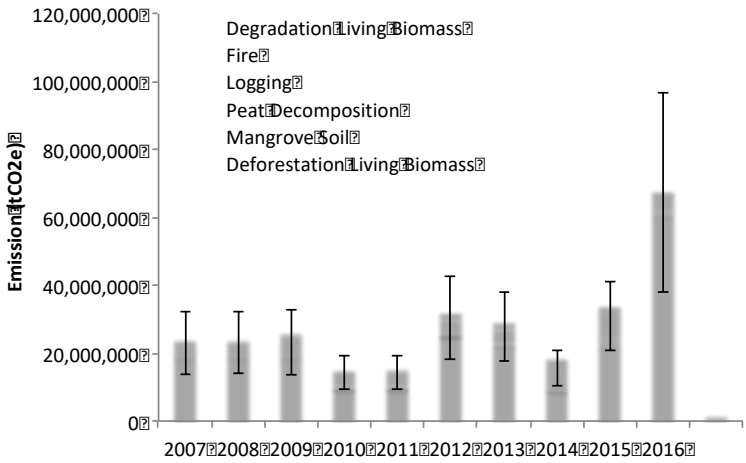


Figure 12.1. Historical emissions and the uncertainties of REDD+ Activities

13. Calculation of Emission Reductions

13.1. Ex-ante estimation of the Emission Reductions

The reference level of emissions for the ERPA period is 144.6 m tCO2, of which 74% is caused by deforestation, 14% by degradation from logging, 5% by fire, 4% by peat degradation, 2% by mangrove soils, and 1% by the degradation of primary forest into secondary forest.

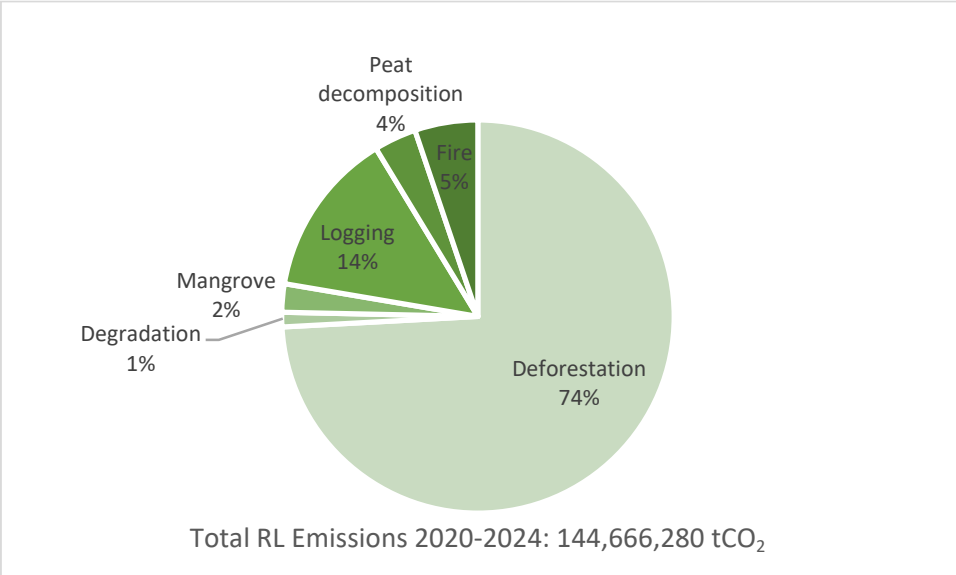


Figure 13.1. Breakdown of reference level emissions for the ERPA Period

Emission Reductions from deforestation

As discussed in Section 4, deforestation can be roughly attributed to a discrete set of drivers, as recapitulated in the table below. It is possible to estimate the share of emissions contributed by each of the drivers and to link the expected emission reductions for each driver to the ER Program components that address the driver. It is expected that improvements in governance will lead a reduction in emissions from all the drivers. For most of the drivers, program activities are expected to lead to a 20% reduction of emissions. For oil palm plantations, timber plantations, and forestry concessions the expected emission reduction is estimated at 30%. Concessions tend to have clearly defined management entities that can participate in the ER Program, and whose actions can be influenced through policies, regulations and incentives. This is less so for the areas allocated to mining, as much of this area is not managed and a key activity involves revoking those mining permits. Overall it is estimated that the ER Program will lead to a 27% emission reduction from deforestation, equivalent to 29.2 million t CO2 over the ERPA period.

Table 13. 31 Ex-ante estimation of the ERs expected from reduced deforestation

	Share of RL Deforestation	RL Emissions	ERP Components	Expected ER %	Expected ER	Expected Annual Emissions under the program
Oil Palm	51%	54,188,917	C1, C2, C3	30%	16,256,675	37,932,242
Timber plantation	14%	14,671,371	C1, C2, C4	30%	4,401,411	10,269,960
Mining	10%	10,565,328	C1, C2	20%	2,113,066	8,452,263

Overlogging/ Poor Concession Mgmt	8%	8,971,012	C1, C2, C4	30%	2,691,304	6,279,709
Illegal Logging	7%	7,221,761	C1, C2	20%	1,444,352	5,777,409
Agriculture	6%	6,799,758	C1, C2, C5	20%	1,359,952	5,439,807
Unlicensed land clearing	3%	3,738,120	C1, C2, C5	20%	747,624	2,990,496
Aquaculture	1%	1,038,867	C1, C2, C5	20%	207,773	831,094
Others	0%	69,169	C1, C2	20%	13,834	55,336
Total	**100%**	**107,264,305**		**27%**	**29,235,991**	**78,028,314**

Reduction of Emissions from Primary Forest Degradation

The emissions associated with the degradation of primary forests contribute only 1% of the total RL emissions but the ER Program recognizes the important non-carbon benefits associated with primary forests and includes a number of activities that will reduce the loss of primary forest. These include activities within protection forest areas, where around half of the remaining primary forest is found, as well as policies that will lead to improved forest governance. It is expected that the ER Program will lead to a reduction of emissions from primary forest of 30% by the end of the accounting period, leading to ERs of 345,691 tCO2e over the ERPA period.

Table 13. 32 Ex-ante estimation of the ERs expected from the ER Program addressing primary forest degradation

	RL Primary to Secondary Forest (tCO2e/yr)	**Avoided Emissions as % of RL**	**Expected Emission Reductions** (tCO2e/yr)	**Emissions under the Project** (tCO2e/yr)
2020	345,691	10%	34,569	311,122
2021	345,691	15%	51,854	293,837
2022	345,691	20%	69,138	276,553
2023	345,691	25%	86,423	259,268
2024	345,691	30%	103,707	241,984
Total	**1,728,455**	20%	345,691	1,382,764

Reduction of Emissions from Peat Decomposition

The ER Program includes a number of activities that will prevent further conversion of peatlands and help restore already degraded peatland areas. This includes support for the licensing moratorium on peat as well as for the policy to restore 50,000 ha of peatlands within estate crop concessions by 2030. For the ex-ante ER estimate, it is assumed that the program will lead to a 30% reductions of emissions from peat composition by the end of the ERPA. Over the ERPA period, it is expected that 20% of emissions from peat degradation, equivalent to 1,012,266 tCO2e, will be avoided.

Table 13. 33 Ex-ante estimation of the ERs expected from the ER Program addressing peat decomposition

Year	**RL Peat Decomposition** (tCO2e/yr)	**Avoided Emissions as % of RL**	**Ex-ante ER Estimate** (tCO2e/yr)	**Emissions under the ERP** (tCO2e/yr)

2020	1,012,266	10%	101,227	911,039
2021	1,012,266	15%	151,840	860,426
2022	1,012,266	20%	202,453	809,813
2023	1,012,266	25%	253,067	759,200
2024	1,012,266	30%	303,680	708,586
Total	**5,061,330**	**20%**	**1,012,266**	**4,049,064**

Reduction of Emissions from Mangrove soil

Annual loss of mangrove forest in the accounting area between 2006 and 2017 was 1,117 ha, of which 563 ha was primary mangrove and 553 ha was secondary mangrove forest. Overall reference level emissions from mangrove soil conversion were 674,472 tCO2e/yr. The ER Program, in particular Component 5, includes a number of activities related to the drivers of mangrove conversion and it is expected that emissions from this source can be reduced by 25% by the 5th year of program implementation. Total Emission Reductions over the ERPA period from protection of mangroves are expected to be 2.9 million tCO2e.

Table 13. 34 Ex-ante estimation of the ERs expected from the ER Program addressing mangrove loss

Year	**RL Mangrove Emissions** (tCO2e/yr)	**Avoided Emissions** (tCO2e/yr)	**Avoided Emissions as % of RL**	**Emissions under the Project** (tCO2e/yr)
2020	674,472	33,724	5%	640,748
2021	674,472	67,447	10%	607,025
2022	674,472	101,171	15%	573,301
2023	674,472	134,894	20%	539,578
2024	674,472	168,618	25%	505,854
Total	**3,372,360**	**505,854**	**15%**	**2,866,506**

Reduction of Emissions from Logging

Estimation of reduction of emissions from logging takes into account that not all forest management concessions in East Kalimantan will participate in the ER Program, and that that the adoption of RIL-C practices will increase gradually. In the initial year of the ERPA Term, the number of concessions implementing the RIL-C is expected to reach 11 concessions, increasing to 17 concessions by the end of the ERPA term. Overall it is expected that 12% of emissions linked to logging over the ERPA term, equivalent to 17.4 million tCO2e can be avoided.

Table 13. 35 Ex-ante estimation of the ERs expected from the ER Program addressing unsustainable logging

	RL Logging (tCO2e/yr)	**Avoided Emissions as % of RL**	**Expected Emission Reductions** (tCO2e/yr)	**Emissions under the Project** (tCO2e/yr)
2020	3,945,984	10%	394,598	3,551,386
2021	3,945,984	11%	434,058	3,511,926
2022	3,945,984	12%	473,518	3,472,466

2023	3,945,984	13%	512,978	3,433,006
2024	3,945,984	14%	552,438	3,393,546
Total	**19,729,920**	**12%**	**2,367,590**	**17,362,330**

Reduction of emissions from forest fire

Most of the emissions associated with fire occur on lands that are not defined as forest under the ER Program. Nonetheless, the ER Program includes a number of activities to address land fires and these are expected to lead to reduced fires both within and outside of the area defined as forest. For the calculation of ERs only the reference level emissions and reduced emissions within forests are included. It is expected that the ER activities will lead to an average 20% reduction in fire, leading to ERs of 1.5 million tCO2e over the ERPA period.

Table 13. 36 Ex-ante estimation of the ERs expected from the ER Program addressing fire

	RL Fire (tCO2e/yr)	**Avoided Emissions as % of RL**	**Expected Emission Reductions** (tCO2e/yr)	**Emissions under the Project** (tCO2e/yr)
2020	1,501,983	10%	150,198	1,351,785
2021	1,501,983	15%	225,297	1,276,686
2022	1,501,983	20%	300,397	1,201,586
2023	1,501,983	25%	375,496	1,126,487
2024	1,501,983	30%	450,595	1,051,388
Total	**7,509,915**	**20%**	**1,501,983**	**6,007,932**

Total Expected Emission Reductions

Table 13.37 Total expected gross Emission Reductions

Year	Deforestation	Degradation	Mangrove soil	Peat Decomp	Fire	Total	RL Emissions	ER
2020	15,605,663	3,862,508	640,748	911,039	1,351,785	22,371,743	28,933,256	6,561,513
2021	15,605,663	3,805,763	607,025	860,426	1,276,686	22,155,562	28,933,256	6,777,694
2022	15,605,663	3,749,019	573,301	809,813	1,201,586	21,939,382	28,933,256	6,993,874
2023	15,605,663	3,692,274	539,578	759,200	1,126,487	21,723,201	28,933,256	7,210,055
2024	15,605,663	3,635,530	505,854	708,586	1,051,388	21,507,021	28,933,256	7,426,235
ERPA Period	78,028,314	18,745,094	2,866,506	4,049,064	6,007,932	109,696,910	144,666,280	34,969,370

Net Emission Reductions after accounting for uncertainty and buffer

The level of uncertainty of the REL estimate, not including the uncertainty estimate for land-cover change is 28% (see Section 12). It is assumed that the aggregate level of uncertainty lies between 30 and 60%, requiring a conservativeness factor of 8% to be applied to the ex-ante ER estimate. After subtracting the buffer set-aside for reversals of 26%, the net expected ER are 23.8 million t CO2.

Table 13.38 Total expected net Emission Reductions

Year	Gross ER	ER after 8% Uncertainty	26% Buffer	Net ER
2020	6,561,513	6,036,592	1,569,514	4,467,078
2021	6,777,694	6,235,478	1,621,224	4,614,254
2022	6,993,874	6,434,364	1,672,935	4,761,429
2023	7,210,055	6,633,250	1,724,645	4,908,605
2024	7,426,235	6,832,136	1,776,355	5,055,781
ERPA Period	**34,969,370**	**32,171,821**	**8,364,673**	**23,807,147**

14. SAFEGUARDS

14.1 Description of how the ER Program meets the World Bank environmental and social safeguards (WB-SESA) and promotes and supports the safeguards included in UNFCCC guidance related to REDD+

14.1.1 Indonesia's REDD+ Safeguards processes

The following section provides a description of the key processes that the Government of Indonesia (GoI) has undertaken to strengthen the country's safeguards systems in preparation for the ER program implementation. An analysis of potential risks and impacts, as well as their respective mitigation measures is presented in section 14.1.2.

The Government of Indonesia (GoI) has mainstreamed environmental and social risk mitigation measures into the ER program development through an interlinked process for the development of key safeguards instruments specific for REDD+. These instruments include:

a) the REDD+ Safeguards Information System (known as SIS-REDD+)
b) the national safeguards framework (known as PRISAI (*Prinsip Kriteria Indikator Safeguards Indonesia*)
c) the REDD+ Social and Environmental Standards for East Kalimantan Province (known as SES-REDD+ Kaltim)
d) the Strategic Environmental and Social Assessment (SESA) and subsequent Environmental and Social Management Framework (ESMF), and
e) a Feedback, and Grievance Redress Mechanism (FGRM).

While the development of the first three instruments is well advanced, the SESA, ESMF and FGRM are still being finalized. The SESA is expected to provide further context-specific information on environmental and social risks and impacts in East Kalimantan. The assessment also considers local institutional capacity to address the identified risks, and will inform the preparation of the ESMF to ensure the risks are minimized and impacts avoided or mitigated appropriately. The SESA is expected to support further refinement as well as operationalization of the other above instruments.[38]

To date, substantial efforts have been mobilized by MoEF and East Kalimantan Government to meet the World Bank and UNFCCC safeguards requirements. These include (a) various consultations with a broad range of stakeholders, including government agencies, private sector entities, universities, research institutes, civil society organizations, as well as potentially affected

[38] The SIS-REDD+ consultation process, as an example, was intensively carried out from 2011 to 2012. Prior to this, two influential analytical works were carried out by Daemeter Consulting, which were further consulted in the stakeholders meeting for further feedback (Centre for Standardization and Environment. 2013. Principles, Criteria and Indicators for a System for Providing Information on REDD+ Safeguards Implementation (SIS-REDD+) in Indonesia. Centre for Standardization and Environment, Ministry of Forestry, and Forest and Climate Change Programmed, Deutsche Gesellschaft fűr Internationale Zusammenarbeit.)

community groups, (b) relevant analytical work and policy development processes pertaining to REDD+ development, taking into account possible social and environmental risks and adverse impacts and (c) development of initial measures to minimize and/or offset such risks and impacts, such as on biodiversity, livelihood and land titling.[39] A compilation of background information for the development of REDD+ in Indonesia, covering more than 400 identified materials and documentation of earlier processes has been compiled in 2016 with support from the FCPF-World Bank (see Annex 14.1.). These materials will inform the finalization of the SESA and ESMF. Safeguards capacity building on World Bank's safeguards was conducted in 2017, targeting key stakeholders in East Kalimantan.

Earlier and on-going safeguards preparation processes have been instrumental in bringing together international good practices for adoption in the country's safeguards systems, and particularly, the relevant REDD+ system. The processes have been led by the GoI and supported by various development partners, including NGOs and CSOs[40] working in East Kalimantan. Stakeholders' inputs and concerns have been collected in a participatory manner, involving a series of national and sub-national consultative workshops, Focus Group Discussions (FGDs), informal discussions with target communities and document reviews. The SIS-REDD+ consultation process, for instance, was intensively carried out in 2011 and 2012, involving multiple stakeholders, including community representatives.[41] The SIS development represents the earlier process for safeguards preparation under REDD+.

The SIS-REDD+ has been established as a web-based platform to monitor safeguards performance across program interventions. The PRISAI and SES-REDD+ Kaltim outline safeguards compliance standards consistent with World Bank safeguards principles, and include safeguards performance indicators that will need to be achieved by program entities. The ESMF and FGRM, which are currently being finalized, will serve as reference safeguards instruments that will bring together earlier safeguards initiatives into a more comprehensive framework. An interactive web portal for SIS-REDD+ administered by the Directorate General of Climate Change (DG of CC) of MoEF, was developed to enable accessible and direct reporting of safeguards performance across implementing entities.

A parallel initiative, PRISAI, was conducted to further elaborate the Cancun safeguards. The national PCIs were further reviewed and summarized in the PRISAI document, which outlines 10 principles, 27 criteria and 99 indicators, with an expanded focus on finance and fiduciary aspects.[42] PRISAI is built on a set of jurisdictional and project-level safeguards standards[43] developed by the GoI through the (now defunct) REDD+ Task Force, whose work was carried over to the REDD+ Agency. PRISAI was initially designed as a framework to filter, monitor, and evaluate

[39] FCPF. TAP review of the R-Package Submitted by Indonesia, September 2017, p.19
[40] Among others are TNC, GGGI, BIOMA, WWF.
[41] Centre for Standardization and Environment. 2013. Principles, Criteria and Indicators for a System for Providing Information on REDD+ Safeguards Implementation (SIS-REDD+) in Indonesia. Centre for Standardization and Environment, Ministry of Forestry, and Forest and Climate Change Programmed, Deutsche Gesellschaft fűr Internationale Zusammenarbeit.
[42] Clarifying and ttranslating Cancun safeguards into country contexts is also conducted by other countries such as Vietnam, Ecuador, Democratic Republic of Congo, Ghana, Malaysia, Mexico, Zambia (UN REDD Program, UN REDD Programmed. December 2015)
[43] UN REDD Program. December 2015. Country Approaches to REDD+ Safeguards: A Global Review of Initial Experiences and Emerging Lessons.

REDD+ activities at the project and jurisdiction levels. PRISAI has been tested in several sites in East Kalimantan, Central Kalimantan, and Jambi provinces, and mainstreamed into the SIS-REDD+.

The above safeguards instruments, supported with analytical processes currently being undertaken under the SESA, are expected to enhance the existing country systems for the management of environmental and social aspects of the ER program. Indonesia is equipped with a strong legal framework for the management of environmental and social impacts of development activities, which are applicable for activities under the ER program. Relevant mechanisms include: mandatory Environmental Impact Assessments (AMDAL, UKL/UPL), Strategic Environmental Assessments (KLHS) for policy development and spatial planning processes, and the Sustainable Production Forest Management (PHPL) system. In addition, there are a number of existing certification schemes that can be relied upon for specific ER activities, such as the Indonesian Ecolabel Institute (Lembaga Ekolabel Indonesia/LEI), the Forest Stewardship Council (FSC), and the Verification System of Timber Legality (SVLK) standards for ensuring sustainable forest management practices. In the oil palm sector, the Roundtable for Sustainable Palm Oil (RSPO) and the Indonesian Sustainable Palm Oil (ISPO) set out compliance standards for the management of environmental and social aspects along oil palm value chains. These safeguards instruments contain specific mechanisms for oversight of environmental and social aspects of specific programs, grievance redress mechanisms, and reporting compliance based on self-assessments and independent audits. This ESMF developed under the program will build on the existing country systems and ensure that any gaps against the World Bank's safeguards policies are addressed.

Analysis carried out during the SIS-REDD+ process, indicates that existing instruments in general provide adequate coverage for many of the Cancun Safeguards. The analysis found that Cancun Safeguards 1 to 5 are well covered, with Safeguard 6 (permanence of carbon) and Safeguard 7 (leakage of carbon) requiring better coverage. Voluntary standards for sustainable forest management (SFM), for instance LEI and FSC standards, KLHS and HCV achieved relatively high scores with regards to their relevance with the Cancun Safeguards, followed by FPIC, AMDAL and PHPL/SVLK. In terms of regulatory/policy requirements, these instruments call for good governance, protection of Indigenous Peoples' rights, and effective stakeholder engagement. However, gaps were observed with regards to implementation practices and capacities on the ground. Law enforcement also represents an important area for improvement. Additional guidance for implementation, impact monitoring system(s), and capacity strengthening at the sub-national level, as well as an overarching framework for institutional coordination and reporting standards were identified as key areas for improvements. The finalization of the ESMF is expected to lay out the road-map for strengthening the ER safeguards systems at both national and sub-national levels.

