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JEC Re-Assessment: Bi-Annual Re-Approval of the Republic of Indonesia

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Table of Contents

LIST OF ACRONYMS	II
1. MACROECONOMIC OUTLOOK	1
1.1 National Context.....	2
1.2 Government Budget Allocation	2
1.3 International Development Perspective	2
2. POLITICAL DEVELOPMENTS IN 2019 – 2021	3
2.1 Political and Institutional developments	3
2.2 Relevant Developments at National Level	5
2.3 Program Participations	8
2.4 Updates of short- and mid-term targets	8
2.5 Expected developments in the next two years	12
3. DEFORESTATION TRENDS IN 2018-2020	13
3.1 Changes in forest and non-forest areas	13
3.2 Forest fires.....	16
 CHECKLIST JEC 1.....	20
CHECKLIST JEC 2	23
CHECKLIST JEC 3.....	30
CHECKLIST JEC 4.....	39
CHECKLIST JEC 5.....	42
 ANNEX 1 DEFORESTATION DATA 2018 & 2020.....	46
ANNEX 2 DEFORESTATION MAP 2018 & 2020	48
ANNEX 3 PROVINCIAL EMISSION REDUCTION TARGETS	49
ANNEX 4 INDONESIA FOREST COVER 2020	51
ANNEX 5 PEATLAND DISTRIBUTION 2020	52

List of Acronyms

AMDAL	Analisis Mengenai Dampak Lingkungan / Environmental Impact Analysis
APBN	Anggaran Pendapatan dan Belanja Negara / State Budget
APL	Areal Penggunaan Lain/ Other Use Area
BAPPENAS	Badan Perencanaan Pembangunan Nasional / National Development Planning Agency
BAU	Business As Usual
BioCF ISFL	BioCarbon Fund Initiative for Sustainable Forest Landscape
BKPM	Badan Koordinasi Penanaman Modal / Investment Coordination Agency
BPDLH	<i>Badan Pengelola Dana Lingkungan Hidup</i> / Environmental Fund Management Agency
BPS	<i>Badan Pusat Statistik</i> /Statistics Indonesia
BRG	<i>Badan Restorasi Gambut</i> / Peatland Restoration Agency
BRGM	<i>Badan Restorasi Gambut dan Mangrove</i> / Peatland and Mangrove Restoration Agency
BRIN	<i>Badan Riset dan Inovasi Nasional</i> / National Research and Innovation Agency
BUR	Biennial Update Report
CA	<i>Cagar Alam</i> / Nature Reserves
CM	Counter Measures for Emission Reduction
CO ₂	Carbon dioxide
DG	Directorate General
DPR	<i>Dewan Perwakilan Rakyat</i> / House of Representatives
EIA	Environment Impact Assessment
FCPF-CF	Forest Carbon Partnership Facilities-Carbon Fund
FMU	Forest Management Units
FOLU	Forestry and Other Land Use
FREL	Forest Reference Emission Level
GCF	Green Climate Fund
GDRP	Gross Regional Domestic Product
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
Gol	Government of Indonesia
ha	Hectares
HK	<i>Hutan Konservasi</i> / Conservation Forest
HL	<i>Hutan Lindung</i> / Protection Forest
HP	<i>Hutan Produksi Tetap</i> / Permanent Production Forest
HPK	Hutan Produksi yang dapat Dikonversi / Convertible Production Forest
HPT	<i>Hutan Produksi Terbatas</i> / Limited Production Forest
IBSAP	Indonesian Biodiversity Strategic Action Plan
IKI	International Climate Initiative
INCAS	Indonesian National Accounting Carbon System
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Process Product Use
ISPO	Indonesia Sustainable Palm Oil
IUPHHK-HT	<i>Izin Usaha Pemanfaatan Hasil Hutan Kayu – Hutan Tanaman</i> / Timber Forest Product Concession Permit – Plantation Forest
JEC	Jurisdictional Eligibility Criteria
JECA	Jurisdictional Eligibility Criteria Assessment
JIGN	<i>Jaringan Informasi Geospasial Nasional</i> / National Geospatial Information Network
KEE	Kawasan Ekosistem Esensial / Essential Ecosystem Areas
Keppres	<i>Keputusan Presiden</i> /Presidential Decree
KSDAE	<i>Konservasi Sumber Daya Alam dan Ekosistem</i> / Conservation of Natural Resources and Ecosystems
Lol	Letter of Intent

LTS-LCCR	Long Term Strategy for Low Carbon and Climate Resilience
MoEF	Ministry of Environment and Forestry
MoF	Ministry of Finance
MPA	<i>Masyarakat Peduli Api</i> / Community Fire Awareness Group
MRV	Measurement, Reporting, and Verification
NDC	Nationally Determined Contribution
NFMS	National Forest Monitoring System
NPS	Non-party Stakeholders
NTFP	Non Timber Forest Product
OMSPAN	Online Monitoring Sistem Perbendaharaan Anggaran Negara / Online Monitoring of the State Budget System
PCI	Principles, Criteria and Indicators
PDASRH	Pengendalian Daerah Aliran Sungai dan Rehabilitasi Hutan / Watershed Control and Forest Rehabilitation
PEN	<i>Pemulihan Ekonomi Nasional</i> / National Economic Recovery
PIPIB	Peta Indikatif Penghentian Pemberian Izin Baru / Indicative Map of New License Termination
PIPIB	<i>Peta Indikatif Penundaan Pemberian Ijin Baru</i> / Indicative Map of Postponement of Granting New Permits
PP	<i>Peraturan Pemerintah</i> / Government regulation
PPI	Pengendalian Perubahan Iklim / Climate Change Control
PPRK	Perencanaan Pembangunan Rendah Karbon / Low Carbon Development Planning
PPTKH	Penyelesaian Penguasaan Tanah dalam Kawasan Hutan / Settlement of Land Tenure in Forest Area
PSKL	<i>Perhutanan Sosial dan Kemitraan Lingkungan</i> / Social Forestry and Environmental Partnership
PTHI	PT. Hatfield Indonesia
RAD-GRK	<i>Rencana Aksi Daerah Penurunan Emisi Gas Rumah Kaca</i> / Regional Action Plan for Reducing Greenhouse Gas Emissions
RAN-GRK	<i>Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca</i> / National Action Plan for Reducing Greenhouse Gas Emissions
RBP	Result Based Payment
REDD	Reducing Emissions from Deforestation and Forest Degradation
RPJMN	<i>Rencana Pembangunan Jangka Menengah Nasional</i> / Indonesia's National Medium-Term Development Plan
RPPEG	<i>Rencana Perlindungan dan Pengelolaan Ekosistem Gambut</i> / National Peatland and Ecosystem Protection and Management Plan
SDGs	Sustainable Development Goals
SEA	Strategic Environment Assessment
SIMONTANA	<i>Sistem Monitoring Hutan Nasional</i> / National Forest Monitoring System (NFMS)
SIS	Safeguards Information System
SM	<i>Suaka Margasatwa</i> / Wildlife Sanctuaries
SNA	System of National Account
SRN	<i>Sistem Registri Nasional</i> / National Registry System
TACCC	Transparency, Accuracy, Completeness, Comparability, and Consistency
TAHURA	<i>Taman Hutan Raya</i> / Grand Forest Park
TB	<i>Taman Buru</i> / Hunting Park
TN	<i>Taman Nasional</i> / National Park
TORA	<i>Tanah Objek Reforma Agraria</i> / Land Object of Agrarian Reform
TWA	<i>Taman Wisata Alam</i> / Nature Recreation Park
UNFCCC	United Nation Framework Convention on Climate Change