Table 14.39 Overview of instrument relevance and coverage of safeguards against Cancun safeguards

Instrument[1]	Scoring of key relevant components to Cancun Safeguards[2]								
	NFP/ conventio	Good governance sovereignty	Respect to Indigenous peoples	Stakeholders engagement	Biodiversity, forest,	Permanence of Carbon	Leakage Carbon	Mean Score	Rank
PHPL/SVLK	2	2	2	2	2	1	1	1.7	6

SFM	3	3	3	3	2	2	1	2.4	1
KLHS	2	3	3	3	2	2	2	2.4	1
AMDAL	2	2	1	2	2	2	1	1.7	1
HCV	2	3	3	3	3	2	1	2.4	4
FPIC	3	1	3	3	2	1	1	2.0	4
SESA	2	1	2	3	3	1	1	1.9	5
Overall Coverage (mean score)	2.3	2.1	2.4	2.7	2.3	1.4	1.1		

[1] *PHPL/SVLK=Pengelolaan Hutan Produksi Lestari/Sistim Verifikasi Legalitas Kayu (*Sustainable Production Forest Management/System for Verification of Timber Legality; SFM = Sustainable Forest Management, KLHS = *Kajian Lingkungan Hidup Strategis* (Strategic Environmental and Social Assessment/SESA, the GoI's version); AMDAL = *Analisis Mengenai Dampak Lingkungan* (Environmental and Social Impact Assessement); HCV = High Conservation Value, FPIC = Free, Prior and Informed Consultation; SESA = Strategic Environmental and Social Assessment (the WB version).

[2] Every instrument was scored against each Cancun safeguards components. The mean score of each component is calculated to show overall coverage. The color coding corresponds to qualitative assessment of relevance and coverage of the instruments based on the scoring:

: **Good** **:** **Adequate** **:** **Weak**

Source: Centre for Standardization and Environment (2013): Principles, Criteria and Indicators for a System for Providing Information on REDD+ Safeguards Implementation (SIS-REDD+) in Indonesia. Centre for Standardization and Environment, Ministry of Forestry, and Forests and Climate Change Programme, Deutsche Gesellschaft für Internationale Zusammenarbeit. P.6

As part of the SES-REDD+ development for East Kalimantan, an initial process to assess institutional readiness at the provincial and district levels for the management of environmental and social aspects of the ER program was conducted. This assessment will be further refined as part of the on-going SESA process. The initial assessment is presented in the REDD+ SES document. General findings are summarized as follows:

- The level of transparency and access to information and documentation to assess safeguards performance such as AMDAL, KLHS, HCVF, Forest Management Unit (FMU) annual plans, district medium term plans vary across districts. Communities often have the least access to such information.
- Environmental management responsibilities tend to be concentrated at the provincial and district environmental agencies, and are not well institutionalized across relevant agencies under the ER program.
- Conflict and dispute mechanisms exist. However, such mechanisms are not fully supported by formal regulations/standardized protocols. Grievances are often handled on an ad-hoc basis by relevant agencies and/or parties in dispute.
- District-level regulatory frameworks to support operationalization of safeguards measures are not available in some districts. These include definition of carbon rights and benefit sharing, provisions of free, prior and informed consent (FPIC), etc.
- Understanding and awareness of REDD+ and more specifically safeguards still varies across key agencies, private entities, and community groups.

SES-REDD+ in East Kalimantan has been developed to ensure that key issues in land and natural resource governance in the Province are captured in the safeguards monitoring systems. Further work, being commissioned by the DG of CC, is underway to streamline the SIS-REDD+ with SES-REDD+ for East Kalimantan to ensure a harmonized system. There are eleven key issues identified in the SES-REDD+ East Kalimantan that have been taken into account in the ERP. These eleven key issues can be grouped into six major components:

a) rights to land and territory, natural resources, and traditional knowledge;
b) forest governance, leakage and reversals, biodiversity and ecosystem;
c) transparency and accountability;
d) community's welfare;
e) gender equality and inclusiveness participation, particularly those of marginalized and vulnerable groups; and
f) benefit sharing arrangements.

The issues above are expected to be addressed under East Kalimantan's ERP. The issues of land and territory, leakage and reversal prevention, biodiversity and ecosystem conservation, will be addressed in conjunction with support to community welfare and livelihoods, access rights to use of land and natural resources, protection of local wisdom, and gender equality and social inclusion (e.g. participation of Indigenous Peoples and *Adat* communities as well as marginalized and vulnerable groups). Addressing these issues is expected to feed into, and subsequently enhance the program's benefit sharing mechanisms, forest governance, including prevention of leakage and reversals, transparency and accountability. Interlinkages amongst these initiatives have been observed in the ERP design. Synergy and coordination between national, provincial and district levels for safeguards management will continue to be defined and strengthened as the ER Program is being prepared and implemented.

Table 14.40 Matrix of important issues in East Kalimantan with Principles and Criteria of each SG initiatives

Important issue in East Kalimantan	SES - REDD+	PRISAI	SIS-REDD+
1. Rights to land and territory	P1	P1	P3.C1
2. Rights to use of natural resources	P1	P1	P3.C1
3. Recognition and appreciation of wealth of traditional knowledge	P6.C2	P4	P3.C4
4. Forest Governance	P4	P3	P1, P2
5. Prevention of leakage	P5.C3	P8	P6, P7
6. Prevention of Reversals	P2	P7	P6
7. Transparency and accountability	P2.C2, P4	P10	P2
8. Conservation of biodiversity and ecosystem services	P5	P6	P5
9. Improving people's welfare	P3	N.A.	P2.C2-C3
10. Community participation of customary/local or vulnerable/marginalized groups including gender issues	P3.C2, P6	P5	P4, P2.C1
11. Benefit sharing	P2	P9	P3.C2-C3-C4

Compatibility Analysis between Indonesian Safeguards and the World Bank Safeguard Policies

A compatibility analysis for identifying possible gaps is conducted on the relevant instruments of the existing Safeguards of the WB and GoI, against the identified environmental and social impacts of ERP (described in Section 14.1.2.2). This is to ensure that the overall issues will be well addressed and managed. Including in the compatibly analysis is the relevant Indonesia's regulatory frameworks at national and sub-national

level. Table 14.3. presents the initial findings of the compatibility analysis. ~~.From this~~ This table needs to be read in conjunction with Table 14.7. on the summary of issues/risks/impacts and subject for further refinement upon SESA's findings:

Table 14. 24 **Compatibility Analysis between Existing Indonesia's Safeguards (Including relevant regulatory frameworks) with the World Bank Safeguards Policies.**

Summary of Risks / Impacts	Priority Level*	Indonesian Safeguards*				World Bank Safeguard Policies	Identified Gaps
		Key Relevant GOI Regulatory Frameworks**	SIS RED	PRI SAI	SES REDD Kaltim		
1. Tenurial Conflicts and Disputes	1	On conflict handling: GR. No. 2/2015; Joint Regulation of . MOHA, MOEF, PWH, and Head of BPN No. 79/2014, 3/2014, 1/2014, and 8/2014 on Conflict Handling; MR of MoEF No. 83/2016 on Social Forestry On Tenurial conflict, esp. *adat* community: Law No 32/2009 on Environmental Protection and Management; Law No 19/2004 on Forestry; Law No 18/2013 on Prevention and Abolition of Forests Destruction; Law no 26/2007 on Spatial Planning; MR of MoHA No 52/2014 on the Guidelines for the Recognition and Protection of *Adat* Community; PR No. 88/2017 on Land Tenure Settlements in Forest Areas.	P 3	P 1	P 1	OP/BP 4.01, 4.12, 4.10.	No gap is identified. The tenurial rights, particularly of *Adat* community, are well protected by the existing legal frameworks. The conflict handling will be equipped further with an FGRM for ERP (Section 14.3). Wherever relevant, as identified in SESA's findings, IPPF will be developed. **Note**: In addition other regulatory frameworks that are not key but relevant (such as GR No 14/2015 on the Master Plan for National Industry where IP is identified is key), will also be considered.
2. Lack of Participation	5	Law No 25/2004 on National Planning Development System; MR of MOEF No. 17/2012 on Public Involvement into AMDAL; GR No. 3/2008 on FMU Planning	P 4	P 5	P 6	OP/BP 4.01, 4.04, 4.10; 4.12, 4.11, 4.36	No gaps are identified Note: The IP participation is well recognised in the Law No 25/2004
3. Access Restrictions and	3	MR of MoEF No. 83/2016 on Social Forestry; Regulation of	P 3	P 4	P 3, 1	OP/BP 4.01, 4.04, 14.12, 4.36,	No gaps are identified

Summary of Risks / Impacts	Priority Level*	Indonesian Safeguards*				World Bank Safeguard Policies	Identified Gaps
		Key Relevant GOI Regulatory Frameworks**	SIS RED	PRI SAI	SES REDD Kaltim		
Impacts on Livelihoods Changes		the Directorate General on the Conservation of the Ecosystem Resources, No. P.6/2018 on Conservation Partnership					
4. Institutional Capacity Constraints to Manage Potential Environmental and Social Risks	2	Law no. 32/2009 on Environmental Protection; MR of MoEF No. P.94/2016 on Invasive Species; MR of MoEF No. 17/2012 on Public Involvement in AMDAL; MR of MA No. 11/2015 on ISPO; GR No. 46/2016 on SEA	P 1	P 2	P 4	OP/BP 4.01, 4.04, 4.10, 4.11, 4.12, 4.36,	No gaps are identified
5. Lack of effective and accessible FGRM	7	GR. No. 2/2015; Joint Reg. between MOHA, MOEF, PWH, and Head of BPN No. 79/2014, 3/2014, 1/2014, and 8/2014 on Forest Land Conflict Handling; MOEF Reg. No. 84/2015 on Forest Tenurial Conflict Resolution Guidelines.	P 2 & 3	P 1, 9, 10	P 7, 2, 3	OP/BP 4.04, 4.10, 4.11, 4.12, 4.36	A gap is identified re the establishment of FGRM for ERP. An initial FGRM has been identified (section 14.3) and is subject for refinement upon completion of the current assessment on effective FGRM, being conducted in conjunction with SESA.
6. Gender Inequalities and Social Exclusion	6	PI no 9/2000 on Gender Mainstreaming MR on Gender Mainstreaming Implementation, such as MR of MOHA No. 15/2008 and No. 67/2011 and MR of MoEF No p.31/menlhk/setjen/set.1/5/2017.	P 3	P 4, 5	P 3	OP/BP 4.10, 4.12, 36	No gaps are identified
7. Governance Risks	4	Forestry Law no. 41/1999 jo 19/2004; Law no. 32/2009 on Env. Protection; Law no. 6/1994, Law no. 17/2004, Law No.	P 2	P 3	P 4	OP/BP 4.04, 4.10, 4.11, 4.12, 4.36	No gaps are identified

Summary of Risks / Impacts	Priority Level*	Indonesian Safeguards*				World Bank Safeguard Policies	Identified Gaps
		Key Relevant GOI Regulatory Frameworks**	SIS RED	PRI SAI	SES REDD Kaltim		
		16/2016 on Climate Change; Law No 14/2008 on open Public Information; GR No. 46/2016 on SEA					

Notes:

* Priority Level is measured through assessing the following three indicators of: (a) The likeliness for the issue to happen due to ERP implementation, (b) The complexity and seriousness level, (c) The availability of existing mechanisms to respond to the risks/impact.

** List of Indonesian Regulations contain the most relevant one with the issues/risks. More regulations at the project implementation level are described in the SESA and ESMF. Between SES-REDD+, PRISAI, and SES-REDD+, SIS-REDD+ is the most recognised and nationally accepted and referred in Indonesia.

Abbreviation: MR=Ministerial Regulation, GR=Government Regulation, MoEF=Ministry of Environmental and Forestry, MA=Ministry of Agriculture, MOHA=Ministry of Home Affairs, FGRM=Feed Back Grievance Response Mechanism, IP= Indigenous People, IPPF= Indigenous People Planning Framework, SEA=Strategic Environmental Assessment; PI=Presidential Instruction; PR=Presidential Regulation.

~~The full assessment of gap analysis is presented in Annex XX of this report.~~ Overall, there is no significant gaps between Indonesian safeguards and the World Bank safeguards policies, except on the FGRM. The analysis however is subject for refinement upon completion of the assessment (SESA, FGRM and BSM) currently being conducted by the Government. The gaps, wherever identified, will be used to further refine the safeguards.

The on-going SESA is in the process of finalization with additional field assessments being carried out to better understand potential environmental and social risks and impacts in the jurisdictional context of East Kalimantan. In Indonesia, the selection of East Kalimantan province for the ER program location as well as the identification of ER priority interventions occurred while the SESA process is ongoing. This created a demand from the government side to undertake further SESA processes, particularly to better identify risks and impacts and strengthen local stakeholder engagement, including potentially affected communities. The SESA also aims to look at potential opportunities and key challenges for the operationalization of the FGRM under the program, particularly with regards to people's access to information and ability to provide feedback as well as raise complaints and necessary resources and capacities for managing potential grievances.

SESA is expected to take stock of various existing environmental and social assessments for specific development activities as well as policy development processes at both the national and sub-national levels. In 2011, the GoI issued the Ministerial Regulation of MoEF no. 9/2011 which mandates sub-national governments to conduct strategic environmental assessments (KLHS)[44] for the purpose of the development of sub-national spatial plans. The enactment of the

[44] Whilst some, with reference to the WB's SESA, argue that KLHS cannot be considered as SESA, Law No 32/2009 stipulates that '*lingkungan hidup*' consists of all non-living and living things in a particular area, including human behaviour that affect the environment in both positive and negative manner. As such, KLHS is a GoI's version of SESA that deserves further supports in moving towards international compliance. This is especially considering that KLHS is

regulation suggests that assessments of environmental aspects of policy and spatial planning processes have been mainstreamed in the country systems, in addition to earlier AMDAL (Environmental and Social Impact Assessments) for specific development activities. Such commitments have been translated in the National Long-Term Development Plan (*Rencana Pembangunan Jangka Panjang Nasional*) 2005 – 2025 and the current Mid Term Development Plan (*Rencana Pembangunan Jangka Menengah Nasional*) 2015- 2019, where the GoI has articulated deforestation and forest degradation as threats to development, which need to be addressed.

Using the available information and consensus generated through the interim SESA (Annex 14.3) and earlier safeguards processes, MOEF in close collaboration with East Kalimantan Government is also in the process of developing an ESMF to manage environmental and social risks considered under ERP. A summary of potential risks and impacts is summarized in Section 14.1.2 and further elaborated in Annex 14.2. The ESMF seeks to consolidate existing safeguard instruments developed as part of ER readiness as well as capture emerging risks that evolve as the Program design is being further refined and finalized. The ESMF will lay out the required environmental and social risk management procedures to address identified risks and impacts, by adopting a risk mitigation hierarchy to avoid potential impacts. The ESMF also seeks to define roles and responsibilities of different stakeholders at various levels, acknowledging that activities under ERP will cover broad sector categories and involve multiple agencies both at national, provincial and district levels during implementation. A road-map for ESMF implementation, including safeguards capacity building, development of necessary guidelines and manuals, integration with the SIS-REDD+ for safeguards monitoring and the FGRM, as well as a requirement for an independent safeguards performance evaluation and participatory community monitoring will be established as part of the ESMF. The ESMF will be applicable to the parallel investments directly financed by the World Bank. The GoI attempts to ensuring consistent ESMF application and compliance to PCIs for investments financed by the government budget (from both the national and sub-national allocation), private entities, as well as other financing partners.

The final SESA report and ESMF will be disclosed and cleared by the World Bank prior to the World Bank's appraisal of the program. Stakeholder engagement, including public consultations with affected communities, is on-going and will continue as part of the SESA process and ESMF development. The following table (Table 14.3) outlines the expected milestones towards finalization of the SESA and ESMF.

Table 14. 25 Milestones for SESA and ESMF

Time line	Milestone	Note
End of 2017	TOR for SESA and ESMF was revised and approved by the World Bank	• The earlier version of the SESA/ESMF TOR has been adjusted following the selection of East Kalimantan and formulation of strategic options.
February – June 2018	Procurement process and appointment of a consulting company for the finalization of SESA and ESMF.	• Public announcement for calling of bidding has been completed. • Six companies have been identified and short listed for further selection processes.

made obligatory for sub national government to feed into the sub national development plan (*Rencana Pembangunan Jangka Menengah Daerah/*RPJMD)

Time line	Milestone	Note
July – August 2018	First draft of SESA and ESMF	• Additional field work and series of stakeholders' consultations for the development of the SESA and drafting of the ESMF. • Face-to-face and web-based public consultation on the 1st draft.
September – October 2018	Second draft SESA and ESMF	• Public validation consultations for SESA and ESMF. • Face-to-face and web-based public consultation on the 2nd draft of SESA and ESMF.
End of December 2018	Final SESA & ESMF	• Public disclosure of final SESA & ESMF;
2019 onwards	ESMF Capacity building/training	• ESMF dissemination and capacity building/training.

In parallel to these on-going efforts, the GoI has also issued Ministerial Regulation of MoEF no 9/2011 which requires sub-national governments to conduct strategic environmental and social assessments (KLHS)[45] during the development of sub-national spatial plans. This indicates GoI's commitments to mainstream environmental and social good practices in policy making processes, as relevant to the SESA. Such commitments have been translated in the National Long-Term Development Plan (*Rencana Pembangunan Jangka Panjang Nasional*) 2005 – 2025 and the current Mid Term Development Plan (*Rencana Pembangunan Jangka Menengah Nasional*) 2015-2019, where the GoI has articulated that deforestation and forest degradation are development issues and therefore, needs to be addressed.

14.1.2 Environmental and social risks and impacts, and mitigation measures

This sub-section contains a summary of mitigation measures to the risks and impacts of the ERP referring to the triggered World Bank Safeguards Policies. This section contains two sub-sections. The first outlines the relevance of the triggered World Bank Safeguards Policies in the ERP, and the second provides a summary of environmental and social potential risks and impacts, and mitigation actions, with a detailed description being appended in Annex **14.2 and Annex 14.3**.

The ER Program triggers the following World Bank Operational Policies (OPs):

- Environmental assessment (OP 4.01)
- Natural Habitats (OP 4.04)
- Pest Management (OP 4.09)
- Indigenous Peoples (OP 4.10)
- Physical Cultural Resources (OP 4.11)
- Forests (OP 4.36)
- Involuntary Resettlement (OP 4.12)

[45] Whilst some, with reference to the WB's SESA, argue that KLHS cannot be considered as SESA, Law No 32/2009 stipulates that '*lingkungan hidup*' consists of all non-living and living things in a particular area, including human behaviour that affect the environment in both positive and negative manner. As such, KLHS is a GoI's version of SESA that deserves further supports in moving towards international compliance. This is especially considering that KLHS is made obligatory for sub national government to feed into the sub national development plan (*Rencana Pembangunan Jangka Menengah Daerah*/RPJMD)

In addition, the ERP also attempts to address gender and development and social inclusion for vulnerable groups as cross-cutting issues across ERP interventions.
Further explanation with regards to the rationale of triggering these policies and how gender concerns and social inclusion are being addressed in the ERP is presented in section 14.1.2.2.

14.1.2.1 The World Bank Safeguards Policies and their Relevance to ERP

Environmental Assessment (OP 4.01)

In compliance with WB OP 4.01 on the environmental assessment, key assessments as outlined in this policy such as SESA, EIA, ESIA, regional or sectoral EA have been and will be conducted in the ERP insofar relevant. The use of country systems such as AMDAL, UKL/UPL in lieu of the assessments mentioned, will also be applicable as per-GoI's regulations on environmental management. Some preliminary assessments as part of SESA and ESMF processes have been conducted and will be refined further. Other program and/or activity-level environmental assessments will be part of the requirement for program activities in accord with the existing Government regulatory frameworks on environmental management. These processes and documents have informed the development of the ERP supported by the World Bank.

An initial identification of potential risks, impacts, and proposed mitigation measures has been conducted, and further details are provided in Annex 14.2 and Annex 14.3. An indicative ESMF, which is subject to further refinement as the SESA is being finalized, has been developed based on the risks identified from the initial SESA process and other earlier assessments and consultations. Relevant risks, impacts and mitigation measures as part of safeguards requirements are aligned with the analysis of the drivers of deforestation and degradation and subsequently, informed the design and selection of program components, sub components and activities included in the ERP. Capacity building on the SESA and ESMF has also been identified and budgeted as part of the ER program component activities under the program management. Some of the identified challenges that may impact on safeguards are related to capacity and resource constraints which affect oversight ability amongst program entities, incentives for compliance and reporting of safeguards performance to the SIS-REDD+, lack of awareness of the broader REDD+ program, and safeguards requirements at the local and community levels.

The Natural Habitat (OP 4.04)

The Natural Habitat (OP 4.04) is one of the major concerns of Indonesia's ERP with more positive than potential negative impacts on natural habitat. The overall ER Program aims at maintaining and restoring natural habitat since degradation and deforestation in areas with HCV are major contributors to emissions. These measures will facilitate positive impacts that include, among others: restored and better maintained biodiversity, environmental services and ecosystems; reduced deforestation and increased carbon uptake; reduced degraded land; better protected forest areas and wildlife habitats; decreased fire hotspots; enhanced ecosystems; reduced GHG emissions; reduced possible risks of changes in physical and chemical properties of the soil; more appropriate measures for post-mining reclamation and revegetation; better assurance for well qualified reclamation; and enhanced ecosystem sustainability. These are in line with the current Government regulatory frameworks on biodiversity, such as Law No 11/2013 on the ratification of the Nagoya Protocol of the Convention on Biological Diversity.

The possible risks of lack of acceptance is anticipated from community members and companies on sustainable management practices (Activity 1.1.1) and District Governments and/or businesses (Activity 1.2.1) which could have a negative impact on natural habitats. The lack of buy-in may be due to lack of awareness and limited capacity of the local community on the pertinent issues of sustainable management practices, spatial planning, and low emission development planning. These issues will be addressed through IEC and capacity building. Intensive training, coaching and mentoring in the planning processes will be ensured throughout ERP implementation. Incentive schemes for companies and smallholders/farmers to adopt sustainable management practices will be envisaged for mitigating this issue.

Indigenous Peoples and Indonesia's Adat Communities (OP 4.10)

The policy is triggered since the activities under the ERP will be implemented in areas claimed by communities who can be categorized as Indigenous Peoples as per-OP 4.10 and therefore, may have impact on their claims and access to land and natural resources. The Indonesian legal regulatory frameworks generally refer such communities as "*Masyarakat Hukum Adat*" or "*Masyarakat Adat*" (or *Adat* Communities)[46]. Identification of such communities in the current country systems uses similar characteristics as described in OP 4.10 (see table 14.4). The GoI acknowledges the presence of Adat Communities and their rights, provided that groups meet these and other eligibility requirements (further elaborated in the Ministry of Home Affairs' regulation no. 52/2014). Their existence must subsequently be legally recognized (i.e. through district regulations/decrees) before their land claims and rights can be processed for further legal recognition. This district recognition process sets the initial condition for subsequent recognition processes, including land rights.

Table 14.5 The WB Criteria on Indigenous People (IP) and GoI's Conformity

Characteristics of Indigenous Peoples based on OP 4.10	GoI's *Masyarakat Adat*[1]	Note
• Vulnerable due to distinct circumstances and dependence on land and natural resources	Applies to a sub-set of *Masyarakat Adat* categorized as Isolated Adat Communities (or known as KAT/*Komunitas Adat Terpencil*)	Vulnerability is not a determining factor for land rights and other rights that follow, but rather serves one of the targeting criteria for social assistance and development programs.
• Self-identification and recognized by others	In the process of gaining legal recognition from the government, self-identification as *Adat* is subject to verification and validation by a verification team (Tim IP4T/*Tim Inventarisasi Penguasaan, Pemilikan, Penggunaan dan Pemanfaatan Tanah*) established by district heads. As part	The current guideline is set out in the Ministerial Regulation of Home Affairs No. 55/2014 which governs recognition of *Adat* community existence. This process is often understood as the first step for subsequent land right recognition.

[46] Relevant regulatory frameworks include Law No. 32/2009 on Environmental Protection and Management, Law No.41/ 1999 (further revised to Law No 19/2004) on Forestry, Law no 18/2013 on Prevention and Abolition of Forests Destructions, Presidential Instruction No 88/2017 on Land Tenure Settlements in Forest Areas, and Ministerial Regulation of the Ministry of Home Affairs No 52/2014 on the Guidelines for the Recognition and Protection of *Adat* Community and most recently the Presidential Regulation No 88/2017 on Land Tenure Settlements in Forest Areas.

Characteristics of Indigenous Peoples based on OP 4.10	GoI's *Masyarakat Adat*[1]	Note
	of such verification process, communities concerned need to be recognized by others backed with evidences for such recognition.	
• Collective attachment to geographically distinct habitats or ancestral territories and its natural resources	Collective attachment as per OP 4.10 is further defined into: • living in groups, in the form of associations (*paguyuban*/ *rechsgemeenschap*); • adherence to customary law that has a clear jurisdiction and specific customary law court/process; • maintenance of ancestral connection; • strong connection with land and environment, especially for daily life sustenance; • occupation in a certain territory for generations.	Equivalent
• Customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture.	• specific/distinct economics, politics, social and cultural value systems that are still practiced and respected	Equivalent
• An indigenous language, often different from the official language of the country or region	Not specified/required for legal recognition	The widespread use of Bahasa Indonesia as a lingua franca has contributed to gradual erosion of local languages and dialects. Since Indigenous language is not a requirement, the current GoI's frameworks have a broad coverage for their application
• A group that has lost "collective attachment to geographically distinct habitats or ancestral territories in the project area due to forced severance.	Not specified	The current frameworks for *Adat* communities are tied to land and resource claims, which may consequently present barriers for communities with no ancestral/territorial claims from being recognized as *Adat* communities.

[1] In accordance to the relevant Law that stipulates *adat* community: (a) Law No 32/2009 on Environmental Protection and Management; (b) Law No 19/2004 on Forestry, (c) Law No 18/2013 on Prevention and Abolition of Forests Destruction; (d) Ministerial Regulation of the Ministry of Home Affairs No 52/2014 on the Guidelines for the Recognition and Protection of *Adat* Community, (e) Presidential Regulation No. 88/2017 on Land Tenure Settlements in Forest Areas.

The GoI acknowledges the presence of Adat Communities and their rights, provided that groups meet these and other eligibility requirements (further elaborated in the Ministry of Home

Affairs' regulation no. 52/2014). Their existence must subsequently be legally recognized (i.e. through district regulations/decrees) before their land claims and rights can proceed further to legal recognition through a verification and validation processes conducted by the locally established Adat Committee, in coordination with other relevant entities such as the IP4T Tim (*Tim Inventarisasi Penguasaan, Pemilikan, Penggunaan dan Pemanfaatan Tanah*). In EK Province, the Adat Committee team is regulated under the Governor's Regulation No 1/2015. At the moment, there are 4 Adat communities already obtained their legal presence and received Adat land entitlement. These are Hemaq Beniung, Kekau, and Hemaq Pasoq in the district of Kutai Barat, through the issuance of Kutai Barat district regulation No 9/2014, and Mului in Paser District though the issuance of a Decision Letter No SK.413.3/2018.

The ESMF applies to all communities with Indigenous Peoples characteristics[47] regardless of the presence of legal recognition and therefore, the provisions of the OP 4.10 apply to address potential risks and protect the rights of these groups in the ERP implementation. The ESMF encompasses two inter-related processes to address OP 4.10 policy requirements. First, at the participation level, the application of the ESMF will not be conditional upon *Adat* recognition and therefore, will allow broader groups participating in the ER program, including other communities who possess characteristics as per-OP 4.10. Requirements for screening and free, prior and informed consultations to obtain broad community support will be applicable prior to implementation of ER activities where Indigenous Peoples' claims exist. At the benefit sharing level, eligibility requirements will be defined based on the types of ER activities and whether or not such activities are tied to land and resource claims. In addressing tenure settlements for Adat communities and other forest dependent people, the GoI's regulatory frameworks, particularly the Presidential Regulation No 88/2017 on Land Tenure Settlements in Forest Areas (PPTKH), will prevail.

In the context of ERP, tenure recognition for *Adat* communities is critical not only to protect the rights of these communities but also to define benefit sharing entitlements. *Adat* communities who are not legally recognized or currently in the process of obtaining legal recognition may have limited access to participate in and benefit from the program. There are also potential risks that conservation efforts supported by the ER program may adversely impact on these communities' access to land use and natural resources in the absence of legal protection of tenurial claims. Furthermore, existing schemes for forest tenure settlements[48] e.g. social forestry and TORA (land distribution) may, in some cases, not be accessible to *Adat* communities due to the lack of legal personality and the absence of legal recognition by GoI.

Depending on where *Adat* claims are located (i.e. forest and non-forest areas), tenure settlements for *Adat* claims are handled by MoEF and the Ministry of Agrarian and Spatial Planning/Land Agency (ATR/BPN) as respective custodians of respective forest and non-forest

[47] In conjunction with OP 4.10, the term Indigenous Peoples in this document is used in a generic sense to refer to a distinct, vulnerable, social and cultural groups with the following characteristics in varying degrees: a) self-identification as members of a distinct indigenous cultural group and recognition of this identity by others; b) collective attachment to geographically distinct habitats or ancestral territories in the project area(s) and to the natural resources in these habitats and territories; c) customary, cultural, economic, social or political institutions that are separate from those of the dominant society and culture; and d) an indigenous language, often different from the official language of the country or region.

[48] As currently governed in the Presidential Regulation No. 88/2017 on Land Tenure Settlements in Forest Areas (PPTKH)

lands. Recognition of communal land rights is currently regulated under the Ministerial Regulation of ATR/BPN No. 10/2016. Under the regulation, district land offices play an important role in determining the legal status of *Adat* communities concerned. *Adat* communities submit a preliminary application to the District Land Office following which the process for determining communal rights is triggered and procedures for determination of communal rights on customary land will be launched. On the basis of the report prepared by a team of government officials representing key ministries (known as IP4T teams) following their field verification, land tenure settlements will be handled depending on the status of the land claimed. If such claims are located within the Forest Areas[49], the IP4T will hand over the verification results to the MoEF in order for the claimed parcels to be released from the Forest Areas. If the land claimed is located within non-forestry concession areas (e.g. HGU), the IP4T will request the license holders to enclave the land parcels claimed and release them from the HGU areas. The granting of communal land titles by ATR/BPN will be subject to MOEF and HGU owners' willingness to release parts of their territories claimed by *Adat* communities from the Forest Areas. For *Adat* communities to be eligible to communal right titles, formal recognition of their existence as *Adat* (by district governments) is required as regulated in the Ministry of Home Affairs' regulation no. 52/2014.

Recognizing possible constraints that Adat communities may face in participating in the ER program, facilitation and engagement with Adat communities will need to be tailored to enable these communities to benefit from the program. Poverty and population pressures[50] amongst forest-dependent communities are considered drivers for forest degradation due to unsustainable extraction of natural resources and encroachment. In response to these risks, under sub-component 3.1. on settlement of existing land tenure disputes, the ER program seeks to facilitate social forestry schemes for forest dependent communities, including Adat communities as well as resolution of land tenure disputes through a participatory process (i.e. as guided by PPTKH). Enabling these communities to access secure land tenure, as well as facilitation and capacity building for sustainable forest-based livelihoods, is expected to relieve anthropogenic pressures on forest resources.

The ER Program concedes the possible risks of some parts of the Accounting Area to be subject to significant conflicts or disputes related to contested or competing claims or rights, and if critical may hamper the successful implementation of the ER Program. Such conflicts or disputes have been and are proposed to be addressed through adopting the tenurial conflict resolution mechanism as identified in the following section 14.3 on FGRM. There are several regulatory frameworks available for tenurial conflict resolutions at both national and provincial levels. These include the Joint Agreement of East Kalimantan Provincial Government, National Land Agency office at EK Province (BPN Kaltim), Forest Determination Section (*Balai Pemantapan Kawasan*

[49] In May 2013 the Constitutional Court ruled that *Adat* forests are not part of the State forest (*Kawasan Hutan*). This Court decision modified the sub-classification of what was known as Forest Areas as: Titled Forests (*Hutan Hak*), and State Forests (including concessions, village forest programs as *Hutan Desa*, and *Hutan Hak*, those areas held by *Adat* communities). This decision further implied that *Adat* forests, wherever legally recognized, would be assumed to be the collectively owned forests of Indigenous Peoples and *Adat* communities i.e. part of the Titled Forests category

[50] Rural areas in Indonesia have a consistently higher rate of poverty than in urban areas (14.7% compared to 8.5% respectively). Six million of the 32 million people that live in and around forest areas are poor. The households in the forest areas have limited access to services and are heavily reliant on natural resources. In these regions and in Indonesia more broadly, forestry-based activities and industries (e.g., timber harvesting, pulp and paper processing, furniture making) are an important source of growth and employment. In addition, several million people are employed in managing small-scale agro-forestry systems (FIP-2 Program Appraisal Document).

*Huta*n) of MoEF, and East Kalimantan Regional Police for the Prevention and Handling of Overlapping Land Use Permits in East Kalimantan Province, issued on January 25, 2013, (No. 110/1317 / BPPWK.A / I / 2013, B / 02 / I / 2013, B6 / Memo-64 / I / 2013, and MCC.45 / BPKH / IV / 2013) and the joint regulation of the Ministry of Home Affairs (MoHA), MoEF, Ministry of Public Infrastructure, and the National Land Agency on the Procedures for The settlement of Land Ownership in Forest area (Nomor 79/2014, PB.3/MENHUT-II/2014, 17.PRT/M/2014, 8/SKB/X/2014; Permen ATR/BPN No. 10/2016).

The ESMF will incorporate an Indigenous Peoples Planning Framework (IPPF) to ensure that the ER activities follow the policy requirements including free-prior and informed consultation leading to broad community and provide facilitation to assist tenure recognition. Recognizing that some of these groups are vulnerable and marginalized, the main objective of this IPPF is therefore to help ensure that carbon emission reduction initiatives are designed and implemented in a manner that promotes meaningful participation of Indigenous and *Adat* communities as well as respects their identity, human rights, dignity, livelihoods and belief systems. The IPPF will include provisions for development of specific plans for activities within communities that are affected by the ER-Program and will ensure that the potential benefits are considered along with risks and impacts that will be managed through avoidance and mitigation measures specific to the issues identified. The IPPF will require program entities to ensure that affected communities have complete understanding of the project impacts and receive a meaningful opportunity to participate in planning activities and decision making that affect them. Capacity-building components as well as M&E measures will be considered in the IPPF.

As informed by various analyses of risks as well as constraints due to lack of legal recognition, the ERP seeks to support tenure protection and recognition of *Adat* and other forest dependent communities to enable them to meaningfully participate in the Program. Such efforts will be mobilized at two levels. First, under policy reform and development of REDD+ enabling environments (sub-component 1.1), efforts will be mobilized by East Kalimantan Provincial and District Governments to expedite legal recognition processes of *Adat* communities and land dispute settlements (activity 1.2.2). The ER program will support further development of regulatory frameworks relevant to *Adat* communities such as the current initiative on the development of cross-sectoral conflict resolution, mediation on tenurial conflicts in forest areas, and assessment of tenurial conflicts and community forestry. Second, at a specific intervention level, the ERP aims to strengthen forest-dependent communities to engage in sustainable forest management through community facilitation in social forestry schemes and forest partnership. Several schemes that will be supported under the ERP to strengthen community tenure and technical assistance in sustainable forest management include *hutan adat* (customary forest) as a form of ownership titles and a range of forest use permits including a) Village Forest (*hutan desa*), b) Community Forest (*Hutan Kemasyarakatan*), c) Community Forest Plantation (*Hutan Tanaman Rakyat*), and d) Partnership Forest (*Kemitraan*). As outlined in Sub Chapter 14.3 the conflict handling mechanisms processes will be created and adopted. As much as possible, conflicts should be resolved through mediation processes. Should a mutually agreed resolution not be achieved, a legal action may be opted. However, legal action should be the last resort and consensus approach should be prioritized.

The GoI has been proactive in identifying and documenting *Adat* communities, with support from Civil Society and Non-Government organizations, such as AMAN (Indigenous Peoples

Alliance of the Archipelago). However, further efforts will still be needed to develop comprehensive documentation of *Adat* communities, including their claims and existing tenurial conflicts with other communities, companies (especially mining companies) and the Government, and subsequent recognition and protection of their rights. Such efforts are expected to be addressed with the implementation of Presidential Regulation No. 88/2017 on PPTKH and be conducted in tandem with the implementation of the FGRM and land dispute settlements (further described in the following **Subsection 14.3**). Community engagement in the handling of forest tenure conflicts will be strengthened by: a) developing and adopting of the minimum standards for gender mainstreaming and inclusive community participation, b) establishing of community-based early warning mechanisms to identify and respond to conflicts and c) providing training to paralegals specializing on tenurial rights and local dispute mediators to facilitate community-based conflict resolution.

Involuntary Resettlement (OP/BP 4.12)

OP 4.12 is triggered when there is a possibility that the ER Program activities may restrict the access of forest dependent communities in nature reserves and/or other protected areas as a result of formalizing forest boundaries and zones within FMUs. The project will not require land acquisition, which would result in direct involuntary resettlement and/or livelihoods displacement. There is also a risk that the ER program may exacerbate and affect existing disputes over land rights if no sufficient community participation and dispute mediation is in place during the program implementation. The ER Program will seek to establish participatory approaches in forest boundary demarcation and tenure settlements. Under Component 2.1 (Enhancing FMUs' Capacity for Sustainable Forest Management), the GoI is committed to providing support through FMUs to create alternative livelihoods such as social forestry schemes and forest-partnership (*Kemitraan*) with forest-dependent communities within and surrounding FMU areas.

Increased land and forest tenurial conflicts have been and will continue to be a major concern for the success of the ER Program. Such conflicts often involve Adat communities who have claims before establishment of Forest Areas (*Kawasan Hutan*) and issuance of forest concessions. Since 2012, Indonesia has mobilized significant efforts to identify existing tenurial and other land use and forestry related conflicts, as well as develop relevant policies and regulatory frameworks. The ER program will take into account an indicative tenurial conflict map that the GoI has developed, with an inventory of around 201 conflicts, mostly in Sumatera (60.7%) and Kalimantan (16.4%).[51] Such identification is currently on-going to further identify tenurial conflicts in the forest areas through a joint assessment between the Government and communities, including *Adat* communities and identify ways forward to settle conflicts through consensus.

The ESMF developed under the ER Program will incorporate a Resettlement Policy Framework (RPF) and Process Framework (PF) to mitigate potential resettlement and access restriction risks resulting from forest tenure settlements and boundary demarcation supported by the ERP. The ESMF will be built on the current GoI's frameworks on forest tenure settlements,[52] and will seek

[51] MoEF power point presentation at the FGRM workshop for the development of ERPD, 8 March 2018

[52] The refinement of community based conflict handling mechanisms will be conducted with adherence to relevant regulatory frameworks for addressing tenurial conflict are, among others, Law no 7/2012 on social conflict management, MoEF Ministerial Regulation No P.32/Menhut-Setjen/2015 on Forestry Rights, MoEF Ministerial Regulation No 84/Menlhk-Setjen/2015 on Forestry Tenurial Conflict Handling, MoEF Ministerial Regulation No 83/Menlhk-Setjen/2016 on Social Forestry, MoEF Ministerial Regulation No 34/Menlhk-Setjen/2017 on the protection

to address any gaps, particularly with regards to free, prior and informed consultations with affected parties, compensation and livelihoods restoration.

The governing framework for the handling of tenure settlements in the Forest Areas (PPTKH) is set out in the Presidential Regulation No. 88/2017. The Presidential Regulation No. 88/2017 sets out several measures to address forest occupation and/or encroachments depending on the functions of the forest estates concerned (i.e. conservation, protection and production), as outlined in the following table (**Table 14.5**):

Table 14.6 Options for Land Tenure Settlements within the Forest Estates

Options	Conditions/requirements
Occupation and/or encroachment before the designation of forest estates (*penujukan*)	
Land parcels/part of parcels to be enclaved and excised from the forest estates	- Land in question has been occupied and/or titles have been granted prior to the designation of forest estates;
Occupation and/or encroachment following the designation of forest estates (*penujukan*)	
Land parcels/part of parcels to be enclaved and excised from the forest estates	- Occupation for settlement purposes and/or establishment of public and social facilities in areas no longer classified as protection or conservation zones. - Land in question has been utilized for agricultural purposes for more than 20 consecutive years Note: Enclaved land parcels could be subject to the Land Distribution Schemes (TORA) and registration, including titling is to be processed through PTSL.
Land swap	Occupation for settlement purposes and/or establishment of public and social facilities in areas no longer classified as protection or conservation zones (applies to provinces whose forest cover equals to or is less than 30% of the total size of watersheds and/or land masses within provincial administrative5 jurisdictions)
Social forestry schemes	Land in question has been utilized for agricultural purposes for less than 20 years. These schemes apply to provinces whose size of the forest estates equals to or is less than 30% of the total size of watersheds and/or land masses within provincial administrative jurisdictions regardless of the length of occupation.
Resettlement	- Land in question is classified within the **conservation zone** regardless of the use (e.g. settlements, agricultural purposes and other land uses); - Occupation for settlement purposes and/or establishment of public facilities in **protection forests**. Note: In provinces whose size of forest estates equals to or is less than 30% of the total size of watersheds and/or land masses within provincial administrative jurisdictions, resettlement options can also be applied to forest occupation for settlement purposes and/or establishment of public and social facilities in **production forests under the discretion of MOEF.**

Unlawful resettlement for informal settlements on State Lands is prohibited under the current laws. Under the PPTKH scheme described in Table 14.5, land in question must be free from any

of local wisdom in natural resources and environmental management. MoEF Ministerial Regulation No 83/Menlhk-Setjen/2016 on Social Forestry.

encumbrances and/or disputes with other parties. The schemes offered for tenure settlements can only be enforceable when land disputes have been settled through a separate process (e.g. mediation and/or court resolution). The government agencies involved are prohibited from enforcing evictions, criminalizing land claimants, closing access to land, and/or imposing any forms of access restrictions during the implementation of forest tenure settlements. These requirements would enable investments in community facilitation and engagement, to which the GoI is committed to providing further support and facilitation under the ERP. The ESMF will ensure that resettlement will only be enforced when other options have been exhausted, and the ERP will ensure that action plans that satisfies key requirements of OP 4.12 as well as OP 4.10 for Indigenous Peoples are in place and consulted broadly with affected parties before any action with resettlement and/or access restriction impacts can be carried out.