1. Macroeconomic Outlook

Indonesia has sustained strong growth in the past decade. GDP growth averaged 5.7 percent annually over 2010-2014, with a slowdown to an annual average of 5 percent over 2015- 2019.5 The slowdown since 2015 is due to a fall in commodity prices, which led to a deceleration in consumption and triggered some tightening of fiscal policy to counter revenue effects and increased turbulence in capital flows. This period saw robust job growth and the employment rate reached a two-decade high in 2019 though most jobs were created in lower productivity services such as trade, transport, and hospitality. The unemployment rate and consumer price inflation averaged 6 and 4.7 percent respectively. Indonesia's overall strong economic performance was also underpinned by prudent macroeconomic policies in the face of various commodity and financial cycles and shocks. By law, fiscal deficits were limited to a range of 2-2½ percent of GDP; the external current account deficit was below 3 percent of GDP throughout. The pandemic shock led to the first recession in two decades with the economy contracting by an estimated 2.1 percent in 2020 compared to a pre-pandemic projection of 5.1 percent growth. The Indonesian economy is expected to start rebounding in 2021.

Policy development in Indonesia is directly or indirectly influenced by the national economic condition. The main indicator at the macroeconomy level is the Gross Regional Domestic Product (GRDP). The GRDP, calculated using current and constant prices, is the total value of final goods and services produced by all economic units in a region. The GRDP at constant prices shows the added value of these goods and services, which is calculated using the prices prevailing in one particular year as the basis. Statistics Indonesia (BPS) has used the compilation of GRDP from 2000 to 2010 for defining constant prices following the System of National Account (SNA) principles¹. BPS has classified sectors into 17 categories (including forestry and agriculture sector) that contribute to GRDP. The Table 1 shows the GRDP at 2010 constant market prices by region, as well as national in Indonesia:

Table 1 GDRP at 2010 constant market price by region in Indonesia, 2016 – 2020.

Region	Year (billion rupiah)				
	2016	2017	2018	2019	2020
Sumatera	2,044,984	2,132,579	2,229,071	2,330,579	2,302,731
Jawa	5,545,720	5,857,508	6,191,172	6,530,684	6,367,054
Bali and Nusa Tenggara	291,499	302,267	310,351	325,950	309,626
Kalimantan	807,896	842,972	875,369	919,007	898,174
Sulawesi	563,958	603,147	657,105	702,810	704,423
Maluku and Papua	244,777	256,751	274,669	254,246	257,903
GDP National ²	9,498,834	9,995,224	10,537,737	10,137,392	10,839,911

There was a dynamic change in the growth rate of GRDP in 2016-2020. In the re-assessment period (specifically in 2019 to 2020), almost all regions experienced a contraction, except Sulawesi, Maluku, and Papua.

¹ SNA 2008 is the internationally agreed standard set of recommendations on compiling economic activity measures following strict accounting conventions based on economic principles

² Source: <https://statistik.kemendag.go.id/gross-domestic-product>

1.1 National Context

Indonesia has sustained strong growth in the past decade, but the pandemic shock led to the first recession in two decades with the economy contracting by an estimated 2.07 % in 2020 (pre-pandemic projection was 5.1% growth). To respond to the pandemic shock, the government implemented an emergency fiscal package (3.6 percent of GDP) providing relief to households and firms and supporting output. Bank Indonesia (BI) loosened monetary policy by cutting its benchmark policy rate to a record low and providing liquidity, including through a substantial local government bond purchase program (3.7 percent of GDP of which 3.0 percent of GDP in the primary market).

The Indonesian economy is expected to start rebounding in 2021. On the domestic front, the economic rebound in the near term is predicted on a gradual improvement in consumer spending and investment supported by the containment of the pandemic, the successful rollout of COVID-19 vaccines and improvements in the labor market. On the external front, growth will be supported by stronger recovery in advanced economies and export commodity prices. In the medium term, growth is projected to return to its pre-pandemic potential by 2025 assuming that the crisis's potential scarring effects are mitigated by the implementation of structural reforms to improve investment, human capital and productivity³.

1.2 Government Budget Allocation

In response to the pandemic, the GoI issued Presidential Instruction No.4/2020 to implement a “budget re-focusing” policy, where existing budgets for all sectors in Indonesia are partially allocated for health and social assistance. The Ministry of Environment and Forestry (MoEF) has allocated a budget of 10.8% of the total MoEF budget or IDR 1.01 trillion to support the government social assistance program to communities in and around forest areas, especially forest farmer groups and social forestry groups, as well as officers who serve in the environmental and forestry sector affected by Covid-19⁴.

As a result, the MoEF revised their portion of the 2020 State Budget (APBN) from IDR 9.32 trillion to IDR 7.74 trillion; a reduction of IDR 1.58 trillion (16.95% reduction from the original budget). Commitments to reducing the impact of climate change can be seen in the budget for climate change adaptation and mitigation 2018-2020⁵ earmarked and secured for all five sectors (forestry & other land use; energy; transportation; agriculture; and industrial processes & product use) amidst budget reduction in other sectors.

1.3 International Development Perspective

International development and cooperation aim to support inclusive, competitive, and sustainable development. It is geared toward helping Indonesia emerge stronger from the Covid-19 pandemic by focusing on three strategic pathways: (i) improving well-being—by strengthening the health care system, expanding social protection, advancing educational quality in an equitable manner, and developing workforce skills; (ii) accelerating economic

³ World Bank – [Country Partnership Framework for Indonesia](#). April 6, 2021 [Accessed October 18, 2021].

⁴ Ministry of Environment and Forestry. 2020. [KLHK Alokasikan Rp 10,1 Triliun untuk Bantu Masyarakat dan Petani Hutan Terdampak Corona](#) (MoEF Allocates IDR 10.1 Trillion to Help Communities and Forest Farmers Affected by Corona) (press release No. SP. 146/HUMAS/PP/HMS.3/4/2020); [Accessed October 7, 2021].

⁵ Ministry of Finance. 2021. [Kemenkeu Rilis pendanaan Anggaran dan Pendanaan Publik Perubahan Iklim Nasional dan Daerah untuk Mencapai Target NDC](#) (Ministry of Finance Releases National and Regional Climate Change Budget and Public Funding to Achieve NDC Target) (press release No. SP. 24/KLI/2021o); [Accessed October 7, 2021].

recovery—by supporting economic policy and structural reforms, domestic resource mobilization, financial market deepening and inclusion, and the development of high-quality infrastructure; and (iii) strengthening resilience — by supporting climate change mitigation and adaptation measures, environmental sustainability and green recovery, disaster risk management and finance, and water and food security⁶. International development support is aligned using systematic country diagnostic to ensure alignment with national development plan, post-covid recovery policies, and other advantages⁷.

2. Political Developments in 2019 – 2021

2.1 Political and Institutional developments

At the national level, Indonesia has submitted an updated the NDC⁸ to the UNFCCC in July 2021. The updated NDC highlights the reduced Business as Usual (BAU) prediction from 2.881 GtCO₂e to 2.869 GtCO₂e.

At the sub-national level, Jambi and East Kalimantan provinces strengthened their provincial strategies for emission reduction. In May 2018 Jambi Province developed Prospective Development Pathways Document to encourage private sector engagement in landscape approaches to reduce emission in Jambi Province⁹. Emission Reduction Payment Document (ERPD)¹⁰ for jurisdictional program at sub-national level (East Kalimantan province) was updated in May 2019, and re-submitted to World Bank for approval.

2.1.1 Developments in Regulations

Law No. 11/2020 regarding Job Creation¹¹ was formalized on October 5, 2020. The Law was designed to provide three benefits consisting of (1) eliminating overlaps between various laws and regulations, (2) efficient and necessary changes through revocation of specific laws, (3) eliminating the sectoral egotism that underlies some of the laws and regulations.

The Omnibus Law of Job Creation resulted in several implementing regulations including Presidential Regulation No. 109/2020 regarding the acceleration of National Strategic Programs (including the development of food estates). This regulation provides an “exception” for national strategic programs to bypass the need for a Strategic Environmental Assessment. Such exemption potentially creates a risk to forest conversion activities if not implemented with caution. Another derivative of Omnibus Law is the regulation on economic valuation of carbon that will be relevant with voluntary carbon pricing¹². This regulation has not yet been formalized

⁶ [ADB Country Partnership Strategy 2020-2024](#); [Accessed in October 7, 2021].

⁷ [World Bank Country Partnership Framework for Indonesia](#); [Accessed October 7, 2021].

⁸ [Updated Nationally Determined Contribution. Republic of Indonesia](#). July 2021; [Accessed October 18, 2021].

⁹ [Prospective Development Pathway: Private sector engagement in landscape approaches to reduce emission from land use activities in Jambi province](#); [Accessed October 7, 2021].

¹⁰ Forest Carbon Partnership Facility Carbon Fund: [Emission Reduction Program Document for East Kalimantan Jurisdictional Emission Reduction Program](#); [Accessed October 7, 2021].

¹¹ [Abstract of this Law](#) [Accessed October 18, 2021].

¹² Hukum online. 2020. [Rancangan Peraturan Presiden Tahun 2020 tentang Instrumen Nilai Ekonomi Karbon untuk Pencapaian Kontribusi yang Ditetapkan Secara Nasional](#) dan Pengendalian Emisi Karbon dalam Pembangunan (Draft Presidential Regulation 2020 on Carbon Economic Value Instruments for Achievement of Nationally Determined Contributions and Control of Carbon Emissions in Development); [Accessed October 7, 2021].

and, as a result, numerous voluntary carbon projects are currently on hold pending its enactment.

The MoEF produced Regulation No. 8/2021 regarding forest governance, management plan, and forest resource use plan in production and protected forests (under the management of provincial government) as one of the implementing regulations of the Omnibus Law on Job Creation No. 11/2020. This regulation specifically refers to the base map from the Geospatial Information Agency for developing the aforementioned governance and plans.

A key institutional change included the change of scope for the national agency responsible for peatland restoration. The Peatland Restoration Agency (*Badan Restorasi Gambut* [BRG]) changes to the Peatland and Mangrove Restoration Agency (*Badan Restorasi Gambut dan Mangrove* [BRGM]) and their conservation scope is extended to include mangrove and peatland restoration. There is no change in peatland restoration practices, but the target is reduced from 2 million ha to 1.2 million ha peatland restoration in five years.

Changes to relevant regulatory instruments compared to the previous assessment include:

- Addition of new regulations (regulations validated from 2018 onwards):
 - The Director General (DG) of Conservation Natural Resources and Ecosystem, MoEF Regulation No.6/2018 on conservation partnerships;
 - Government Regulation No. 32/2019 on ocean spatial planning (related to the blue carbon strategy);
 - Regulation of MoEF No. 8/2021 on forest management at the sub-national level;
 - Presidential Regulation No. 109/2020 on national strategic projects; and
 - Government Regulation No.5/2021 on risk-based business licensing.

Revocation and replacement of previous regulations were predominantly done after the Omnibus Law was enacted and include:

- Presidential Regulation No. 1/2016 was revoked and replaced by Presidential Regulation No. 120/2020 on BRGM;
- Court Ruling No. 35 /2012 on customary forest was replaced with Ministerial Regulation No. 21/2019 on customary forests (*hutan adat*) and forest with property rights (*hutan hak*); and
- Government Regulation No. 27/2012 was revoked and replaced with Government Regulation No. 22/2021.

In addition to these revocations, the governments of Indonesia and Norway Letter of Intent (LoI) dated May 2010 was cancelled in September 2021¹³.