Introduction of sustainable livelihood practices (e.g. settled cultivation, no burning practices) may have potential risks of restricting forest dependent communities' access to livelihoods. In addition to the requirements in the RPF and PF in the ESMF, the GoI is committed to putting in place enabling environments for these communities to effectively engage in sustainable NRM practices, including various capacity building and facilitation activities, access to inputs, technology, finance, and markets, and improvements in the regulatory frameworks to accelerate the implementation of social forestry schemes through Activity 2.2.1. Over the longer term, the ER Program is expected to enhance local communities' access to sustainable livelihoods as well as tenure security, which serve as the building blocks to sustainable NRM. Mobilization of resources through corporate social responsibility (CSR) from companies will also be sought to leverage existing initiatives, in conjunction to incentive schemes for farmers and smallholders that will be established under the program.

Physical Cultural Resources (OP/BP 4.11)

This policy is triggered because it is possible that ER-P interventions may indirectly affect areas and/or access to areas/objects (both tangible and intangible) that are regarded as sacred sites by local communities. If these sacred sites are located in protected forest areas, this project may restrict local communities' access to the sacred sites and negatively impact their perception of ownership. Existing physical and cultural resources that may be affected will be further identified and explained in the SESA and ESMF. In these cases, the local community will be engaged in seeking an agreement on the use and ownership of these physical and cultural resources.

The Indigenous Peoples policy and regulatory frameworks on *Adat* communities are strongly linked and provide assurances on the protection and restoration of both intangible and physical cultural resources. The existing mechanism for protecting and restoring cultural heritage will be maintained and if necessary, further strengthened to ensure the protection and avoidance of degradation of physical cultural resources that may include forests themselves. Necessary measures to meet the provisions of OP/BP 4.11 will be implemented through intensive engagement with potentially affected communities, including *Adat* communities. The GoI is committed to mainstreaming key principles of Free Prior Informed Consultation (FPIC) throughout the ER program, that will facilitate in maintaining physical cultural resources. Existing physical cultural resources in the program area and strategies to maintain them will be further identified in the SESA and ESMF. A Physical Cultural Resource Management Framework, which also covers intangible cultural resources will be prepared as part of the ESMF.

Forests (OP/BP 4.36)

The program supports reductions in deforestation and forest degradation, leading to positive impacts on the health and quality of forests in the program area. This policy is triggered since the program may enforce protected forest boundaries that impact access of forest dependent communities. Potential impacts and proposed mitigation measures will be included in the ESMF.

The Government of Indonesia clearly outlines the policy on pro-growth, pro-job, pro-poor, and pro-environment development (Law no. 17/2007 on Long Term National Development Planning). The management, conservation, and sustainable development of forest ecosystems and their associated resources are thus treated as essential for lasting poverty reduction and sustainable development. Indonesia's Constitution also ascertains the GoI's full mandate in natural resource management and utilization, with people's wellbeing at the core. GoI has put serious efforts into ensuring favorable results of development and investments to both people and the environment. Forestry relevant regulatory frameworks and measures have been developed for this purpose. Some examples include, among others, the development of *Rencana Aksi Nasional penurunan Gas Rumah Kaca (RAN-GRK)* or the National Action Plan on the reduction of carbon emission, *Sistim Registrasi Nasional* (SRN) or the National Registry System, which was developed in early 1990s and further developed into a GHG inventory system, as well Indonesia National Carbon Accounting System (INCA). These frameworks were developed based on evidence and placed people-centered approaches at the core. The GHG inventory system, for instance, serves as a diagnostic tool by enabling the GoI to map emission sources and identify possible underlying causes that, among others, relate to poverty issues through which appropriate mitigation measures can be developed.

The policy on Forests (OP 4.36) requires that the REDD+ program interventions that are supported by the WB ER Program follow third-party certification standards for commercial forestry operations that may be involved while small-holder forestry is subject to development of time-bound plans seeking to achieve the standards of the policy. Key requirements of OP 4.36 will be further elaborated in the ESMF.

The interim findings of SESA identify that limited access to livelihoods due to environmental degradation, climate change resulting in lack of predictability of seasonal changes, and tenure conflicts has encouraged communities to engage in unsustainable practices in utilization of forest resources. Volatility in commodity prices, such as rubber, has also incentivized farmers to switch to oil palm. Furthermore, limited access to inputs and technology has also encouraged people to continue slash and burn practices. Illegal logging and other unsustainable harvesting of forest products have continued to be sustained due to a combination of factors, which include incentives for "quick cash", existence of accessible markets/traders, lack of skills and workforce on sustainable based livelihoods, which are often associated with brain drains (i.e. outmigration of young people to urban centers). The GoI has continued to pursue law enforcement to crack down on illegal timber operations in various locations in East Kalimantan.

The ER Program, GoI seeks to support sustainable community livelihoods through a) provision of skills development on entrepreneurship and business opportunities for sustainable timber and non-timber forest products (NTFPs), b) facilitating networks building and business partnership and cooperation (Activity 1.1.3.) and c) social forestry schemes. The National

Medium-Term Development Plan for 2015 – 2019 allocates 12.7 million hectares for social forestry purposes, where communities are granted use and management rights to government-owned protection and production forest areas. There are several government-sponsored or formal social forestry schemes, including community forest (*hutan kemasyaraktan*), village forest (*hutan desa*), and community plantation forest (*hutan tanaman rakyat*), as well as forests allocated for partnerships between state-owned companies and private communities (*kemitraan*). In addition, there are private forestry schemes in the forms of customary forests (*hutan adat*) and smallholder forests (*hutan rakyat*).

Under the social forestry schemes, the provisions of forest use rights to local communities represent the first step towards improvements in sustainable NRM. The GoI is committed to putting in place enabling environments for these communities to effectively engage in sustainable NRM practices, including various capacity building and facilitation activities, access to inputs, technology, finance, and markets, and improvements in the regulatory frameworks to accelerate the implementation of social forestry schemes through Activity 2.2.1. Over the longer term, the ER Program is expected to enhance local communities' access to sustainable livelihoods as well as tenure security, which serve as the building blocks to sustainable NRM. Mobilization of resources through corporate social responsibility (CSR) from companies will also be sought to leverage existing initiatives, in conjunction to incentive schemes for farmers and smallholders that will be established under the program.

Limited buy-in, capacity, awareness and trust, including from district government and private entities, may hamper the implementation the ER Program's particular components of sustainable management practices, spatial planning and low emission development planning. This is perceived as a program governance risk that will need to be addressed prior and over the course of ER-P implementation. Strengthening IEC activities and technical assistance to key agencies and village government in areas such as participatory village development, low emission spatial plan development, alternative livelihoods, etc. will be provided under the program. This will be coupled with intensive training, coaching and mentoring in the planning processes throughout ER-P implementation. Incentive schemes for companies and smallholders/farmers under the benefit sharing arrangements for those who have adopted sustainable management practices will be developed to attract participation and retain commitments.

Gender and Inclusive Development

Forest management and land tenure processes tend to be male-dominated and/or led in Indonesia. Key institutions that govern forest management in Indonesia tend to employ fewer women than men. This is despite the fact that women tend to be more dependent on forests and play a critical role in collecting and using forest products than men to meet their family's daily needs. In addition, although regulatory frameworks (such as in community participation, marital property and inheritance) in Indonesia are not discriminatory towards women, challenges with regards to local practices and access still persist. Limited women's participation is in part attributable to cultural factors and religious beliefs which do not enable/allow women to be outspoken, as well as household burdens which often restrict mobility and participation of women. There is widespread lack of understanding that has led to misunderstanding within communities, particularly women, and amongst village leaders regarding the possibility and benefits of joint titling of land and property rights. This is coupled with the prevailing conservative attitude in the land offices and lack of field staff orientation, thus resulting low demand from

women to register land titles under their names. Available data suggests that only close to one-third of the land titles are formally owned by women either individually or jointly with their spouses (Asian Development Bank, ADB, 2016). Excluding woman's names on the title renders women vulnerable to having their rights denied. In the case of divorce, abandonment, or separation, they may be left with nothing. Separated and divorced women for example cannot claim their husband's land, nor can widows and women-headed households apply for inheritance.

In the context of public participation, inclusive participation remains a challenge, with village development planning consultative meetings (*Musyawarah Perencanaan Pembangunan Desa/Musrenbangdes)* are often dominated by village elites and men, leaving marginalized and vulnerable group, including *Adat* community and women behind. Addressing this issue is vital, considering the current implementation of Village Law[53] -- particularly on village funds -- presents an important opportunity for mainstreaming low carbon emission initiatives, conservation efforts and sustainable livelihoods at the village level. Village governments are responsible for administering village funds (*Dana Desa* and *Alokasi Dana Desa*) and accommodating community needs through democratic processes (hamlet and village deliberations). Under the framework of the Law, villages now have the autonomy to determine development based on their own understanding and needs through participatory process from the hamlet to the village level. *Musrenbangdus* (hamlet deliberation) was often perceived by villagers, especially women, to be more participatory and receptive to proposals from various community groups. This is, however, not the case of *Murenbangdes* (village deliberation) where men and village elites usually dominate the meeting. Through this deliberation process, a long list of proposed activities will be produced by each hamlet and subsequently short-listed and competed with other hamlets during *Musrenbangdes* (village deliberation). During village deliberations, women's interests and needs are often at risk of being disregarded due to lack of participation and voice. The winning proposals will form the basis for the development of the village government work plan (*Rencana Kerja Pembangunan Desa/*RKPDes). Following the finalization of RKPDes, APBDes (*Anggaran Pendapatan dan Belanja Desa/*village budget plans) will be developed once indicative ceilings of village funds have become known.

In addressing gender and inclusive development issues particularly for the vulnerable groups and Adat communities, the GoI acknowledges that mainstreaming gender and social inclusion are key to ensuring ER program sustainability. Such political commitments have been translated into legal and budget commitments with the issuance of relevant regulatory frameworks and adoption of gender responsive planning and budgeting, as stipulated in the joint decree
of the Ministry of Home Affairs (MoHA), Ministry of Finance (MoF), Ministry of Women's Empowerment and Child Protection (MoWE-CP), Ministry of National Planning/Bappenas on the National Strategy on Gender Responsive Planning and Budgeting (NOMOR: 270/M.PPN/11/2012 NOMOR: SE-33/MK.02/2012 NOMOR: 050/4379A/SJ NOMOR: SE 46/MPP-PA/11/2012) and MoF's Regulation on the guidance for the development and review of annual workplan and budget of line ministries (No 94/PMK.02/2017) the requires gender budget statement. Indonesia has adopted a twin track policy for gender mainstreaming and women's empowerment. Included in the relevant policies and legal frameworks include among others: gender budgeting, gender-

[53] The new Village Law was issued in January 2014, replacing the previous Law No. 32 of 2004 on Regional Autonomy. The Village Law incorporates a number of key Community Driven Development (CDD) principles and institutions, including participatory village planning, implementation of village-level projects, inter-village collaboration, community facilitation and community oversight.

disaggregated data, and women empowerment program. Such a policy is to ensure that gender equality concerns are well integrated and addressed in the country development frameworks.

The ER Program seeks to mainstream gender-sensitive and inclusive development approaches to address gender and exclusion issues in the NRM. These include (a) ascertaining the equal participation and active engagement of women as well as vulnerable and marginalized groups in the process of consultations and overall ERP implementation, (b) ensuring that the design and implementation of the ERP seek to promote "better off' conditions for women as well as vulnerable and marginalized groups, (c) ensuring gender equality and social inclusion concerns are well addressed in the IPPF to address Indigenous Peoples concerns as well as RPF and PF to address resettlement and access restriction risks. A minimum standard for gender mainstreaming and social inclusion will be developed in consultation with all relevant stakeholders prior to ERP implementation.

14.1.2.2 Analysis of Potential Environmental and Social Risks and mitigation measures

The interim SESA findings grouped potential environmental and social risks and impacts into seven categories, which include the following (further analysis is appended in Annex 14.3 on interim SESA findings):

1. Addressing Tenurial Conflicts and Disputes
2. Lack of Participation (Limited buy in, Awareness and Trust)
3. Access Restrictions and Impacts on Livelihoods Changes
4. Institutional Capacity Constraints to Manage Potential Environmental and Social Risks
5. Lack of Effective and Accessible FGRM
6. Gender Inequalities and Social Exclusion
7. Governance Risks

A summary of environmental and social potential risks and impacts, along with their proposed mitigation measures are provided in Table 14.7. Further details are made available in Annex 14.3 on interim SESA findings. These interim findings will be validated with the SESA's result that is currently being conducted and will be made available in October.

Table 14.7 Matrix Summary of Environmental and Social Impacts, Mitigation Actions, and the corresponding activity and OP/BP

Environmental & Social Risks and Impacts	Priority Level*	Mitigation Actions (Corresponding Activity)	Corresponding ERP Activity and WB's OPs	
			ERP Activity	WB Operational Policies (OP)
1. Tenurial Conflicts and Disputes	1	• Joint-Collaboration of the Government, civil society and private sector on (a) issuance of joint decrees for conflict settlements (Activity 1.1.1), (b) existing/local conflict handling protocols refinement (Activity 1.1.3) and (c) FGRM (Activity 1.1.2).	Activity 1.1.1; 1.1.2, 1.1.3;	OP 4.01, OP 4.10, OP 4.12, OP 4.36

Environmental & Social Risks and Impacts	Priority Level*	Mitigation Actions (Corresponding Activity)	Corresponding ERP Activity and WB's OPs	
			ERP Activity	WB Operational Policies (OP)
		• Training on fair/impartial mediators; Identification and assessments of tenurial conflicts; Enhancing communication and engagement with relevant stakeholders on conflict settlements and management of HCV areas (Activity 1.1.2 – 1.1.4)	Activity 1.1.2 - 1.1.4.	
		• IEC Activity and Capacity Building on: Sustainable management practices for estate crops, peatland, and mangrove (Activity 1.1.1), Transparency and access to information on licensing (Activity 1.1.2), FGRMs, Conflict early warning and handling systems, Community-based conflict resolution mechanisms, including training for paralegals for tenurial conflicts and local dispute mediators, A participatory conflict assessment.	Activity 1.1.1; 1.1.2.	
2. Lack of Participation (limited buy in, capacity, awareness and trust)	5	IEC activities and technical assistance to key agencies and village government **(**e.g. participatory village development, low emission spatial plan development, and alternative livelihoods); Intensive training, coaching and mentoring in the planning processes throughout ER-P implementation; Incentive schemes for companies and smallholders/farmers under the benefit sharing arrangements.	Activity 1.1.3; Activity 5.1.1.	OP 4.01, OP 4.04, OP 4.10, OP 4.12, OP 4.11, OP 4.36, Gender and Social Inclusion Concerns
3. Access Restrictions and Impacts on Livelihoods Changes	3	Skills development on entrepreneurship and business opportunities for sustainable timber and non-timber forest products (NTFPs); Facilitating networks building, business partnership and cooperation (Activity 1.1.3.); Social forestry schemes, e.g. Community forest (*hutan kemasyaraktan*), village forest (*hutan desa*), and community plantation forest (*hutan tanaman rakyat*), Partnerships Forest (hutan *kemitraan*), customary forests (*hutan adat*) and smallholder forests (*hutan rakyat*); Resource mobilization through CSR	Activity 1.1.3, 2.2.1.	OP 4.36, OP 4.04, OP 4.01, OP 4.12
4. Institutional Capacity Constraints to Manage Potential Env and Social Risks	2	Strengthening capacity building activities on specific areas e.g. business development, fire protection and control, use of technology for SFM and RIL (Activity 2.2.1, 2.2.2.) and HCV (Activity 2.2.3); Community engagement and facilitation for alternative livelihoods; conflict mediation and resolution; Participatory boundary mapping; Reviews and amendment of	Activity 2.2.1 - 2.2.3, in tandem with Activity 1.1.1 – 1.1.3.	OP 4.01, OP 4.04, OP 4.10, OP 4.12, OP 4.11, OP 4.36, Gender and Social

Environmental & Social Risks and Impacts	Priority Level*	Mitigation Actions (Corresponding Activity)	Corresponding ERP Activity and WB's OPs	
			ERP Activity	WB Operational Policies (OP)
		regulations, as well as development of operational guidelines on FMUs' business operations (Component 1.)		Inclusion Concerns
5. Lack of effective and accessible FGRM	7	Capacity building to staff of government agencies, CSOs/NGOs, and community representatives; Community-based dispute resolution (as outlined on 1. Tenurial conflict and dispute).		OP 4.01, OP 4.04, OP 4.10, OP 4.12, OP 4.11, OP 4.36, Gender and Social Inclusion Concerns
6. Gender Inequalities and Social Exclusion	6	Community awareness, collaborate with relevant agencies, in this case District Community Empowerment Agencies (DPMD) to link ER initiatives with the Village Law implementation. Particular attention will be paid to women and those from poor, vulnerable and marginalized groups, including Adat community (Activity 2.1.1., 2.1.2, and 1.1.3.);	Activity 2.1.1., 2.1.2, and 1.1.3.	OP 4.10 OP 4.12 OP 36 Gender and Social Inclusion Concerns
7. Governance Risks	4	Development of community-based monitoring or "watchdog" groups to report abuses (Activity 1.2.1; 1.2.2) and strengthening access to FGRM; Capacity building; Strengthening the SIS-REDD+, the National Registry and other database relevant for the Program. (Activity 1.2.2. and 4.1.2.); Additional needs assessments on capacity for data collection and monitoring (to be conducted as part of the SESA); M&E Framework, data protocols and guidance (to be developed as part of the ER Program); Training and Information, Education and Communication (IEC) on knowledge management systems and information dissemination (Activities under Sub Component 6.1 – 6.3); Fostering coordination and seeking commitments of relevant stakeholders, as well as establish effective coordination mechanisms across levels (Activity 6.1.1.); Further analysis on resource requirements and potential funding sources to safeguard ER Program (Activity 6.1.2, to be conducted under the SESA); Further analysis on stakeholder engagement, public campaign and benefit sharing (Activity 4.1.2.); Developing strategies to enhance existing appraiser systems, including a need and gap assessment (Activity 4.1.2); Developing a business case to	Activity 1.2.1; 1.2.2; 4.1.2. Activities under Sub Component 6.1 - 6.3	OP 4.01, OP 4.04, OP 4.10, OP 4.12, OP 4.11, OP 4.36 Gender and Social Inclusion Concerns

Environmental & Social Risks and Impacts	Priority Level*	Mitigation Actions (Corresponding Activity)	Corresponding ERP Activity and WB's OPs	
			ERP Activity	WB Operational Policies (OP)
		attract further growth of assessors and certification bodies (Activity 4.1.2.); Identifying reliable providers and securing the terms of conditions to address emergency program system issues, as well as hiring an IT expert for typical IT maintenance issues (Activity 6.3.1 and 6.3.2)		
Note: * Priority Level is measured through assessing the following three indicators of: (a) The likeliness for the issue to happen due to ERP implementation, (b) The complexity and seriousness level, (c) The availability of existing mechanisms to respond to the risks/impact.				

14.2 Description of arrangements to provide information on safeguards during ER Program implementation

14.2.1 The development and application of the Safeguards Information System (SIS) to the FCPF Emissions Reduction Programmed in East Kalimantan

This section describes how the institutionalized mechanisms of SIS-REDD+ linked to the ERP will be managed and made available to local and international institutions, as well as to individuals.