2.1.2 Indonesia's Medium Term Development Plan 2020-2024

The National Medium Term Development Plan (*Rencana Pembangunan Jangka Menengah Nasional* [RPJMN]) includes target for protecting forest, natural resources, and ecosystem conservation. Between 2020 and 2024, the government will focus on (i) permanent cessation of licenses in primary forest and peatlands; (ii) forest restorations; (iii) increasing participation of business sector in forest rehabilitation; (iv) rehabilitation of 637,000 ha mangrove; (v) corridors for connecting fragmented habitat; (vi) maintaining conservation areas; (vii) scaling up best practices in research and education; and (viii) establishment of 1.02 million ha of high

¹³ NICFI. 2021. Press statement: [The Indonesia-Norway climate and forest partnership](#); [Accessed October 7, 2021].

conservation value forest¹⁴.

As per RPJMN, the areas that need protection due to forest ecosystem services, are expanded from 51.8 Mha to 65.3 Mha, and include both forest and non-forest areas. This has to be considered in the process of developing land use planning at sub-national level.

The RPJMN 2020-2024 Background Study for the forestry sector¹⁵ is not only oriented towards economic growth but also the sustainability of ecosystem services by highlighting the main strategies, directions, objectives and framework of Indonesia's forest development until 2045 as well as forest area optimization and management. Referring to the RPJMN 2020-2024, the various policies developed are expected to consider the Long-Term Development Planning (RPJP), the National Forestry Plan (RKTN) and the Nationally Determined Contribution (NDCs) of Indonesia committed under the Paris Agreement. **This background study also finds that to achieve Indonesia's climate commitments, by 2045 the total forest cover area should reach at least 85.6 million ha with an investment of Rp. 565.92 trillion (approximately 39.80 million USD).**

2.2 Relevant Developments at National Level

The major developments of the last two years include an updated REDD+ governance and creation of the national level programs to reduce deforestation and forest degradation. Indonesia has stated voluntary national contribution in 2019, and updated it in 2021¹⁶.

2.2.1 One Map Policy updates

The Thematic Geospatial Information System for Forestry, fully integrated with the National Geospatial Information Network (*Jaringan Informasi Geospasial Nasional* [JIGN]), is intended to facilitate the implementation of Indonesia's One Map Policy (*Kebijakan Satu Peta*)¹⁷. Currently, the Government of Indonesia (GoI) is working on five steps (i) formulation and defining mechanism of work procedures; (ii) establishing basic & thematic geospatial information; (iii) updating of basic and thematic geospatial information; (iv) optimizing dissemination of basic and thematic geospatial information; and (v) synchronization to eliminate overlaps) to implement the One Map Policy through the establishment of a geoportal¹⁸. The One Map Policy has been implemented only partially due to delay in synchronizing land use overlaps¹⁹ of

¹⁴ [The State of Indonesia's Forests 2020](#). Ministry of Environment and Forestry; [Accessed October 18, 2021].

¹⁵ [The National Medium-Term Development Planning \(RPJMN\) 2020 – 2024. Background study for the forestry sector](#); [Accessed October 18, 2021].

¹⁶ Source: <http://bsilhk.menlhk.go.id/index.php/2021/08/05/the-path-for-indonesian-tropical-forest-for-the-world-of-hope/>

¹⁷ [Percepatan Kebijakan Satu Peta](#) (One Map Policy) is an effort to realize a thematic map that functions as a reference for improving thematic geospatial information data for each sector and a reference for planning for wide-scale spatial use that is integrated in the spatial plan document. One map policy is mandated in Presidential Regulation Number 9 of 2016.

¹⁸ Regulated through Presidential Decree (*Keputusan Presiden [Keppres]*) No. 20/2018 on authorized access for data sharing in One Map Policy and its derivatives (Coordinating Minister Regulation No. 6/2018 and No. 7/2018 regarding the Classification of Access Authority for Sharing Geospatial Data and Information through the National Geospatial Information Network in Accelerating the Implementation of the One Map Policy).

¹⁹ Coordinating Ministry for Economic Affairs. 2021. [Kebijakan satu Peta Memberikan Manfaat Luas bagi Pembangunan Indonesia](#) (One Map Policy Provides Broad Benefits for Indonesia's Development) (press release No. HM.4.6/93/SET.M.EKON.3/04/2021); [Accessed October 7, 2021].

different versions of map. A regulation for accelerating the implementation of the One Map Policy (Presidential Regulation No. 23/2021) was issued in 2021. One Map Policy is expected to be completed by December 2024²⁰.

2.2.2 REDD+ Monitoring Reporting and Verification

Between 2018 and 2020 there have been updates in the following aspects of REDD+ monitoring:

- Independent system to monitor forests nationally (National Forest Monitoring System [NFMS]), also known as Simontana, was introduced in 2020. This considerably improved the national Monitoring, Reporting, and Verification (MRV) system for climate change²¹;
- In early 2020, the MoEF began to compile the 2nd National Forest Reference Emissions Level (FREL). This document was submitted to the United Nations Framework Convention on Climate Change (UNFCCC) by July 2021²²; and
- The Indonesian National Accounting Carbon System (INCAS)²³ provides information on carbon emissions at the sub-national (provincial) level. This is done to align the inventory data from sub-national to national level. This system is mainstreamed into the national registry system²⁴.

2.2.3 Regulation to Prevent Forest Conversion

Indonesia has permanently extended the forest and peatland moratoriums²⁵ through Presidential Instruction No.5/2019, updated in 2021²⁶. The moratorium permanently suspends the issuance of new concession licenses, and evaluates existing ones on utilization of primary natural forest and peatlands (palm oil and timber). Existing licenses can be revoked if there is clear proof of violation to the environmental and/or forestry regulations. Other regulations include those for controlling forest and land fires, controlling peat damage, controlling climate change, limiting changes in forest area allocation for the non-forestry sector (HPK), completion of land tenure in forest areas (PPTKH/TORA), sustainable forest management, social forestry, and forest and land rehabilitation²⁷.

2.2.4 Peatland and Mangrove Restoration

The National Peatland and Ecosystem Protection and Management Plan (*Rencana Perlindungan dan Pengelolaan Ekosistem Gambut* [RPPEG]) which guide stakeholders involved in peatland

²⁰ [Appendix of Presidential Regulation No.23/2021](#) regarding Amendment to Presidential Regulation Number 9 of 2016 concerning Acceleration of One Map Policy Implementation at the Level of Map Accuracy Scale 1:50,000.