Development of Principle, Criteria, Indicator (PCI) and Assessment Tools for SIS-REDD+

The PCI provided a strong and reliable basis for the development of SIS-REDD+, which serves as an umbrella reporting and monitoring platform for safeguards compliance for the overall ER program implementation. The SIS-REDD+ consists of 7 principles, 17 criteria and 32 indicators, that aim at reflecting provincial characteristics (Annex 14.2.). SIS-REDD+ is currently being piloted in East Kalimantan and necessary improvements are being sought by the Province to further operationalize the SIS-REDD+.

Under the SES-REDD+ process, which is a provincial initiative, the East Kalimantan Taskforce, under the leadership of DDPI, undertook a participatory multi-stakeholder process to adjust the national-level PCIs to fit into the province specific context. [54] The draft SES-REDD+ was tested in the Districts of Berau, Kutai, and Paser between 2015 and 2016. The result of this field testing suggests that SES-REDD+ is applicable throughout the Province. The safeguards system also recognizes the national Rights Based Standard (RBS). Further details of SIS-REDD+ are provided in section 14.2.

Effective implementation of the Cancun REDD+ safeguards requires translating these safeguards into the national context, developing policies and regulatory frameworks, making resources available and building institutional capacity. Indonesia's policies, regulations and practices on forest management serve as a foundation to develop the SIS-REDD+, with a country-

[54] Pambudhi et al., 2015

specific context at the national and sub-national levels. Safeguards policies are not new in Indonesia's forest management. The past body of work on safeguards allows the Ministry of Forestry of the Republic of Indonesia to report on progress to date regarding the COP 16 decision on REDD+ safeguards.

A comprehensive and multi-stakeholder process began in 2011 to create a national SIS- REDD+, by undertaking an analytical review of the existing Cancun-Safeguards relevant policies and regulatory frameworks and translating the results of this analysis into the national principles, criteria and indicators (PIC), identifying the best structure and mechanism for Indonesia SIS-REDD+ and developing assessment tools to implement the SIS-REDD+. The existing policies and regulatory frameworks under review include: Law no 32/2009 on the management and protection of environment that stipulates key instruments of the Environmental Impact Assessment (AMDAL), Strategic Environmental and Social Assessment (KLHS), Sustainable Production Forest Management (PHPL), certification for sustainable forest management such as the certification by *Lembaga Ekolabel Indonesia* (LEI) or the Indonesian Ecolabel Institute, Forest Stewardship Council (FSC) certification, and the Verification System of Timber Legality (SVLK).

These instruments have been reviewed and verified at different scales linked to REDD+ activities in Indonesia, and have become valuable assets for SIS-REDD+. The review and verification process includes an evaluation on the appropriateness of these instruments to relevant mandatory and voluntary instruments of REDD+ safeguards as stipulated in the COP 16 Safeguards decision. This review assessed the relative strengths and weaknesses, stakeholders' acceptance, challenges for effective implementation, as well as interrelatedness between instruments for a comprehensive and integrated approach. These instruments contain mechanisms for oversight of specific requirements of good environmental and social practices. They also define specific arrangements for project proponents to report compliance based on self-assessments and independent audits.

The SIS-REDD+ PCI formulation was conducted through extensive stakeholders' consultation at both national and sub-national level. The long consultative process resulted in several revisions to the initial design, which led to the reframing of the PCI framework. Eventually, there were 7 principles, 17 criteria and 32 indicators formulated as the basis of SIS-REDD+ as noted in Ministerial Decree of MoF No. P30/Menhut-II/2009 on the procedure for REDD+ Implementation. Multilateral agencies have also developed safeguards frameworks of their own. These include the Social and Environmental Principles and Criteria (SEPC) and various REDD+ safeguard initiatives. As aforementioned, PRISAI, Indonesia's PCI of REDD+ Safeguards, was developed by the REDD+ Task Force, which was handed over to the REDD+ Agency. PRISAI was initially designed as a framework to filter, monitor, and evaluate REDD+ activities at the project and jurisdiction level. In elaborating the Cancun safeguards, PRISAI added three more principles to fit the Indonesian context to reach a total of 10 principles, 27 criteria, and 97 indicators. PRISAI has been tested in several sites in East Kalimantan, Central Kalimantan, and Jambi provinces.

Another initiative that has made significant progress is the REDD+ Social and Environmental Standards[55] (SES-REDD+). SES-REDD+ was adapted and piloted in East Kalimantan and Central Kalimantan provinces. The development of SES-REDD+ was commissioned by Clinton Climate Initiative and developed by the Climate, Community & Biodiversity Alliance (CCBA) and CARE

[55] http://www.redd-standards.org/

International, in collaboration with the REDD+ Working Group of East Kalimantan Province in Indonesia and LEI, the national certification agency. SES was developed as part of the participatory and multi-stakeholder initiative (launched in May 2009) and field tested in 17 jurisdictions within 12 countries. Under SES REDD+, safeguards are based on the key forest governance issues faced by the provincial government. SES outputs contribute to the implementation of SIS-REDD+, particularly in providing support at sub-national level and linkages to SIS-REDD+ at national level.

The Participatory Governance Assessment (PGA) is another multi-stakeholder safeguards-related initiative led by the UN-REDD Programmed. PGA aims to inform policy-making by providing regularly updated and robust governance information accompanied by recommendations. The framework consists of 4 aspects/principles, 3 criteria/variables, and 32 indicators and was piloted in 2012 and 2014 at the national level as well as in several provinces and districts.

The fact that the existing safeguard frameworks vary in Indonesia is inevitable since activities, governance frameworks and on the ground conditions relevant to ER vary across the country. The development of existing frameworks has enabled the GoI and REDD+ implementers to refine approaches and management of relevant risks, including addressing capacity gaps. This is particularly relevant for the sub-national and project levels, where PRISAI, SES, and PGA are expected to be applied consistently across ER interventions. The linkages of the existing safeguards instruments, including the applicability of SIS-REDD+ across ER interventions are currently being tested to enable improved synergy and coordination.

Stakeholder engagement and community consultations remains an iterative exercise and will be regularly revisited to ensure ERP legitimacy and promote broad participation. Engagement promotes transparency and participation and increases the confidence of the diverse stakeholders in the program, which in turn engenders a stronger sense of ownership and acceptance. This approach enables the outputs from sub-national perspectives and therefore is expected to enhance the current ERP design.

14.2.2 Safeguards Information System (SIS) REDD+ as a Form of GoI's Commitments for Promoting Transparency and Effectiveness

SIS-REDD+ requires REDD+ implementers to independently assess and report on safeguards implementation. The system is intended to promote transparency and accountability from the site level. For this purpose, the MoEF has formulated APPS, a Safeguards Implementation Assessment Tool. The tool was developed on the principles of simplicity, transparency, accountability, completeness, and comparability. APPS provides a checklist of supporting documents required as evidence of REDD+ safeguards implementation. It is provided along with the complete PCI under SIS-REDD+ in the Annex and can be downloaded on the SIS- REDD+ website (http://ditjenppi.menlhk.go.id/sisredd/). The followings are the main content of the SIS REDD+, of which details are provided in each of this key content:

Table 14.8. Summary of Main Content of SIS REDD+

Main Content	Details
A. About Safeguards	Provide detail information on the history of Indonesia SIS-REDD+, Safeguards of REDD+, Indonesia SIS-REDD+, and links of relevant institutions.
B. Safeguards Information	Provide information on the safeguards implementation of Safeguards 1 to 7.
C. News	Contains latest information on safeguards implementation activities, new relevant regulatory framework, implementation at FMU level.
D. Guidelines	Provide relevant guidelines for public to download as per their needs. Examples are Guidelines on the Identification of the sources of forests deforestation and degradation and Principles, Criteria, ?Indicators and Measurements.
E. Publication	Guidelines are also made available in here together with other publications.

SIS-REDD+ aims to gather, process, analyze, and present the necessary information on how safeguards are managed and respected in REDD+ activities, ranging from the project sites to district, provincial and national SIS management units. To ensure efficiency, an institutional structure and distribution of tasks and responsibilities for the information system from the site to national level have been established. Further refinement is currently underway to achieve a well-established Safeguard system.

The responsibility to further develop, implement, and manage SIS-REDD+ is currently under the REDD+ Division of MoEF.[56] Two components were created to promote transparency and ease access to safeguards information provided in SIS-REDD+:

1. A database, to manage data and information on safeguards implementation; and
2. A website, tracking progress on safeguards implementation

The SIS-REDD+ website provides a public access to REDD+ implementers or users to report their activities by filling in the checklists and uploading necessary documents as required by the APPS. Stakeholders can find a summary of both general REDD+ activities data and specific information on REDD+ safeguards. The REDD+ Division at MoEF is also considering several options to link the web-platforms to other forestry instruments with REDD+ relevant safeguards elements.

[56] The responsibilities were previously under Pustanling of the former Ministry of Forestry, which changed to the Ministry of Environment and Forestry (MoEF).

SIS-REDD+ has been designed to receive inputs from various stakeholders and allow SIS management units at the sub-national and national levels to work with independent third parties through the establishment of a Multi-Stakeholder Forum or Institution (L/FMP). The L/FMP can be established as necessary with members including representatives from the government, indigenous peoples, the private sector, NGOs, universities, and community leaders. L/FMP serves as a point of communication and coordination between related agencies, provides regulatory recommendations, becomes the contact center for complaints related to the implementation of REDD+ safeguards, and conducts information, education and communication program and activities for awareness-raising and capacity building.

As a relatively well-developed framework in systematic data collection and information presentation, SIS-REDD+ has the potential to assist other frameworks in collecting data and documents through a similar platform. Examples of the current relevant frameworks that SIS-REDD+ may draw from is the FLEGT (Forest Law Enforcement, Governance and Trade) and the Information System for Forest Product Management (SI-PUHH).

14.2.3 Institutional Structure and Information Flow in SIS-REDD+

The SIS-REDD+ website is designed to provide comprehensive and up to date information on safeguards implementation under REDD+, as well as other details of REDD+ (project names, locations, implementers, partners, duration, scope of activities, key achievements as well as challenges and supporting factors). As more data arrives, the website will eventually be able to provide a summary of REDD+ activities in Indonesia in a more precise manner, for both general and detailed information. Further user-friendly and more integrated data and information presentation, such as maps and graphics can be generated.

The National SIS Management Agency (PSIS-Nas) placed under the MoEF's REDD+ Division is assigned as the administrator and manager and is mandated to maintain and further refine the system as well as providing guidance to PSIS at sub-national levels. Including in PSIS-Nas roles and responsibilities are data and information verification, periodical data update, data storing,

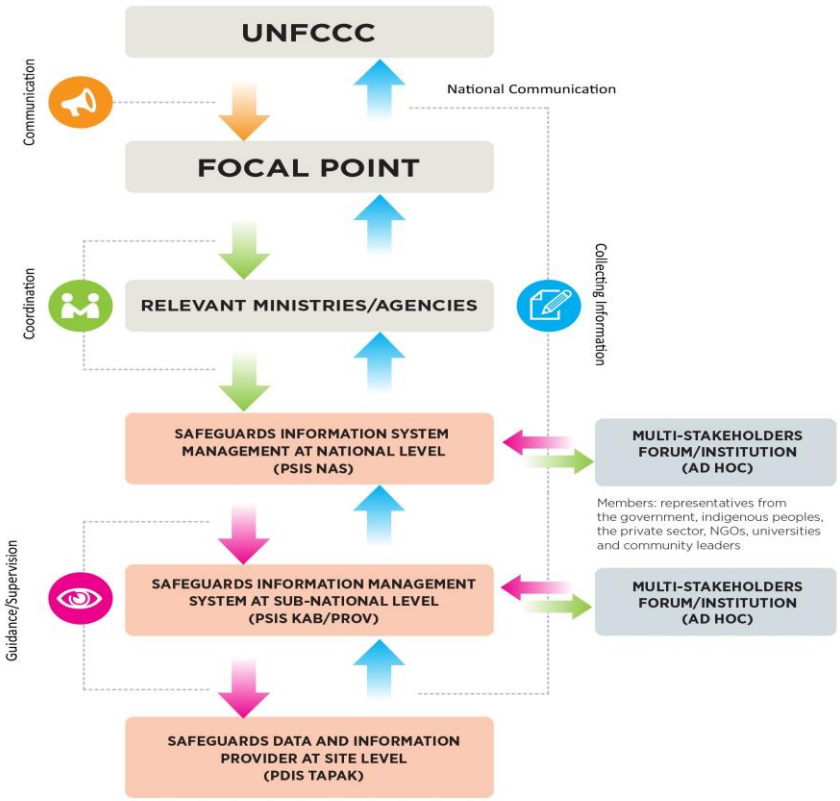


Figure 14. 26 Institutional structure and information flow in SIS-REDD+

and generating analytical information (such as maps and graphics) on safeguards implementation. PSIS Nas, serving as the national information focal point, is responsible in preparing information for the MoEF, to be integrated into the National Communication and/or Biennial Update Report for submission to the UNFCCC.

PSIS Province and PSIS District act as clearing houses that collect, verify, consolidate, process, store data from PDIS Tapak, the smallest institutional unit, and provide consolidated periodical reports to national level that will be made public. In this regard, PSIS Sub-Nas is tasked to provide guidance and facilitation for the development of information systems and databases at provincial and district levels. Included in the guidance are standards, operational procedures, reporting mechanisms and other technical guidelines for SIS implementation. The administrator of data and information at PDIS Tapak is the REDD+ activity implementer, who will be responsible for conducting a periodical self-assessment on project implementation. Upon completion of the self-assessment, the PDIS Tapak data and information administrator will fill in the aforementioned checklist prepared by the REDD+ Division, under the DG for Climate Change of MoEF, and submit it to the SIS management at district or province (District/Provincial PSIS or PSIS Kab/ Prov, also called PSIS Sub-Nas) together with the required supporting documents. PDIS Tapak, or 'users', is also in charge of preparing user-friendly information on safeguards implementation to the public about their respective site, establishment of a grievance mechanism, as well as opening communication channels with stakeholders and disseminating information.

14.2.4 Operation Overview of instrument relevance and coverage of safeguards against Cancun Safeguards of the SIS-REDD+ at Sub National Level

To date, SIS-REDD+ Indonesia has been consistently operationalized in accordance with its initial design at national, provincial and district level. The PCI and assessment tools and institutional structure are followed, and awareness raising on REDD+ safeguards is systematically conducted. At the moment, there are several sub-national jurisdictions working with the central management (DGCC – MoEF), including East Kalimantan, Jambi, and South Sumatra Provinces. These provinces are home to relatively vast forest areas with incredible biodiversity and environmental services,but are also facing tremendous population and economic growth pressures, for example in the agriculture and mining sectors. The Provincial Government of Jambi and East Kalimantan are both committed to implementing REDD+ activities, proven by the development of Provincial REDD+ Strategy and Action Plans (SRAPs). According to the latest data from the Ministry of Environment and Forestry, there are at least six ongoing REDD+ Demonstration Activities in Jambi and East Kalimantan.

A number of initiatives have been conducted in collaboration with partners and local governments since 2013 to gain feedback from various stakeholders, particularly on developing SIS-REDD+ at the sub-national levels, installing piloting systems, and improving the capacity of regional technical staff.

The following are lessons learned from these activities at the sub-national level:

1. **A permanent formal institution at the district/provincial levels is necessary for SIS management.** This is to ensure clear distribution of roles and responsibilities to enhance sustainability of the information system. Such arrangements do not necessarily require establishment of a new institution, but can capitalize on existing agencies while strengthening their institutional capacity.

2. **Enhancing human resources capacity and infrastructure is key to allow effective data collection and reporting**. This applies both for the data managers at the provincial and district level (PSIS Provinsi/Kabupaten), who are responsible to consolidate and verify data, as well as REDD+ implementers (PDIS Tapak), who are expected to supply the information and necessary documents.

3. **The sub-national SIS shows potential to be a key element of a broader Forest Management Information System (FMIS)**. The sub-national SIS is currently addressing sustainable forest management (SFM), good forest governance (through FLEGT), and biodiversity conservation. A combined approach of human capacity development and procurement of sufficient technical infrastructure is essential to strengthen the SIS at the district and provincial levels.

14.2.5 Further Development and Improvement

Indonesia has become one of the leading countries in building REDD+, including safeguards, with the SIS-REDD+ as one of the most important building blocks for REDD+ governance. Yet, some improvements and preparation are required to ensure a sound information system on

safeguards that can support a full implementation of REDD+ efficiently. These measures comprise efforts for (a) improving the institutional and legal mandate and (b) capacity building.

14.2.6 Institutional and legal mandate

The necessary steps may include:

1. Operationalization of SIS-REDD+ in Indonesia based on Ministerial Decree No. 70/2017 on REDD+ Implementation. It will serve as a formal guideline for implementers of REDD+ activities in Indonesia on the provision and reporting of information on how REDD+ safeguards are addressed and respected. The regulation defines how data and information will be managed in accordance with relevant COP decisions;
2. Encouraging use of SIS- REDD+ to support the REDD+ National Registry System for Climate Change (SRN PPI) on SRN PPI website (http://www.ditjenppi.menlhk.go.id/srn/);
3. Identifying and assessing institutions and individuals as potential members of the Multi-Stakeholder Forum (MSF) at provincial and district levels; and
4. Identifying needs at the national, provincial, and district levels to develop and maintain SIS- REDD+.

14.2.7 Capacity building

The necessary steps may include:

1. Continuing the implementation of SIS-REDD+, PCI, and APPS in Jambi and East Kalimantan provinces after successful consultation processes with stakeholders and several trials;
2. Evaluating and continuously improving the SIS-REDD+ web-platform, keeping in mind the wide disparity of infrastructure and technical capacities in various forested areas across Indonesia;
3. Rolling out SIS-REDD+ in other provinces and districts, emphasizing the benefits and importance of a REDD+ safeguards information system and securing support from the local government, including commitment and resources for the necessary human resources and infrastructure;
4. Identifying ways to utilize other emissions reduction initiatives, such as the Forest Management Unit (FMU, or KPH in Indonesian), and integrate SIS into their activities at field level and feed this information into the national system. Related activities may include defining standard operating procedures (SOPs) and reporting mechanisms for SIS-REDD+ at the district and/ or provincial levels;
5. Developing models for local capacity building based on identified safeguards as well as existing infrastructure and capacity in the respective areas; and
6. Fostering further understanding about the relationship and the importance of coherence between SIS-REDD+ and other safeguards frameworks that have been introduced and developed in Indonesia. SIS-REDD+ will function as a clearing house (see Figure 6), to which other, often CSO-led, frameworks could feed complementary information and improve the data available, as well as the main platform to share the information with stakeholders in Indonesia and globally. Lessons learned from the piloting and implementation of these safeguards frameworks will also inform the iterative improvement of SIS-REDD+, particularly at the provincial and district levels.

14.3 Description of the Feedback and Grievance Redress Mechanism (FGRM) in place and possible actions to improve it

Acknowledging that the ERP is built on multiple initiatives across relevant sectors and involve multiple agencies at both national and sub-national levels, the FGRM is currently being developed to coordinate across existing mechanisms to address grievances and disputes. Under the ERP, a Program Management Unit (PMU) at the national level and provincial REDD+ Taskforce, with extension units at the district level will be established to monitor and report grievances and conflicts to relevant stakeholders in a coordinated and timely manner. The FGRM institutional arrangements will be nested in the ERP institutional arrangements, which are currently being finalized. Under the existing internal MOEF's FGRM systems, the Directorate General of Law Enforcement on Environment and Forestry (Ditjen PHLHK or also well-known as Ditjen GAKUM) and the Directorate General of Social Forestry and Environmental Partnership (*Perhutanan Sosial dan Kemitraan Lingkungan/Ditjen PSKL*) [57] are key departments within MOEF who are mandated to address forestry related disputes. Specific coordination mechanisms, including definition roles and responsibilities are currently being developed and will be finalized as part of the development of ERP institutional arrangements.

14.3.1 Existing FGRM Processes under ERP

The ERP FGRM is currently placed under the SIS-REDD+ system, set up by the Ministry of Environment and Forestry, that is being developed further into a web-based FGRM. **The Government is in the process of refining the FGRM to best address ERP, including <u>an internal and cross-sectoral coordination mechanism and referral system</u> (Figure 14.2).** FGRM unit for the ERPD will be established under and operated through the existing mechanism that goes up to TAPAK level. Several options available for FGRM to be hosted under the Directorate General of Law Enforcement on Environment & Forestry (Ditjen PHLHK or also well-known as Ditjen GAKUM), Directorate General of Social Forestry and Environmental Partnership (Perhutanan Sosial dan Kemitraan Lingkungan/Ditjen PSKL), or a new established unit for ERP-FGRM under Ditjen PPI, in which SIS is placed. Ditjen GAKUM has the institutional readiness for complaint handling with its four directorates of (1) complaint, surveillance and administrative sanctions, (2) dispute resolution, (3) forest prevention and protection, and (4) criminal law enforcement. Ditjen KLHS, with its Directorate on Complains on Conflict, Tenurial, and Customary Forest, will also be relevant considering that addressing tenurial conflict is crucial for the success of ERP implementation.

The following are identified processes of the FGRM: a) receive and record grievance; b) screen and categorize grievances; c) acknowledge receipt and its follow up action; d) refer to the relevant ministries, for non ER P grievances, e) investigate, for ER P grievances, which includes field visit for verifying and validating grievances ; f) act/follow up and g) conclude. An appeal to the court

[57] The Ditjen GAKUM and Ditjen PSKL were identified for the reasons that both indicates a readiness that can be equipped further for an FGRM for ERP. The Ditjen GAKUM has the following relevant Directorates on (a) complaints, surveillance and administrative sanctions, (b) dispute resolution, (c) forest prevention and protection, and (d) criminal law enforcement. Whilst Ditjen PSKL has a specific Directorate on Complains on Conflict, Tenurial, and Customary Forest, which is strongly relevant with ERP.

might take place, in the case of not reaching a mutually agreed resolution. Appeal mechanisms are identified in the aforementioned Law No 32/2009. This law is further translated in the Government Regulation no 27/2012 and MoEF ministerial regulation no P.22/MENKLHK/SETJEN/SET.1/3/2017 on the complaint handling mechanisms. A monitoring and reporting system will be established/put in place.

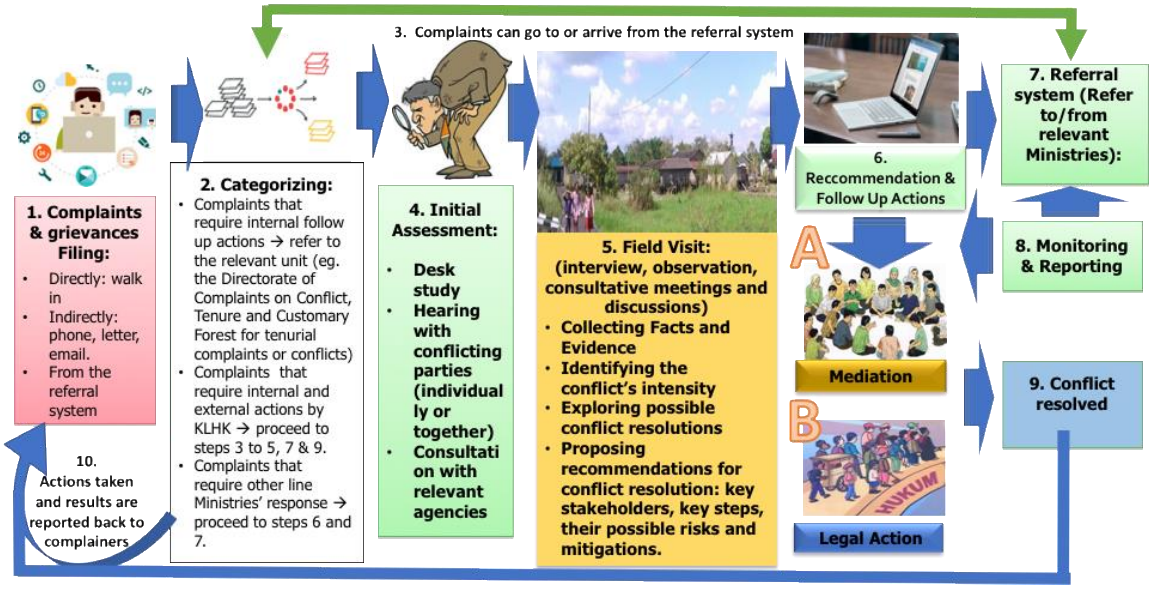


Figure 14. 27 ERP FGRM Processes (source: MoEF)

The FGRM for the ERP will adopt the following principles: a) accommodate existing systems to the extent possible, b) fully integrate the FGRM system into the existing mechanisms within MoEF, c) enhance other GoI's grievances mechanisms at both national and sub-national levels insofar as it is relevant. The FGRM units will seek to enhance coordination with the existing units under MoEF and East Kalimantan Government as well as other external channels. The FGRM business process is further illustrated in Figure 14.2. As such, the unit will work closely with the other grievance mechanisms in MoEF (such as under FIP) and grievance mechanisms of the Government (such as the President's LAPOR) and needs to be further equipped with a referral mechanism to ensure grievances are directed to the right responsible unit within KLHK, or other relevant ministries or government agencies for proper responses. The mechanism and institutional structure will: (a) reflect existing capacity within potential entities and/or structures with mandates or authorities to manage grievances, (b) include a roadmap for GRM pilot/model at sub-national level that takes into account the available capacity and resource, (c) pay serious attention to the tenurial conflicts and the latest relevant regulatory frameworks, especially at sub-national levels, and, (d) address the carbon and non-carbon benefit sharing related grievances. This best mechanism is as yet to be defined and further assessed by a consulting company that is currently being procured.

The ERP identifies the following key areas of support for Provincial and District Governments in operationalizing and enhancing the existing FGRM process in their respective jurisdictional

area. Law No 32/2009 on Environmental Protection and Management stipulates the authority, roles and responsibilities of sub-national governments with regards to addressing tenurial issues and handling of conflicts. Some of the areas to strengthen FGRM processes under the ERP include:

a. Regulatory development: the current conflict resolution frameworks at the provincial and district levels will still need to be enhanced to ensure that they are operational and clear with regards to roles and responsibilities;
b. Development of well-defined monitoring, verification and reporting protocols for FGRM that directly feed into corrective actions (e.g. amendment of workplans and mitigation measures);
c. Enforcement mechanisms for administrative and legal sanctions in the event of infringement and lack of compliance;
d. Promoting citizen participation and accountability in FGRM (checks and balances), which also encompass addressing access issues for vulnerable groups;
e. Development of incentive mechanisms for reporting cases and legal protection for "whistleblowers";
f. Translating the existing national and sub-national FGRM mechanisms (such as ones for AMDAL and KLHS) in a more practical and responsive manner. This will need to factor in accessibility of such mechanisms, public access and disclosure of information, engagement from planning to implementation, etc.
g. Litigation support for vulnerable groups and/or communities (e.g. community disputes with private companies);
h. Institutional capacity strengthening at individual agency level to enhance impartiality, transparency, and capacity to respond grievances in a timely fashion;
i. Availability of qualified and credible community mediators and paralegals to assist conflicting parties to settle disputes through consensus.

The GoI considers the importance of operational FGRM under the ERP to provide assurance for communities to raise their concerns, objections and complaints, thus enabling their rights to be fully respected. By doing so, it is expected that the ERP legitimacy and credibility can be enhanced to ensure sustained participation. The GoI is taking serious measures to enhance monitoring, reviewing and reporting capacity of the current FGRM in order to enable corrective actions, adjustment of mitigation measures as well as law enforcement in a more responsive manner. Such efforts are crucial to ensure regulatory compliance and institutional credibility.

14.3.2 Relevant Regulatory Frameworks for FGRM under the Social and Environmental Management

An initial analysis and identification of the relevant regulatory frameworks and their roles in FGRM especially with regards to conflict handling has been conducted and will feed into the current initiative on FRGM refinement. This analysis further signifies the importance of law enforcement mechanisms, especially in addressing the potential risks of criminalization due to legal disputes and infringements of environmental management of ERP activities. The FGRM of AMDAL has been well recognized by Provincial and District Government, but more needs to be done in translating them further at a more practical level and in a more comprehensive and appropriate manner, especially on KLHS. This becomes more relevant with the development of space for a community to raise their concerns, complain and to obtain access for full engagement in the entire ERP programmatic cycles.

Law No. 32/2009 on the Environmental Protection and Management and Law No 26/2007 serve as the primary regulatory frameworks in the environmental management which governs which communities' engagement and complaint-handling mechanisms as well as sanctions for incompliance are stipulated. Law No 32/2009 requires a social and environmental impact assessment by the Government prior to the development of mid-term and other relevant development planning and programs, and by business prior to the development of the business plan. Law No. 26 /2007 on Land Use Planning provides guidance in spatial planning for commercial activities, natural resource conservation and environmental protection. Sanctions are applied for the issuance of concession licenses that do not comply with the guidance. Relevant other regulatory frameworks include Government Regulation no 27/2012 on the Environmental Permit and Ministerial Regulation No 17/2012 on the Guidance for Involving Communities in Analyzing Environmental Impact and Permit.

Table 14.9 Initial analysis of the relevant regulatory frameworks of KLHS, AMDAL and GAKKUM

Aspect	Regulatory Frameworks		
	KLHS	**AMDAL**	**Gakkum**
Object	Policy, planning and program (at provincial and district level)	Project planning at FMU	Specific case
Mechanisms	Mechanisms are not stipulated in detail	Detailing in accordance to activity classification and authority of Commission on AMDAL Evaluation	Mechanisms follow the existing arrangement of Ministries, Governor, head of district
Institutions	No detailing, following the existing authority and mechanism of KRP (*Kebijakan, rencana, Program /* Policy, Planning, Program) technocratic	Detailing in accordance to activity classification and authority of Commission on AMDAL Evaluation	Hierarchical arrangement in accordance to the authority of Ministers, Governor, and Head of District/Municipality
Time table	No details are provided for the time table for the conflict handling	No details are provided for the time table for the conflict handling	No details are provided for the time table for the conflict handling
Follow up	Recommendation of KRP refinement in accordance to the technocratic mechanisms of KRP	Changes in environmental permit, environmental audit, and law enforcement by Gakkum	Administrative and legal sanctions

Potential Conflicts	Political and economic conflict, that can be extended to legal dispute, and possible risk of criminalization	Legal dispute, and possible risk of criminalization	Summation, legal dispute for compensation.

Source: KLHK presentation of the FGRM workshop for ERPD, 8 March 2018

This regulatory framework, particularly Law No 32/2009, requires the engagement of the affected community, environmentalists and/or other affected parties starting from the planning processes through public announcement on business and/or activity plan and a public consultation. A business plan has to be made public and within a period of ten working days after the announcement, the public is allowed to raise their written concerns, propose suggestions, opinions and other responses to the plan. These are to be submitted to the proponent and the minister, governor, or head of district/mayor. Attention is paid to the environmental/forest degradation, where the Ministry of Environment and Forestry issued the Ministerial Regulation No. 22/2017 on the Mechanism for Managing Complaints on Suspected Polluting and Environmental and/or Forest Degrading Actions.

Nonetheless, Indonesia still needs to work more on the social conflict resolution mechanism, which often is interlinked with environmental disputes. An example is on the tenurial conflict that often occurs within the social forestry program. The Ministerial Regulation No. 83/2016 on Social Forestry issued by the Ministry of Environmental and Forestry articulates an aim to solve tenurial and legal issues of local, indigenous and tribal communities living within or surrounding forest areas for the sake of improving community welfare and preserving forest function. This Social Forestry scheme is implemented through 5 different programs, namely community forest, customary forest, community plantation forest, village forest and forestry partnership. However, this regulation and other relevant regulatory frameworks have been lacking conflict handling mechanisms, such as impartial mediators and/or paralegals to help in mitigating conflicts before they escalate into serious legal disputes or to provide assistance to the affected communities should conflicts intensify and become legal disputes.

14.3.3 REDD+ Environmental and Social Conflict Resolution

REDD+ may have negative impacts on communities, as identified in the previous section of this chapter, by limiting communities' access to REDD+ forest areas, leading to loss of community forest-based livelihoods. The REDD+ complaint handling mechanism can make use of the existing relevant policies and regulatory frameworks, such as the MoEF Ministerial Regulation No. 22/2017, that provide mechanisms to resolve tenurial conflict, illegal logging, forest and land burning, encroachment, and wildlife hunting. This regulation stipulates the responsible Government agencies for managing complaints at national and subnational levels. The Ministry of Environment and Forestry is the responsible Ministry at the national level. At the subnational levels the responsible agencies include the Provincial Law Enforcement Agency, the Post for Complaints at the Provincial and District/Municipal Environmental Agency, and the Forest Management Unit at site level.

As stipulated in the Ministerial Regulation No 22/2017, there are five steps for complaint handling, i.e. grievance receiving, review, verification, reporting, and follow-up action. For verified complaints, follow up actions would include sanctions. There are five types of sanctions identified in the Regulation: (1) administrative sanctions, (2) mediation for off-court dispute resolution, (3) criminal law enforcement, (4) ordering the respective sections/units to address the issue, and (5) requesting relevant agencies to address complaints. The Ministerial Regulation also stipulates that communities' engagement in complaints handling should be based on the basic principles of (1) transparent and complete information,(2) equality, (3) fair and wise problem solving, and (4) coordination, communication and cooperation among concerned parties.

Unattended grievances may develop into social conflicts such as tenurial conflict, limited community's access to natural resources and land, and inequitable benefit-sharing, which could eventually lead to the failure of REDD+ programs in reaching emission reduction targets. Hence, identification of factors that can lead to the occurrence of social conflict at various stages of the implementation of REDD+ activities are necessary. Law No 7/2012 regarding the Management of Social Conflict, only considers hostile and/or physically violent clashes between two or more groups of people which take place in a certain period of time and with a broad impact that leads to insecurity and disintegration that disturbs social stability and hinders national development.

As outlined in the Law, included in the social conflict handling mechanisms are (1) conflict prevention, (2) cessation of conflict/hostility, and (3) post-conflict recovery. Conflict prevention is conducted through maintaining peace in society, developing a system of peaceful dispute settlement, reducing potential conflict, and establishing early warning systems. Conflict termination is done through the cessation of physical violence, determination of the status of emergency, protection of victims and deployment of authorized officers. Post-conflict recovery includes reconciliation, rehabilitation, and reconstruction.

The Government pays serious attention to land tenure conflict and its resolution, also through the issuance of MoEF Ministerial Regulation No. 84/2015 on Environment and Forestry, in which tenurial conflict resolution consists of mediation, social forestry, and law enforcement.

14.3.4 Possible actions to improve it

The Government pays serious attention to guaranteeing communities' rights to be fully engaged in environmental management and to raise their concerns/objections/complaints as protections through the development of high quality FGRM that meet international standards. The following are the current efforts of the Government that deserve further technical assistance for a well-developed FGRM:

a) Well defined measures for monitoring, reviewing and reporting the FGRM to feed into the corrective actions such as revisiting KRP, changing mitigation plans.
b) Enforcement mechanisms of administrative and legal sanctions. This is particularly true with mining companies that do not comply with their obligation to restore and conserve their former mining area.
c) The President Office's LAPOR, a web-based FGRM initiative
d) Community consultative meetings for development planning and implementation (*Musyawarah Perencanaan Pembangunan/Musrenbang*), available at all levels, including the village level. This can be further utilized for ascertaining the need and interests of women,

children as well as marginalized and vulnerable group through organizing a special Musrenbang for them (such as in the Municipality of Banda Aceh and in Central Java Province, where a women and/or children *Musrenbang* is/are also made available).

e) Better defined incentives and disincentives to be used as part of a grievance handling mechanism (like incentives for the community to provide accurate reports)
f) Conflict handling desk
g) Legal mitigation and litigation technical support: These are often required especially for the communities who are in dispute with companies.
h) Better community engagement in the development and refinement of FGRM through providing checks and balances.
i) Further developing the second line enforcement in the current FGRM and conflict handling mechanism.
j) Translating further the national FGRM regulatory frameworks (such as on AMDAL and KLHS) in a more practical, comprehensive and appropriate manner. This is especially true with respect to the space where communities can raise their concerns and/or complain, and the guarantee for open access through which communities can be fully engaged from the initial stage of planning to the social monitoring at implementation stage.
k) Well qualified and impartial FGRM personnel such as web-based FGRM operators and officers for a quick and qualified response mechanism
l) Well qualified paralegals at field levels, with skills and experience as mediators and facilitators.

15. BENEFIT-SHARING ARRANGEMENTS

15.1 Description of benefit-sharing arrangements

Funding from the Carbon Fund will go to the Ministry of Finance, which manages Indonesia's public budget. From here, funds will be transferred to the Environmental Fund Management Agency (*Badan Pengelola Dana Lingkungan Hidup/BPDLH*), which is currently being developed and which is expected to be established by the end of 2018. Should the BPDLH not be finalized in time, funds will be transferred to the Government of East Kalimantan through an on-granting mechanism, for further transfer to beneficiaries at the local level. All transfers, whether via BPDLH or through on-granting, will be verified by the Ministry of Environment and Forestry to ensure that they are based on performance, and meet the principles and criteria of REDD+ and the Carbon Fund. All pertinent criteria and supporting documents for accessing REDD+ payments will be developed and managed by the Ministry of Environment and Forestry. Any grievances regarding the carbon fund payment transfer and its mechanism will be addressed through the FGRM (Chapter 14.3). It is expected that the BPDLH will receive funding from multiple donors, which will be placed into separate accounts. Initially the BPDLH will distribute funding from the Carbon Fund as grants and loans, but other funding approaches will be developed.

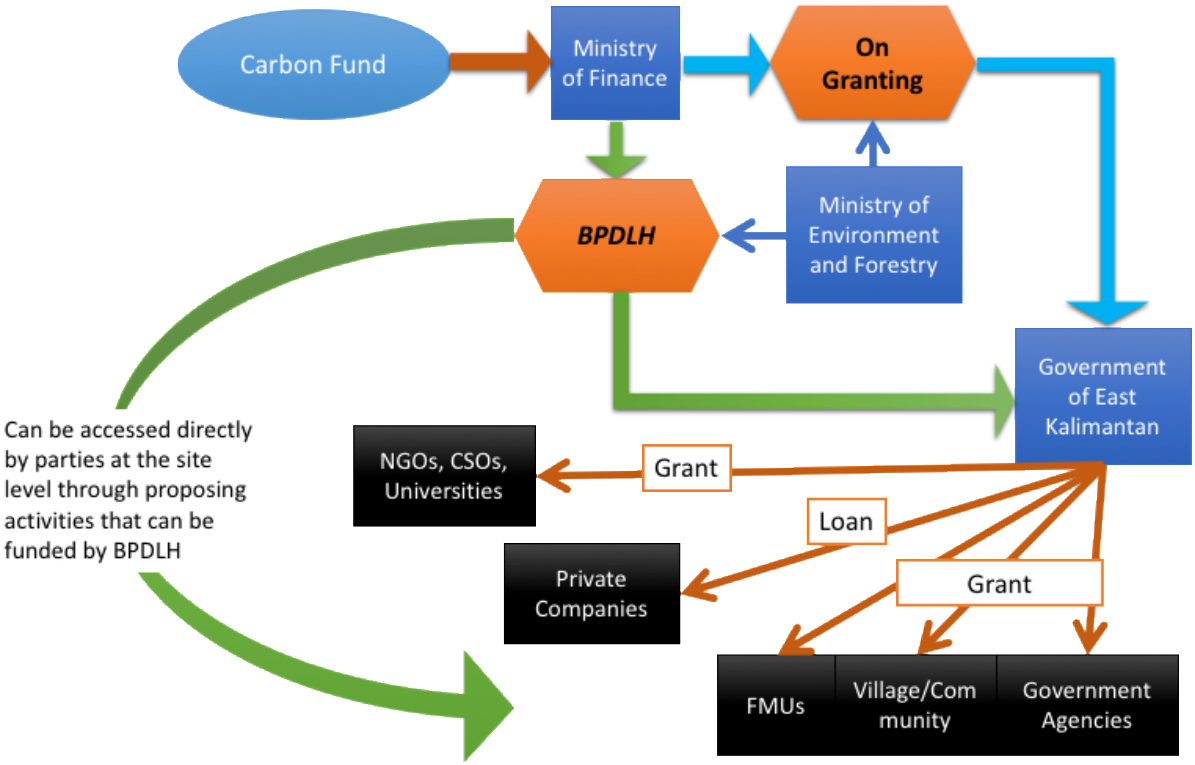


Figure 15. 28 The Carbon Fund Transfer Mechanism

15.1.2. The Environmental Fund Management Agency (Badan Pengelola Dana Lingkungan Hidup/BPDLH)

The basis for the establishment of the BPDLH was finalized in 2017 with Government Regulation No. 46/ 2017 on the Economic Instrument for the Environment. The Government has also prepared the strategic business plan, the structure of BPDLH (to be legalized through a Ministerial Decree from the Ministry of Finance), the investment plan, and the financial report for the BPDLH and is in the final stage of preparing the Presidential Decree on the establishment of BPDLH. GOI has allocated state for the operationalization of BPDLH. Other processes, such as the selection of trustee, and the assignment of BPDLH's head and staff take place after BPDLH has been fully established.