²¹ Ministry of Empowerment of State Apparatuses and Bureaucratic Reform. 2020. [Pantau Sumber Daya Hutan dan Cegah Deforestasi dengan Inovasi Simontana](#) (Monitor Forest Resources and Prevent Deforestation with Simontana Innovations); [Accessed October 7, 2021].

²² Directorate General of Climate Change. 2021. [Updated Nationally Determined Contribution Republic Indonesia](#); [Accessed October 18, 2021].

²³ Source: <http://www.mitigationpartnership.net/indonesias-national-carbon-accounting-system>

²⁴ The national registry system can be accessed from: <http://srn.menlhk.go.id/index.php?r=home%2Findex>

²⁵ [LTS-LCCR](#), 2021 [Accessed October 18, 2021].

²⁶ MoEF. 2021. [KLHK Tetapkan PIPPIB Tahun 2021 Periode II](#) (MoEF Determines Stipulation of Indicative Map for Termination of New Permits in 2021 Period II) (press release No. SP.324/HUMAS/PP/HMS.3/9/2021); [Accessed October 7, 2021].

²⁷ MoEF. 2021. [Laju Deforestasi Indonesia Turun 75,03%](#) (press release No. SP. 062/HUMAS/PP/HMS.3/3/2021); [Accessed October 7, 2021].

ecosystem protection, and management was issued in June 2020²⁸. In 2018 a model for Peatland Ecosystem Protection and Management was established for peatland areas in Kapuas – Terentang rivers, Kubu Raya District, West Kalimantan Province. GoI produced a regulation (MoEF Regulation No. 2/2021) that mandates responsibility for peatland restoration to seven provinces in Indonesia. This is a policy to ensure forest management between the national and sub-national governments is coordinated.

2.2.5 Forest Fire Prevention Mechanisms

Government agency in charge for forest fire prevention and responses (known as *Manggala Agni*) implemented innovation on forest fire prevention and mitigation includes:

- New measures to prevent and control forest and wildland fires such as predicting el-nino, adopting accurate/sensitive satellite technology for early warning system / hotspot monitoring²⁹, cloud seeding that is conducted before the peak of the dry season³⁰, and water bombing to reduce fire hot spots; and
- The national program Community Fire Awareness Group (MPA) Paralegal³¹ encourages community involvement in preventing forest and wildland fires³². This expands the roles and responsibilities of community members from fire extinction to fire prevention by patrolling the area, and providing education on non-burning agriculture method.

2.2.6 Sustainable forest management by communities

Social forestry programs are expected to strengthen community forest management. The government's approval of forest access licenses has led to the creation of 7,780 social forestry business groups, which successfully increased the productivity and value of on-farm and off-farm commodities and small-scale village industries³³. Social forestry licensing and management (post-license activities) intensify with the formation of village-based business units (Kelompok Usaha Perhutanan Sosial – KUPS). This provides incentives for communities involved in forest management.

The conservation partnership policy has enabled communities to access and utilize non-timber forest products (NTFPs) in up to 579,208 ha designated as traditional zones in national parks. These zones may benefit communities traditionally dependent on certain NTFPs found in these zones. A total of 113 conservation partnership agreements in the national park traditional zones

²⁸ Decree of the MoEF No. SK.246/Menlhk/Setjen/KUM.1/6/2020 tentang Rencana Perlindungan dan Pengelolaan Ekosistem Gambut Nasional (National Peat Ecosystem Protection and Management Plan).

²⁹ East Kalimantan Provincial Communication and Information Office. 2021. [Perlu Inovasi dan Terobosan dalam Pencegahan Karhutla](#) (Innovation and Breakthroughs Needed in Preventing Forest and Land Fires); [Accessed October 7, 2021].

³⁰ MoEF. 2020. [TMC Tahap Ketiga di Riau Berhasil Kurangi Karhutla](#) (The Third Phase of Weather Modification Technology in Riau Successfully Reduces Forest and Land Fires) (press release No. SP. 419/HUMAS/PP/HMS.3/10/2020); [Accessed October 7, 2021].

³¹ A community involvement strengthening program through training on legal aspects of forest and land fires, fires prevention and control, carry out integrated patrol activities, and empowering communities to diversify types of livelihoods.

³² MoEF. 2021. [MPA-Paralegal, Solusi Permanen Karhutla di Tingkat Tapak Berbasis Desa](#) (MPA-Paralegal, Permanent Solution for Forest and Land Fires at the Village-Based Site Level) (press release No. SP.313/HUMAS/PP/HMS.3/09/2021); [Accessed October 7, 2021].

³³ MoEF. 2021. [Kerjasama Perhutanan Sosial Indonesia – Jerman](#) (Indonesia-Germany Social Forestry Cooperation) (press release No. SP. 327/HUMAS/PP/HMS.3/9/2021; [Accessed October 7, 2021].

were established in 2019³⁴. Starting in 2020, essential ecosystem areas (*Kawasan Ekosistem Esensial*/[KEE])³⁵ will complement the overall biodiversity and ecosystem management.

In 2020, watershed rehabilitation covered 112,973 ha with over 28 million seedlings distributed to support local welfare³⁶.

2.3 Program Participations

In the context of Indonesia's success in reducing deforestation and forest degradation, the GoI has participated in various REDD+ and Result Based Payment (RBP) funding commitments from several international parties^{37,38}:

- **Indonesia – Norway Lol:** The Lol contains Indonesia's commitment to reduce emissions resulting from deforestation, forest degradation, and peatland conversion. The RBP is based on the performance of reducing GHG emissions from REDD+ activities for the 2016-2017 period of 11.23 million tons of CO₂e, with a value of USD 56 million³⁹;
- **Green Climate Fund (GCF):** The RBP is awarded for the performance of reducing GHG emissions from REDD+ activities for the 2014-2016 period of 20.3 million tons of CO₂e with a value of USD 103.8 million;
- World Bank's **Forest Carbon Partnership Facilities**-Carbon Fund (FCPF-CF) program for East Kalimantan province: The RBP awarded for reducing GHG emissions from REDD+ activities by 22 million tons CO₂e with a value of USD 110 million for three payment stages between 2021-2025; and
- **BioCarbon Fund Initiative for Sustainable Forest Landscape** (BioCF ISFL): Implemented in collaboration with the World Bank and Jambi provincial government⁴⁰.