As a public service agency (*Badan Layanan Umum/BLU*), the Environmental Fund Management Agency will be under the supervision of Ministry of Finance for issues related to finance, and under the supervision of the Ministry of Environment and Forestry for technical issues. The BPDLH will be managed by a of head of BLU, finance officials, and technical officials. The supervision of the BLU will be carried out by the supervisory board established by Minister of Finance Decree and consisting of representatives from related line ministries. The Supervisory Board can establish a technical team with members from line ministries and experts to support their work in supervising the BLU, including in assessing fund proposals. Further, the operations of the BPDLH will be directed by a Steering Committee established by Presidential Decree and consisting of representatives from key Ministries, including, the Ministry of Finance, the Ministry of Environment and Forestry and BAPPENAS. In this case, the Ministry of Environment and Forestry will be the coordinator of the Steering Committee.

BPDLH's REDD+ Program will serve as the central funding mechanism for the implementation of the National REDD+ Strategy in Indonesia. The BPDLH will manage and mobilize environmental funds from various sources, including donors, the private sector, international agencies, foreign governments, local governments and the central government. Funding could come from the issuance of green bonds, from proceeds from carbon trading, and non-tax revenue such as licensing fees.

The BPDLH is expected to adopt international standards in terms of fund management and distribution, and it will employ an asset management approach that separates assets from the fund manager (BPDLH) by utilizing a custodian bank as trustee. The BPDLH will have several funding windows including a conservation window, a climate change window, and an environmental degradation window. REDD+ will be one of the programs under the climate change window. Financing will be guided by the REDD+ financing scheme which is stipulated through Environment and Forestry Ministerial Regulation No. 70 of 2017 on the Implementation of REDD+. According to the regulation, REDD+ funds will be distributed through a custodian bank to subnational governments or to other REDD+ implementing agencies. If the latter do not have the capacity to access the funds directly, funds can pass through an intermediary agency. Intermediary agencies for channeling funding to the local site could be NGOs that have experience working with funding for local communities.

Entities will be able to access the fund by submitting a concept note to the BPDLH together with proof of emission reductions that are recorded in the national registry. After the BPDLH endorses the concept note, the proponent completes a full proposal that will be assessed by the technical

team. If the proposal meets the requirements, the Head of BPDLH will give approval and there will be a contractual agreement between the BPDLH, the custodian bank, and the proponent. The agreement will be a tool for MoEF to monitor the payment through the national registry, and for BPDLH to evaluate the utilization of the results-based payment.

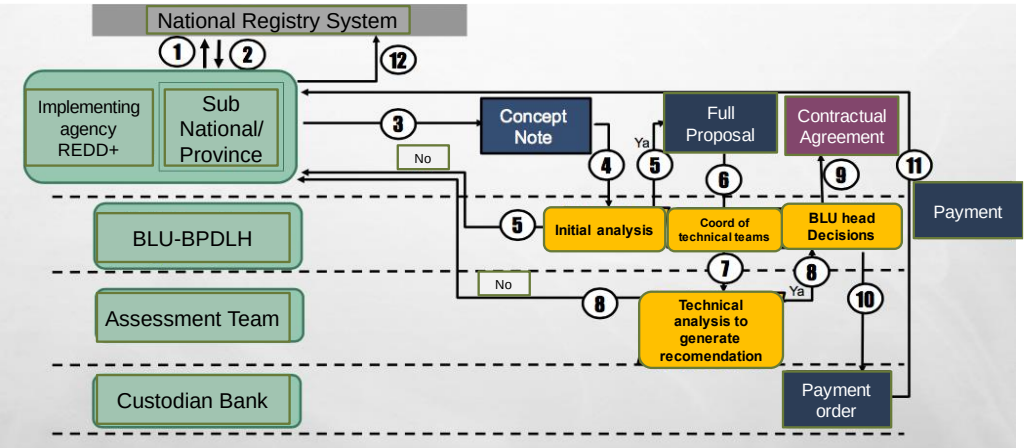


Figure 15.8 The proposed BPDLH funding mechanism

15.1.3 Funding flow from the Provincial Government to the site level

The Government of East Kalimantan will receive funding through on-granting from the Ministry of Finance, in addition to receiving funds through the BPDLH once that has been established. Transfers will be subject to verification by MoEF and registration of ERs in the National Registry. East Kalimantan is in the process of identifying mechanisms for distributing benefits to site level. However, before specific REDD+ mechanisms are finalized, several existing financial instruments will be used to channel payments from the province government to the site level. Payments to government agencies, such as FMUs, and village governments will be through grants. The payment from local government to village government can be distributed in cash, service (training, technical assistance, etc), and through support for public facilities. Benefit transfers to private companies can be in the form of loans. Benefits to NGOs, CSOs, consultants, and universities will be in the form of payment for technical support provided by these entities to the Government and it is classified as a grant.

A key recipient of benefits will be the villages where REDD+ activities have taken place. The recent Village Law provides the foundation for village-level REDD+ programs that are aligned with village development. Villages have the authority to plan and manage their own development through the design of medium-term development plans (RPJMDes). These plans are funded through the national budget (APBN) which is transferred through the subnational budget (APBD). The RPJMDes include land use plans that are aligned with village development goals. By integrating REDD+ activities into its RPJMDes, a village can receive pre-funding for such activities through the Village Fund. The ER Program's benefit sharing mechanism will be designed to also provide results-based financing to villages for verified emission reductions .

A clear mechanism for distributing benefits from the subnational level to local beneficiaries is required and is currently being developed. It is expected that the mechanism can be established by the end of the year 2018.

15.1.4. Beneficiaries

Fund distribution from BPDLH will require that the beneficiaries of REDD+ have a legal status. The main beneficiaries of REDD+ and of the ER Program are as follows:

(1) The National Government, through its role in REDD+ implementation at the national level
(2) Local government, through its role in REDD+ implementation at the subnational level
(3) NGOs and CSOs that support local REDD+ actors
(4) Private businesses that have legal permits in REDD+ areas or that support local REDD+ actors
(5) Educational and research institutions that contribute to emission reductions
(6) Community associations that are REDD+ actors or support those that are
(7) Other institutions that meet the criteria set by the Steering Committee.

In addition to monetary benefits, the ER Program will lead to a number of non-monetary benefits for local communities, customary communities, and the private sector. These are described in Section 16, and include improved access to forests, livelihood opportunities, ecosystem services such as flood control, a clearer licensing regime, and reduced conflict over land.

15.2 Summary of the process of designing the benefit-sharing arrangements

An initial workshop was held in December 2015 in Jakarta to discuss the channeling of funding from the Ministry of Finance to the province. This workshop included representatives from MOEF, MOF, the East Kalimantan Government, development partners and national NGOs. The meeting helped to identify on-granting mechanism as a potential component of the benefit-sharing arrangements. A study on the Benefit Sharing Mechanism in East Kalimantan was conducted in 2016.

Benefit sharing arrangements were discussed further between the Ministry of Environment and Forestry and the Provincial Treasury Agency. In November 2017, the Provincial Treasury Agency (BKAD) and provincial development planning agency (BAPPEDA) discussed the appropriate benefit sharing arrangement for East Kalimantan. It was suggested that the FCPF might use the on-budget off-treasury mechanism for benefit-sharing arrangements so that it will avoid bureaucracy procedures from central to province and/or district government.

As mandated in Act No 32/2009 on Environmental Protection and Management, the Government should provide a policy for an environmental economic instrument. Referring to this mandate, the Government issued Government Regulation No. 46/2017 which regulates development planning and economic activities, environmental funding, and incentives/disincentives. As an umbrella regulation, PP 46/2017 regulates that the government applies the public service agency (BLU) approach to managing the environmental fund. The discussion process of Government Regulation no 46/2017 involved related stakeholders, including other line ministries, local governments, NGOs, the private sector, and academia. Further, a public consultation process was held in selected areas to gain input from local government and other local stakeholders.

The final Benefit Sharing Mechanism will be designed through a consultative process involving the key stakeholders. So far, the system has been discussed at the national level, and further consultations at the district, provincial, and national level levels will be conducted.

The roadmap for the completion of the Benefit Sharing Mechanism is as follows:

June 2018	Completion of Terms of Reference for the finalization of the BSM
July 2018	Contracting
July-December 2018	Stakeholder Consultations
July-December 2018	Finalization of the BPDLH at the national level
December 2018	Final design of the BSM
January–February 2019	Selection of intermediary institutions
March 2019	Implementation of grant funding
2023 - 2030	Implementation of performance-based funding

15.3 Description of the legal context of the benefit-sharing arrangements

The legal context for the benefit-sharing arrangements is as follows:

1. Act No. 1/2014 on State Budget Treasury regulates that BLU's management is one of State Treasuries. In terms of BLU of Environmental Fund or Public Service Agency of Environmental Fund, supervision on fund management is under Ministry of Finance and supervision on technical issues is under Ministry of Environment and Forestry. Minister of Finance, as State General Treasurer, designates a Proxy of State General Treasurer to manage fund in their capacity within their organization (BLU).
2. Government Regulation No. 45/2013 on Procedure of State Budget Implementation regulates that grant, as one of government revenue sources, can be distributed as a grant to local government, Indonesian Stated Owned Enterprises and Regional Owned Enterprises. Further, as one of government revenue sources, grants also can be distributed through social assistance mechanism to communities intending to protect the communities from social risk, to enhance social welfare as well as to enhance economic ability. Government can also distribute the grant through non energy subsidize mechanism to fulfil people live. In terms of this matter, Ministry of Finance, as Budget User of the Government Revenue, can designate an official at a ministry or an institution (i.e. BLU) as Proxy of Budget User.
3. Government Regulation No. 10/2011 on the Procurement of Foreign Loans and Receipt of Grant regulates on how loans and grant works. Loans and grants can be classified into "planned" and "direct" loans and grants. Planned loans or grants should be a part of national development planning and all ministries who will access loans or grants should propose the program/activities funding by loans or grants. Meanwhile, direct loans or grants that goes directly to ministries should be consulted with Ministry of Finance, Ministry of Bappenas, and related Ministries before loans or grants agreement signed. After that Ministry who will get direct loans or grants can ask BLU to manage the funds.
4. Government regulation No. 46/ 2017 on the Economic Instrument for the Environment. The regulation is basis for the establishment of BPDLH. It also stipulates that the Fund could appoint a custodian bank as a trustee. The Trustee would have no decision-making power for project approval and would not be responsible for implementation or

supervision of projects. The Trustee would perform all fund management functions (i.e. the accounting, treasury, and reporting) and be responsible for investment management, such as receiving funds, holding and investing funds, disbursement and financial reporting.

5. Government Regulation No. 2/2012 on Grants for Regions regulates that BLU can be a mechanism to distribute grants from central government to local government. Grants can be distributed referring to based on result (result-based payment). Grants to local government is accounted as APBD.
6. Government Regulation No. 74 year 2012 on changing the regulation of government regulation No. 23 year 2005 on financial management of the BLU.
7. Environment and Forestry Ministerial Regulation No. 70 of 2017 regulates that the distribution of REDD+ financing consist of two approach covering input based payment for enabling environment activities and result based payment for emission reduction achievement. The input-based payment will be distributed based on the enabling environment program/activities proposed. The results-based payment mechanism will be based on verified emission reductions.
8. Regulation of Minister of Finance No. 191 of 2011 on the Mechanism for Grant Management. The regulation provides more detail about grant account management.
9. Regulation of the Minister of National Development Planning/Head of Bappenas No. 4 of 2011 on the Procedures for Planning, Proposal Submission, Assessment, Monitoring and Evaluation of activities financed by Foreign Loans and Grants
10. Regulation of the Minister of Finance No. 188 of 2012 on Grants from the National Government to the Regional Governments
11. Regulation of the Minister of Home Affairs No. 32 of 2011 and its amendments
12. Regulation of the Minister of Home Affairs No. 39 of 2012 on Guidelines for Grants and Social Assistance derived from APBD. This stipulates that grants expenditure from APBD covers individuals/ families, communities, and NGOs. The local government can allocate grants and social assistance if the local government has established a Regional Head Regulation (PerGub/PerBup) related to those issues. The local government can then provide fiscal incentives to beneficiaries consisting of private companies, communities/villages and NGOs.

16. NON-CARBON BENEFITS

16.1. Outline of potential Non-Carbon Benefits and identification of Priority Non-Carbon Benefits

Actions and investments to reduce deforestation and degradation in East Kalimantan will result in important benefits in addition to emission reductions. Such non-carbon benefits include above all the improvement of livelihoods of forest-dependent communities, and the protection of ecosystem services, including: biodiversity, improved water quality, soil fertility, flooding and erosion control, and habitats of game and fish. Another key expected benefit of the ER Program is improved forest governance which will lead to reduced land conflict, and to an improved investment climate. Priority non-carbon benefits, are those that are a direct outcome of reduced deforestation, such as the preservation of ecosystem services; and those that are aligned with government and local priorities and are therefore integral to the program design, such as those linked to improved forest governance and livelihoods.

The expected non-carbon benefits and priority non-carbon benefits are described in the table below.

Table 16. 41 Expected non-carbon benefits

Type of Benefit	Explanation	Relevant ERP Activities
Improved access to forest resources for local communities, leading to improved livelihoods (Priority NCB)	Social forestry licenses and livelihood programs will protect and enhance livelihood opportunities for participating communities. Income from SF can include income from timber or from NTFPs such as *gaharu*, rattan and forest honey. Besides improving income, such activities often provide an important economic safety net to local people.	C21A4: Facilitating FMU in supervising and technical support of SFM and Social Forestry C31A1: Facilitating Social Forestry licenses C31A2: Capacity Building of Social Forestry for Community C31A3: Facilitating the implementation of Social Forestry Management C32A1: Building community commitment and partnership in conservation forest area management C32A2: Capacity building for communities in conservation forest C32A3: Facilitating the implementation of conservation forests by community C51A1: Technical support on Village Low Emission Development Planning C52A1: Enhancing sustainable mangrove practices C52A2: Developing new-model swidden-agriculture with community C52A3: Utilizing riparian lands for development of paddy's field with community C52A4: Developing alternative fresh-water fishery C52A5: Enhancing sustainable agriculture practices with community
Natural disaster reduction/prevention	Deforestation has been shown to lead to increased flooding, fires, and landslides. Reducing deforestation should lead to a reduction in frequency and intensity of these events.	Overall program.
Reduced health impacts from smoke and haze	A reduction in land fires, besides reducing emissions, will also lead to a reduction in smoke	C21A5: Facilitating FMU and Community in Forest Fire Protection and Control

Type of Benefit	Explanation	Relevant ERP Activities
	and haze which will have significant health benefits for local populations and will contribute to a decrease in cross-border pollution.	C22A4: Ensuring Implementation of Fire Prevention and control and Forest Protection by forest concessions C42A2: implementation of Forest Fire Prevention and Suppression by estate crops and community C42A2: Implementation of Land Fire Prevention and Suppression by smallholders
Protection of biodiversity (Priority NCB)	By protecting remaining forests, the ER Program will contribute significantly to both national and global efforts to protect biodiversity. This includes the protection of habitat for key species such as the orangutan or the Borneo clouded leopard.	Overall program
Reduced conflict over land (Priority NCB)	Improved forest management, delineation of land use boundaries, settlement of disputes and an improved licensing regime will lead to reduced conflict over land.	C11A2: Increasing policy on transparency and access to information about licensing C11A3: Strengthening spatial planning policies and village development plans that support the emission reduction program C12A1: Reviewing overlapped permits and enforcing policy implementation on licensing moratorium and RIL C12A2: Acceleration of land tenure settlement for community C12A3: Strengthening community participation to reduce conflict in forested area C21A1: Improving the capacity of FMUs C21A2: Ensuring demarcation of boundary and forest utilization block of FMU C51A1: Technical support for Village Low Emission Development Planning
Improved recognition of customary land claims	Increasing the recognition of customary areas (wilayah adat) and customary forests (hutan	C21A4: Faciltating FMU in supervising and technical support of SFM and Social Forestry

Type of Benefit	Explanation	Relevant ERP Activities
	adat) is an important part of GoI's agrarian reform program and will support improved land governance and more equity for East Kalimantan's customary/indigenous people.	C31A1: Facilitating Social Forestry licences C31A2: Capacity Building of Social Foretry for Community C31A3: Faciliting implementation of Social Foretry Management C12A2: Acceleration of land tenure settlement for communities
More effective local participation in government planning processes and strengthened negotiating capacity.	Enhanced access and participation of local people (including women, indigenous people, marginalized and vulnerable groups), in forest management and in spatial planning will be achieved through capacity building activities and through support for the sustainable village planning.	C32A1: Building community commitment and partnership in conservation forest area management C32A2: Capacity Building for Community in conservation forest C51A1: Technical support on Village Low Emission Development Planning

16.2. Approach for providing information on Priority Non-Carbon Benefits

Besides monitoring emissions reductions, the MRV system will also cover non-carbon benefits, including social and environmental benefits, as well as governance indicators. The SIS REDD+ will include evidence-based information on non-carbon benefits and will include both quantitative and qualitative data collection, and will be based on consultations with target stakeholders. Information can be compared to the baseline information collected as part of the SESA. Information on non-carbon benefits will be collected on a regular basis, will be presented in regular progress reports, and will be made available to the public. An initial list of indicators is presented in the table below.

Type of Benefit	Indicators
Improved access to forest resources for local communities, leading to improved livelihoods (Priority NCB)	Increase in the social forestry area Increased production of NTFPs Increased income of participating communities
Natural disaster reduction/prevention	Reduced deforestation and degradation Reduced frequency and intensity of floods, fires and landslides
Reduced health impacts from smoke and haze	Reduction of fire hotspots Improved air quality in affected areas
Protection of biodiversity (Priority NCB)	Reduced decline in habitat for key species, such as HCV forests and primary forests Reduced decline in populations of key species
Reduced conflict over land (Priority NCB)	Records of settlement achieved Reduced number of conflicts reported
Improved recognition of customary land claims	Area of adat land registered.
More effective local participation in government planning processes and strengthened negotiating capacity	Degree of local participation in governance platforms.

17. TITLE TO EMISSION REDUCTIONS

17.1. Authorization of the ER Program

The Government of Indonesia has a constitutional mandate to control natural resources, which includes the authority to enter into an ERPA and to transfer agreed percentage of Title to ERs to the Carbon Fund. In the context of any agreement pertaining loan or grant, which includes loan or grant on forest and environmental protection, Indonesian law clearly authorize Minister of Finance to be the primary signatory of such agreement. However, as the payment of ER Program from Carbon Fund FCPF is a result based payment that is not yet regulated under Indonesian Laws and Regulations, then it is necessary for Government of Indonesia to carry out consultations with Justice Supreme and Constitutional Courts, including relevant Indonesian lawmakers, and eminent legal professors on the appropriate legal basis for ERPA signature. The consultations are scheduled in mid-September 2018 so that the certain authority of ERPA signature will be presented on the Final Document of ERPD. The purpose of consultations is to find out the appropriate legal basis (if any) and obtain policy solution for the Minister of Finance to sign ERPA and to transfer agreed percentage of Title to ERs to the Carbon Fund.

Name of entity	Ministry of Finance
Main contact person	TBD
Title	TBD
Address	Dr. Wahidin Raya Street No.1 Jakarta (10710) Indonesia
Telephone	TBD
Email	TBD
Website	https://www.kemenkeu.go.id/en
Reference to the decree, law or other type of decision that identified this entity as the national authority on REDD+ that can approve ER Programs	The position of the MoF as the national authority to potentially sign ERPA is explained in several laws and regulations under Indonesian law, as follows: (i) position of MoF as the Chief Financial Officer of Government of Indonesia, which receive a delegation from the President to manage state financial matters on behalf of Republic of Indonesia (The elucidation to the Law of Republic Indonesia No. 17 of 2003 on State Finance and Article 4 of Government Regulation No. 28 of 2015 on Ministry of Finance); (ii) authority of MoF to sign any agreement with foreign legal subject on **loan** and **grant** (Article 32 of Government Regulation No. 10 of 2011 on the Foreign Loan and Grant Procedure)

17.2. Transfer of Title to ERs

17.2.1. Title to ERs under Indonesian Law

The Article 33 of the 1945 Indonesian constitution incorporates a legal theory called "the State Ownership doctrine". It states that "the land and the waters as well as the natural riches therein are to be controlled by the state to be exploited to the greatest benefit of the people"[58]. In the context of forest resources, the Forestry Law No. 41 of 1999 stipulates that the authority to Ministry of Environment and Forestry (the Program Entity) is to as follows:

(i) regulate and manage any subject matters related to forest, forest area, and forest products;
(ii) determine and define legal status of forest area and non-forest area within territory of Indonesia;
(iii) have a right to regulate and define: legal connection between any legal subject under Indonesian law and forest; and any legal act relates to the management, utilization and preservation of forest under Indonesian law.