2.4 Updates of short- and mid-term targets

Changes in government structure can be seen in the changes within the MoEF where the Directorate General of Watershed Management and Protected Forest has been changed into the Directorate General of Watershed Management and Forest Rehabilitation to better address the forestation efforts⁴¹. Other changes include the establishment of the National Research and Innovation Agency (*Badan Riset dan Inovasi Nasional* [BRIN])⁴², and BRGM⁴³. These changes affect the national target for forest rehabilitation (increase from 230,000 ha to 264,000⁴⁴ ha) and

³⁴ [The State of Indonesia's Forests 2020](#). Ministry of Environment and Forestry.

³⁵ Ecosystem outside the Sanctuary Reserve Areas or Nature Conservation Areas, that has important ecological value and merits biodiversity conservation efforts to also benefit communities.

³⁶ MoEF Performance Report 2020.

³⁷ MoEF Performance Report 2020.

³⁸ Forest Product Research and Development Center. 2021. [Progres Result Based Payment REDD+](#) (press release No. SP.036/HUMAS/PP/HMS.3/02/2021); [Accessed October 7, 2021].

³⁹ [This Lol is terminated on September 10, 2021, due to disagreement on disbursement mechanism](#).

⁴⁰ MoEF. 2020. [Dokumen Safeguard Bio Carbon Fund Integrated Sustainable Forest Landscape](#) (BioCF ISFL) Provinsi Jambi; [Accessed October 7, 2021].

⁴¹ Presidential Regulation No. 92/2020 on the Ministry of Environment and Forestry.

⁴² Presidential Regulation No. 74/2019 on National Research and Innovation Agency.

⁴³ Presidential Regulation No. 120/2020 concerning Peatland and Mangrove Restoration Agency.

⁴⁴ <https://www.cnnindonesia.com/nasional/20210325143515-20-622041/menteri-lhk-target-rehabilitasi-lahan-264-ribu-hektare-2021>

peatland restoration (reduced from 2 million to 1.2 million ha), but do not affect eligibility. This is probably a setback in terms of the size of the area but may still be good in terms of carbon equivalent (inclusion of blue carbon from 600,000 ha of mangrove). The national target for deforestation remains relatively constant at 0.43 million ha compared to 0.46 million ha deforestation 2019-2020. This target is set to ensure low deforestation rate using 2019-2020 as the benchmark, while accommodating the needs for developments.

To achieve a strategy to reduce emissions from mangrove and seagrass ecosystems, the government is currently conducting mangrove rehabilitation as one of the National Economic Recovery (PEN) programs through the BRGM and includes seagrass ecosystems in conservation areas. To-date, approximately 92.7% of seagrass ecosystems have been included in conservation areas⁴⁵.

The BRGM targeted 2,000,000 ha for restoration over a 5-year period⁴⁶, but the target was reduced to 1,200,000 ha, adding a target of 0.6 million ha mangrove restoration over a 4-year period⁴⁷. Despite the reduced area, the target now considers blue carbon. By the end of 2020, however, the BRG had managed to restore 835,288 hectares (2.06 million acres) of peatland outside concession areas, or 94% of its target⁴⁸.

2.4.1 Long-Term Strategy for Low Carbon and Climate Resilience 2050

The National Development Planning Agency (BAPPENAS) leads the process of developing the National Medium Term Development Plan 2020-2024⁴⁹ that includes climate change mitigation and adaptation, as well as low carbon development as a priority strategy⁵⁰. The BAPPENAS developed the Long-Term Strategy for Low Carbon and Climate Resilience that spans until 2050 (LTS-LCCR 2050)⁵¹.

In the First NDC, Indonesia has unconditional target of 29% and conditional target up to 41% compared to business as usual in 2030. As per LTS-LCCR 2050, Indonesia will increase ambition on GHG reduction by achieving the peaking of national GHG emissions in 2030 with net- sink of forest and land-use sector, reaching 540 Mton CO₂ e by 2050, and with further exploring opportunity to rapidly progress towards net-zero emission in 2060 or sooner.

The LTS-LCCR 2050 sets the goal of adaptation pathways to reduce the impact of climate change on national GDP loss by 3.45% in 2050, through increasing resilience in four basic necessities (food, water, energy, and environmental health), with three target areas of resilience (economy,

⁴⁵ MoEF. 2021. [Strategi Pengelolaan Karbon Biru di Indonesia](#) (Blue Carbon Management Strategy in Indonesia) (press release No: SP. SP. 217/HUMAS/PP/HMS.3/07/2021); [Accessed October 7, 2021].

⁴⁶ Ministry of Environment and Forestry, "Analisa Data Titik Panas (Hotspot) + Kebakaran Lahan dan Hutan Tahun 2015 Kementerian Lingkungan Hidup dan Kehutanan," Ministry of Environment and Forestry, Jakarta, 2015.

⁴⁷ Ministry of Environment and Forestry, "Analisa Data Titik Panas (Hotspot & Areal Kebakaran Hutan dan Lahan Tahun 2016," Ministry of Environment and Forestry, Jakarta, 2016.

⁴⁸ [Indonesia renews peat restoration bid to include mangroves, but hurdles abound](#). January 2021. (Accessed November 3, 2021).

⁴⁹ BAPPENAS. 2019. [Rancangan Awal Rencana Pembangunan Jangka Menengah Nasional \(RPJMN\) 2020-2024 \(Initial Draft of the 2020-2024 National Mid-Term Development Plan\)](#); [Accessed October 25, 2021].

⁵⁰ Ministry of Finance. 2021. [Kemenkeu Rilis Pendanaan Anggaran dan Pendanaan Publik Perubahan Iklim Nasional dan Daerah untuk Mencapai Target NDC](#) (Ministry of Finance Releases National and Local Climate Change Budget Funding and Public Funding to Achieve NDC Target) (press release No. SP. 24/KLI/2021o); [Accessed October 7, 2021].

⁵¹ [Indonesia Long-Term Strategy for Low Carbon and Climate Resilience 2050](#); [Accessed October 18, 2021].

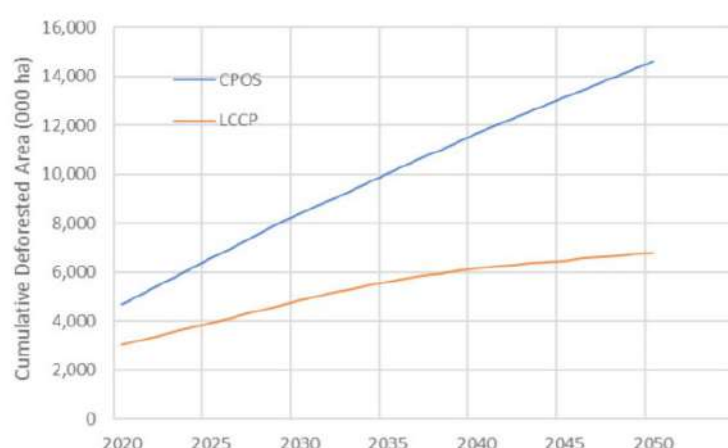
social and livelihood, ecosystem and landscape).

2.4.2 AFOLU-related LTS Targets

In order to achieve LTS target, forestry sector will share considerable efforts to maintain increasing trend of net-sink after 2030, significant transition of energy sector by raising the proportion of renewable energy in energy mix, increasing energy efficiency, reducing substantial amount of coal consumption and implementing Carbon Capture and Storage (CCS)/ Carbon Capture Utilization and Storage (CCUS) and Bioenergy with Carbon Capture and Storage (BECCS).

For increasing agriculture productions to meet the future domestic and global demand without significantly increase the demand for land, Indonesia also put significant efforts to boost productivity and increase land use efficiency and to optimise use of unproductive lands (idle lands). It is estimated that there are ca. 6.4 Mha of convertible production forest, meaning that this forested land can be converted for other land uses in the future and will be subjected to deforestation.

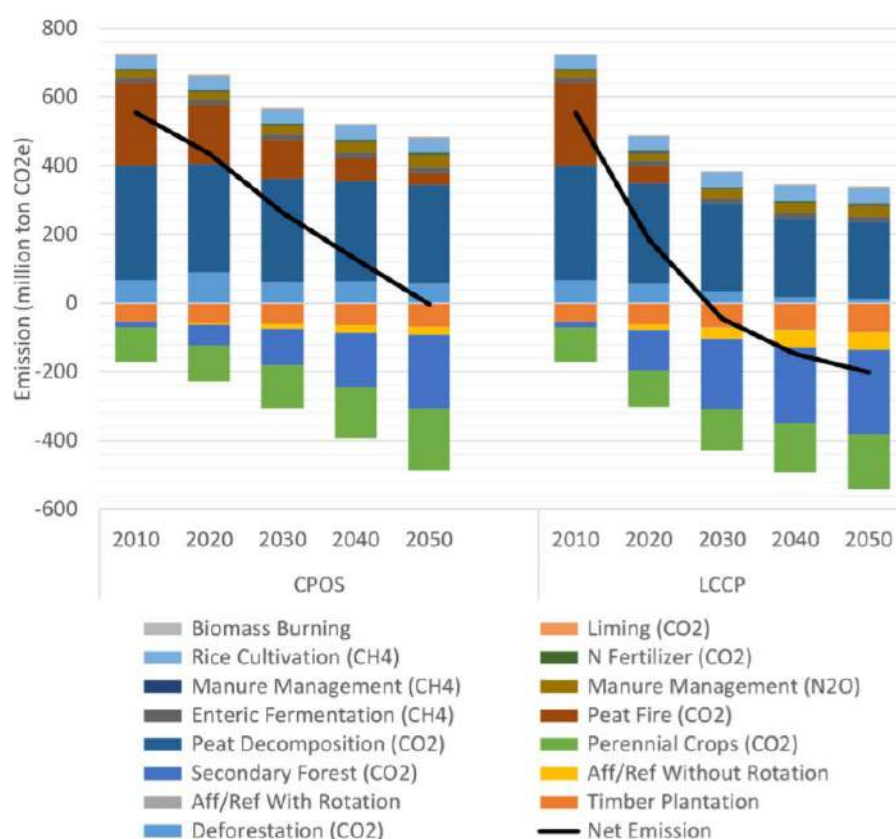
Figure 1. Expected forest conversion in the CPOS and LCCP scenarios (CPOS: extended unconditional commitment of NDC/current policy scenario; LCCP: low carbon scenario compatible with the Paris Agreement target). The CPOS and LCCP indicate that expected cumulative area to be deforested in the future are about 14.6 Mha and 6.8 Mha respectively.



LCCP which requires future deforestation to be limited to 6.8 Mha to bring this sector becoming net sink faces some challenges. Many concession areas (timber plantation and estate crop plantation) and non-concession areas in APL are covered by natural forest. There are more than 9.8 Mha of natural forests in the concessions and APL. By regulation about 50% of this area does not fall under the protection zone, thus allowed to be used for establishing the plantations and for development purposes.

Without participation of concession companies and local governments, the area of the natural forest to be deforested in next 30 years will be about 1.8 Mha. On the other hand, there are about 6.4 Mha of natural forest are in the convertible production forest. To meet the LCCP target, this forested convertible production forest area should not be converted for APL. Under the Government Regulation No. 104/2015, forested area in the convertible production forest can be changed to permanent production forest. Thus, the area of production forest that can be converted for APL are only the non-forested land.

Figure 2. Emission pathways under CPOS and LCCP scenarios. In both scenarios, the significant reduction of emission occurs due to significant decrease in deforestation and peat related emission (peat fire and peat decomposition), and significant increase in carbon sequestration from secondary forest and from afforestation and reforestation. Source: [LTS](#).



2.4.3 Funding the LTS

Indonesia established the Indonesia Environmental Fund (BPD LH) to manage funds related to forestry, energy and mineral resources, carbon trading, environmental services, industry, transportation, agriculture, marine and fisheries, and other fields related to the environment. This is aimed at optimization of the management and use of funds, as well as at domestic and international fundraising. The agency is guided by principles of transparency and accountability and meets international governance standards.

Financing strategy for climate mitigation and adaptation in Indonesia is currently at the preliminary stage of development. Climate finance system will identify finance sources, institutions and their mechanisms (for funding and implementation). Diversification and strengthening of financial sources are important aspects of this strategy. To address this, the GoI has taken a number of policies that consider both national and international – public and private sources (e.g., green bonds, and carbon pricing instruments). International sources may include bilateral, regional, and multilateral channels, including result-based payment for REDD+ under the Paris Agreement, grant, and other potential sources and mechanisms.