Based on Basic constitutional Act of 1945 and Forestry Act No. 41/1999, the forest is controlled and owned by the State. It includes its carbon right[59]. Thus, MoEF has obligation to manage the forest and its resources including carbon storage and carbon sequestration. In addition, herewith other regulations and policies that give authority to MoEF to regulate and manage forest carbon storage/carbon sequestration are as follows:

- The Law No. 23 of 2014, the newest regional autonomy Law, mandates Ministry of Environment and Forestry to retain its authority to manage the utilization of forest carbon storage/carbon absorption.
- The Law No 32 of 2009 on the Environmental Protection and the Government Regulation No. 46 of 2017 on Environmental Economic Instrument provides a mandate to Ministry of Environment and Forestry to develop an emission trading system in Indonesia.

MoEF has also developed regulations related to carbon trade and forest carbon licenses for REDD+ program such as carbon trading procedure (Ministry of Forestry No. P.50/MENHUT-II/2014) and licensing procedure for carbon stock and sequestration (Minister Regulation No. P.8/Menlhk-II/2015), and REDD+ procedures (Minister of Environment and Forestry Regulation Number P.70/ENLHK/SETJEN/KUM.1/ 12/2017) or known as "P 70".

Ministry Decree P.50/2014 and P.8/2015 were issued before Government of Indonesia ratified Paris Agreement and submission of FREL Indonesia to UNFCCC. In other words, those decrees allowed International third party received carbon credits generated from REDD+ Project in Indonesia. However, since P.70 on REDD+ procedures issued in 2017, majority of carbon credits generated from REDD+ project are focused to fulfill the specific portion of Indonesia NDC. The newest regulation on the REDD+ Procedures in Indonesia (P.70/2017) makes P.50/2014 not valid

[58] Point 3, Article 33 – Indonesian Constitutional Law 1945
[59] Carbon constitutes approximately 50% the dry mass of trees

anymore and provide the grace period for the implementation of P.8/2015 up to 31 December 2019.

P.70/2017 laid down a new procedures and perspective towards REDD+ development in Indonesia. Unlike previous REDD+ regulations, it aims to direct majority of carbon credits generated under REDD+ project to fulfill the specific portion of INDC's target. It regulates various parties that can become REDD+ implementers, namely local government, private forest companies; forest and land right holder, forest managers, local communities and private forest holders. Under this regulation, every REDD+ program development is obliged to register to National Registry System (SRN) in order to avoid double counting and multiple claims over generated ERs. Nevertheless, title to ERs and its transfer mechanism from national to sub-national are not yet regulated under P70/2017.

In principle, REDD+ implementers including local government, private forest companies; forest and land right holder, forest managers, village community, and private forest holders based on P70/2017 are entitled to receive benefits from emission reductions. Proposed benefit sharing mechanism and its criteria and indicator to be entitled as carbon beneficiaries can be seen on Annex 15.

The completed ER transfer mechanism system and its benefits linked to beneficiaries in sub-national level will be elaborated and presented into the Final ERPD.

17.2.2. Sub-arrangements with potential land and natural resource licenses holders

Pursuant to the criterion 36.3 FCPF Carbon Fund Methodological Framework, the Program Entity could also demonstrate its ability to transfer of ERs to Carbon Fund through the sub-arrangements with potential land and natural resource licenses holders. The sub-arrangements with REDD+ implementers at sub-national level will be regulated under provincial regulation. The regulation will outline beneficiaries of REDD+ implementers and be linked to the benefit sharing mechanism and its plan. The draft arrangements on BSM can be seen on Annex 15. It includes description of the benefits from REDD+, criteria of beneficiaries, proportion of benefits received, distribution mechanism, and its monitoring.

The land and natural resources license holders will be registered into sub-national register system. The system will not only record the profile REDD+ implementers but also receive ER reports from the implementers. The activity report will be used by Provincial Government as a basis estimated calculation of benefits to be disbursed and channeled to the implementers. The system also will manage and calculate ERs to be transferred to National Registry System (SRN).

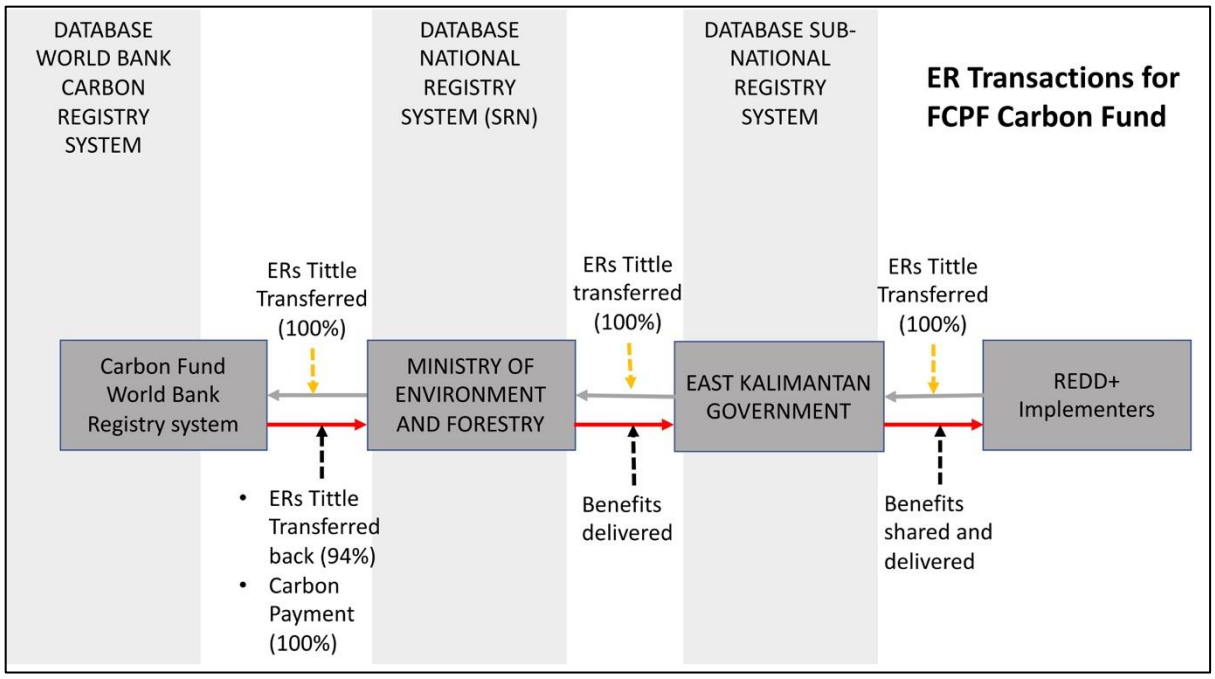


Figure 17.1. Emission Reduction Transactions

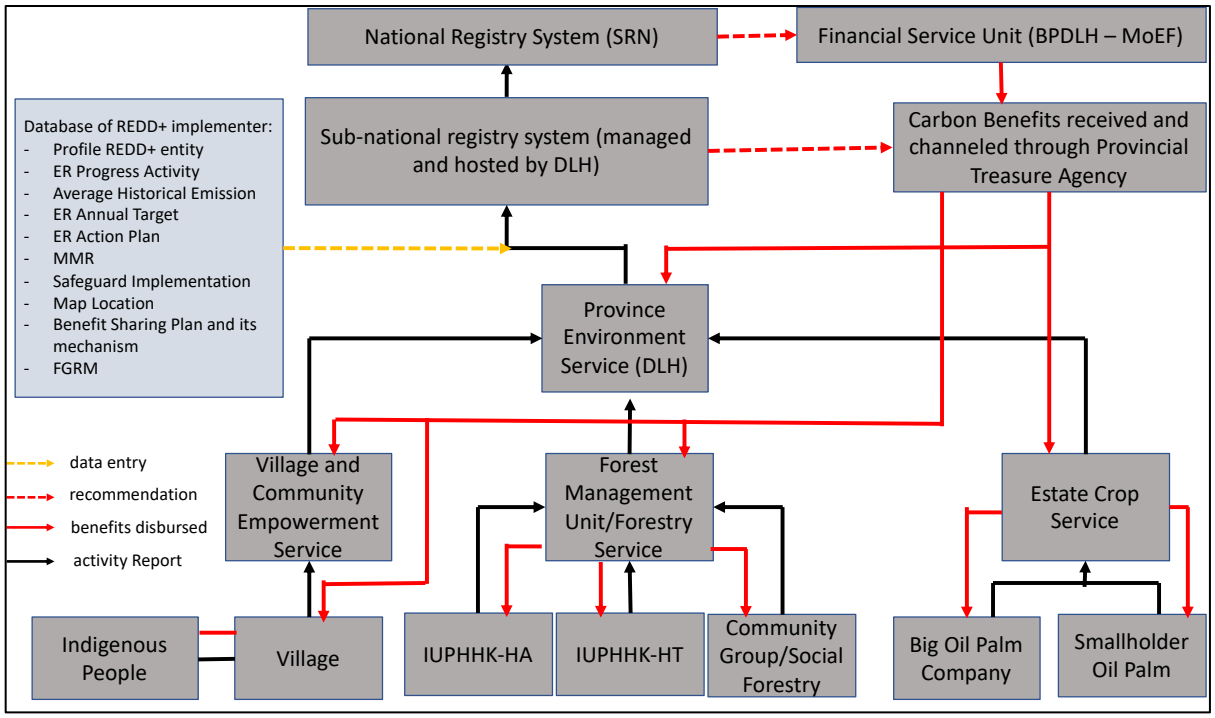


Figure 17.2. Sub-national BSM arrangements

17.2.3. Reference to the Benefit Sharing Plan

Pursuant to the criterion 36.3 FCPF Carbon Fund Methodological Framework, the Program Entity could also demonstrate its ability to transfer of ERs to Carbon Fund through the benefit sharing arrangements under the benefit sharing plan. Benefit sharing mechanism and its procedure are still being discussed between State and sub-national government of East Kalimantan. However, the draft BSM on its mechanism at sub-national level can be seen on Figure 17.1 (above) and Annex 15. The benefit sharing mechanism and its plan will be regulated under Provincial Government regulation. The regulation aims to cover the benefit sharing plan and its procedure to disseminate the benefits to the beneficiaries to site level (village/indigenous people, IUPPHK-HA, IUPHHK-HT, Social Forestry, Big Company/Small holder Oil Palm). The further explanation on Benefit Sharing Plan will be presented into the Final ERPD.

18. DATA MANAGEMENT AND REGISTRY SYSTEMS

18.1 Participation under other GHG initiatives

The GoI is currently discussing options for any excess tonnes of ER generated by the ER Program. Up to now, the Emission Reduction Program, or any part of the Emission Reduction Program has not transferred and is not planning to transfer Emission Reductions to any other GHG Mitigation Initiative. It is expected that the final decision on whether to use excess ERs for domestic compliance or to engage with other GHG initiatives will be finalized by the signing of the ERPA.

18.2 Data management and Registry systems to avoid multiple claims to ERs

To avoid double counting, MoEF has developed a National Registry System integrated with the MRV System, the National GHG Inventory System, the National Forest Monitoring System, and the Safeguards Information System. This system is managed by MoEF through DGCC. At the provincial level, the system is managed by the Environment Office, which is responsible for sub-national reporting.

The Government of Indonesia appoints the Ministry of Environment and Forestry (MoEF) as National Focal Point for climate change mitigation and adaptation. MoEF has developed the National Registry System (SRN), as part of the management of transparency framework Article 13 of the Paris Agreement in the National context. MoEF has issued MoEF Regulation no. P.71/MENLHK/SETJEN/KUM.1/12/2017 on the Implementation of the National Registry System on Climate Change Control, MoEF Regulation no. P.73/MENLHK/SETJEN/KUM.1//12/2017 on Guidelines on the Implementation and Reporting of National Greenhouse Gas Inventories and MoEF Regulations P.72/MENLHK/SETJEN/KUM.1/12/2017 on Guidelines for Implementation of Measurement, Reporting and Verification of Climate Change Action and Resources.

The National Registry System (SRN) is a system of data collection and action of adaptation and mitigation of climate change, government recognition of stakeholder contributions to climate change, provision of data and information to the public, and avoiding double counting of actions and resources used in adaptation and mitigation of change climate, including REDD+. SRN manages data activities, resources, and stakeholders' contributions. The types of actions that are recorded include adaptation actions, mitigation actions, joint adaptation and mitigation actions, and other support activities.

The National Registry System can be accessed via URL http://ditjenppi.menlhk.go.id/srn/. The person in charge of the National Registry System is the Director General of Climate Chang, who appoints the Technical Team to administer the SRN. SRN's reporting is done twice a year, and it becomes a public report. SRN is also connected to the MRV System, National GHG Inventory System (SIGN), Social and Environmental Safeguards Information System (SIS), and National Forest Monitoring System (NFMS).

The current registry has been developed for all implementers of REDD+ in which they can register their activities first. From the beginning, SRN (National Registry System) was designed for spatial approach, but there were problems in identifying the implementers of REDD+ since the Government did not have sufficient spatial data and geo-coordinate information. However, the National Registry System for REDD+ would be refined continuously. In order to avoid double

registry, Kaltim Province will prepare a spatial based monitoring system for REDD + implementation. In addition, Kaltim Province also should decide which institution that be as an admin registration.

The National Registry System (SRN) provides data management for: FREL/FRL, MRV reporting, implementation of Social and Environmental Safeguards (integrated with Safeguards Information System/SIS), implementation costs and source of costs, supporting activities, and contribution to NDC. SRN manager is responsible for maintaining consistency between data and information on REDD+ implementation at national and sub-national levels and avoidance of double counting. Implementation of SRN PPI is done by stages: registration, technical data validation, and verification of actions and resources. Types of the data required for registry into the system are as follows (Figure 18.1):

- general data – information related to the actor. It can be private or public entity
- technical data – information related to the mitigation or adaptation conducted by the actor
- achievement - information related to progress achieved by the actor in mitigation or adaptation.
- data related to village climate change program
- data related to financial progress (if the mitigation effort is funded by MoEF).

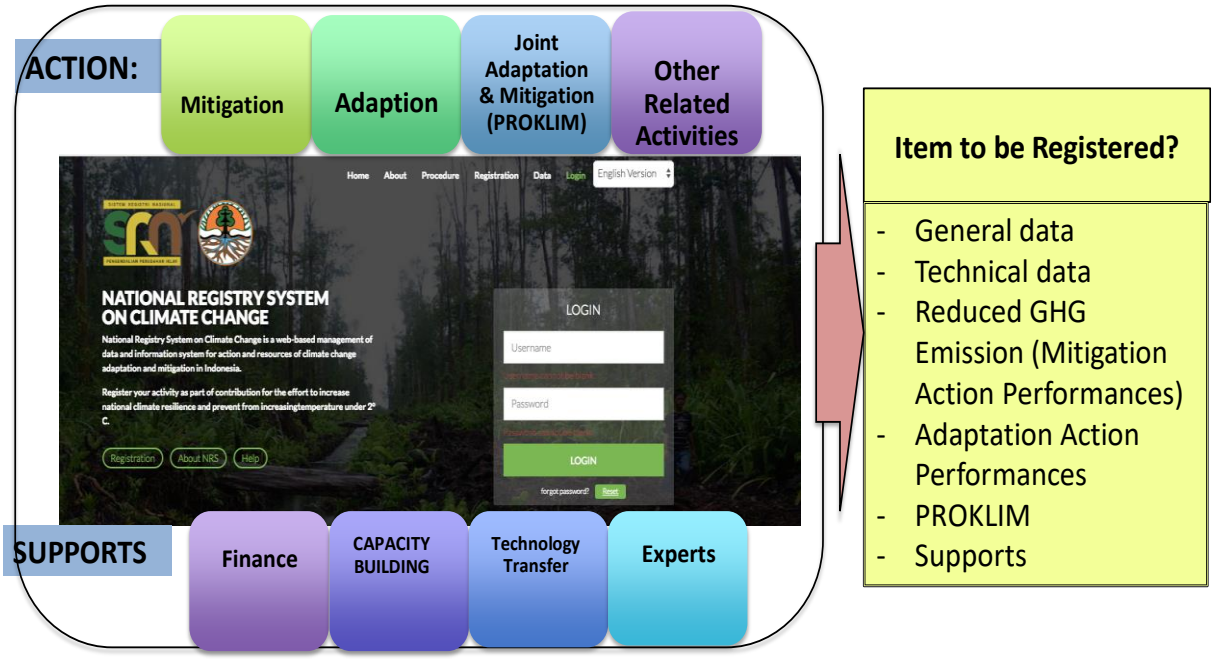


Figure 18. 29. Flow information within SRN

The National Registry System was developed as a system for data management and climate change action information to improve efficiency and operational from the Directorate General of Climate Change. The integration of data simultaneously will decrease data challenges that have been happening and strengthened an accuracy, up to date and data consistency. The National Registry System was developed as an IT-based web application able to accommodate the search of numerical, spatial and administrative data support target performance. And in its development,

SRN encourages the principle of transparency, clarity, and can be understood by the public. There are 4 steps in National Registry System as follow:

Step 1:

1. Person in Charge (PIC) fills the registration form by filling in data that consists of 3 sub-steps which are (a) PIC of Climate Change Activities, (b) Contact Person, (c) PIC Account.
2. PIC will then obtain a verification email in their email account. PIC will verify his account by clicking the link provided in the verification email.
3. PIC will receive a notification email to indicate that their registration has been accepted
4. The Secretariat will do a background check on the registration data
5. The National Registry System (NRS) will send the registration number through email. With this the PIC will be able to login to the system using the username and password that was submitted.

Step 2:

1. PIC fills the general data form for their climate change activities. Filling in the data can be done gradually and PIC be able to save the semi-filled form as a draft or directly send it once filled.
2. The NRS Secretariat will crosscheck the general data submitted.
3. The NRS Secretariat will approve the form once the data is fully checked
4. The National Registry System will award account number for the activity to the PIC through email.

Step 3:

1. PIC fills the technical data form for their climate change activities in accordance to the activity criteria that was selected on the general data form, which are adaptation, mitigation, joint adaptation mitigation, and other.
2. The NRS Secretariat will check and validate the data. If there are data that is unable to be verified or that is missing, the Secretariat will return the form to the PIC to correct.
3. The National Registry System will award a registration number for the activity to the PIC through email.

Step 4:

1. The Secretariat fill in data verification from for each of the activity's component according to the selected activity.
2. The Secretariat conducts a verification of the reported detail on the emission reduction done and the support used by the activities. If there are data that is unable to be verified or that is missing, the Secretariat will return the form to the PIC to correct it.
3. Verified activities will be given a "verified" status and a verification number for the activity to the PIC through email.

When the implementation of the action has been through the verification process with independent verifier, then SRN only record the verification result. However, when the

implementation of the action has not yet carried out the verification process, then the verification process will be carried out on the implementation of the action.

Each implementing agencies of the action program, registering with the SRN, contains information on the general data of the implementer, detailed action information, and technical implementation data. In connection with the implementation of the FCPF-Carbon Fund, the East Kalimantan Provincial Government registers as the implementing agencies of the action at SRN. East Kalimantan's Environment Agency is developing a MRV Kaltim system, which will support sub-national emission reduction action.

More information about SRN can be seen on MoEF Regulation No. P.71/MENLHK/SETJEN/ KUM.1/12/2017 on the Implementation of the National Registry System on Climate Change Control, and for detail guideline will still be developed by the Director General of Climate Change Control.

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20. ANNEXES

To complement the contents of the document, herewith attached the supporting attachments are mainly for stakeholder consultation, emission reduction calculation (forest degradation, gross deforestation, inherited emission), peat fire emission, permanent sampling plots, uncertainty analysis and Indonesia National Standard related with non-carbon benefits especially for biodiversity. The composition of the annexes is presented as follows:

Annex 4.1. Result Chain of ER Program

Annex 4.4. Program Design ERPD East Kalimantan

Annex 4.4 a. Timeline Activities

Annex 4.5 Recognition of Indigenous Peoples in East Kalimantan

Annex 5.1. Stakeholder consultation (11 September 2017)

Annex 5.3. Summaries Related to the Consultation Process

Annex 6.2. Summary of the total ER-Program costs (expected uses of funds)

Annex 7.1. Forest degradation

Annex 7.2. Carbon Pools

Annex 8.1. Illustration of gross deforestation

Annex 8.2. Inherited emission

Annex 9.1. Number of Permanent Sampling Plots (PSP) established East Kalimantan Province

Annex 12.1. Uncertainty analysis

Annex 12.2. Uncertainty of EF for mangrove soil

Annex 14.1. Compile background information for the development of a Strategic Environment and Social Assessment (SESA) final report for Indonesia's REDD+ readiness preparation

Annex 14.2. Potential environmental and social impacts, risks and mitigation actions of East Kalimantan Provinces ERP

Annex 14.3 Interim Findings of the SESA: Environmental and Social Potential Aspects and Mitigation Measures

Annex 15. Benefit Sharing Mechanism

Annex 16.1. SNI 8014:2014 Metode penilaian jasa lingkungan keanekaragaman hayati (*biodiversity*)

Annex 16.2. SNI 8015:2014 Penilaian pengelolaan jasa lingkungan keanekaragaman hayati (*biodiversity*)