In general, to achieve the mitigation targets under LCCP, the growth of investment is essential. Supportive environment for investment will continuously be strengthened, including supportive policies, political stability, transport and infrastructure, as well as efficient financial markets to encourage climateconscious investment and incentives for climate-friendly investments.

2.5 Expected developments in the next two years

- Reforestation activities are expected to intensify and increase in scale (size)⁵², as the role is explicitly mandated to DG Watershed and Forest Rehabilitation;
- Fire control and mitigation measures are expected to get integrated at village level through programs such as “Disaster-resilient Village” and “Independent Village” in collaboration with Ministry of Social Affairs that will provide safety equipment to these villages; and

Covid-19 has halted many industrial and economic activities which will start to gain more traction in the next two years. Assuming that the government maintains these measures, it is expected that the decrease in the deforestation rate will continue for the next years. Furthermore, it is expected that the One Map and One GHG Data policies will also be accelerated within the next two years.

⁵² Info Publik. 2021. [11 Pejabat Eselon II KLHK Baru Diminta Segera Bekerja Maksimal](#) (11 New MoEF Echelon II Officials Urged to Work Maximum); [Accessed October 8, 2021].

3. Deforestation Trends in 2018-2020

3.1 Changes in forest and non-forest areas

In 2019 to 2020, the net deforestation rate in Indonesia decreased substantially to 0.115 million ha from 0.46 million ha in 2018 to 2019 (i.e. considering reforestation, see Box 1 for clarifications on deforestation definitions). Of the area in 2018-2019, 0.37 million ha occurred in forest areas and 0.09 million ha in other land use areas. A breakdown of the extent of net deforestation based on forest types in 2018-2019 is presented in Table 2.

Activities that contribute to deforestation include unplanned felling of natural forest timber at concessions; the conversion of forested areas due to agricultural expansion (estate crops), mining, plantations and transmigration, unsustainable forest management, illegal logging, encroachment and illegal land occupation in forested areas. Direct drivers of deforestation are spatially and temporally dynamic⁵³, they include:

- Oil palm (large and small scale), timber, mixed, and large-scale plantations;
- Mining;
- Fish pond;
- Logging road; and
- Others (e.g., urban expansion).

Table 2 Breakdown of Indonesia's net deforestation in 2018-2019. HK - Conservation Forest; HL - Protection Forest; HPT - Limited Production Forest; HP - Permanent Production Forest; HPK - Convertible Production Forest; APL - Other Use Area (Non-Forest Area). Source: *The State of Indonesia's Forests 2020*.

Forest Type	Net Deforestation (,000 ha)								
	Forest Area							APL	Grand Total
	Permanent Forest Area					HPK	Total		
	HK	HL	HPT	HP	Total				
Primary forest	0.00	0.00	10	0.00	10	0.00	10	10	20
Secondary forest	10	20	20	30	80	10	90	70	160
Plantation forest ⁵⁴	0.00	0.00	10	260	270	0.00	270	10	280
Total	10	20	40	290	360	10	370	90	460

⁵³ K. G. Austin, A. Schwantes, Y. Gu and P. S. Kasibhatla, "What causes deforestation in Indonesia?," Environ. Res. Lett., vol. 14, pp. 1-9, 2019.

⁵⁴ Data regarding plantation forest is based on image interpretation and refers to a class of forest developed by human which include all types of planted forests, both Industrial Plantation Forests/IUPHHK-HT and planted forest from reforestation/regreening within or outside the Forest Area. Plantation forests are identifiable in remote sensing images as having neat patterns on flat areas and/or showing different colors in comparison to surrounding areas with steeper topography.

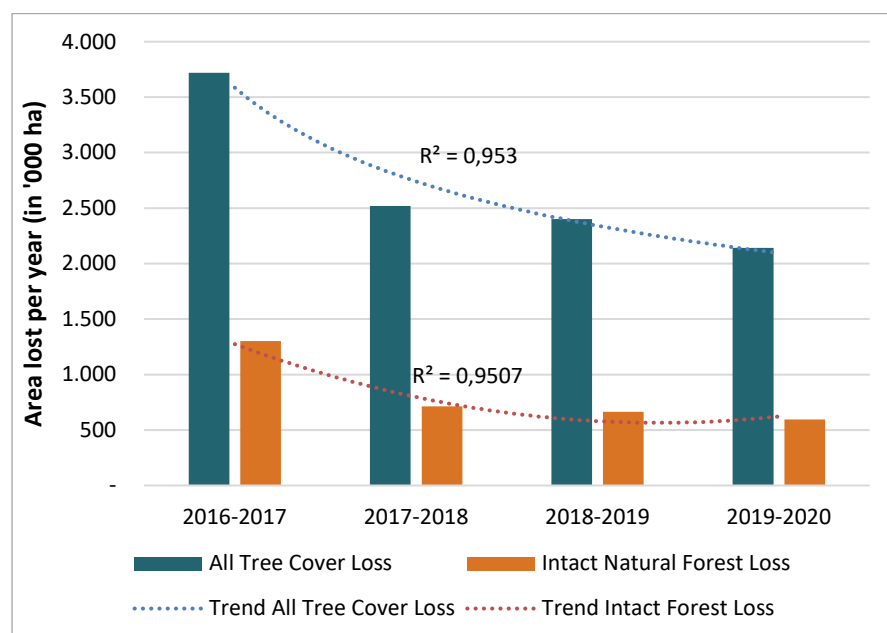
Figure 3 Trends of deforestation rates in Indonesia 1990-2019. Source: *The State of Indonesia's Forests 2020*.



The total net deforestation rate in 2018-2019 period is one of the lowest since 1990 (Figure 3). Comparing to the previous period, the rate remains almost flat, though with a reduction of deforestation in non-forest and increase in forest areas. Deforestation inside and outside Indonesia's state forest areas in the 2019-2020 period amounted to 115.46 thousand ha, 75% lower than in 2018-2019 (462.46 thousand ha).

The net deforestation rate is calculated based on net deforestation, integrating 3.1 thousand ha of reforestation in 2018-2019 and 3.6 thousand ha in 2019-2020⁵⁵. Cumulatively, total net deforestation in the re-assessment period was 575.13 thousand ha (Appendix A1, Table A1.2; Appendix A2). The trend of deforestation is also reflected in data from Global Forest Watch (Figure 3).

Figure 4. Tree cover loss and primary forest cover loss from 2016 to 2020. The trendlines suggest a decreasing trend in primary forest area and tree cover losses. Source: *Global Forest Watch*.



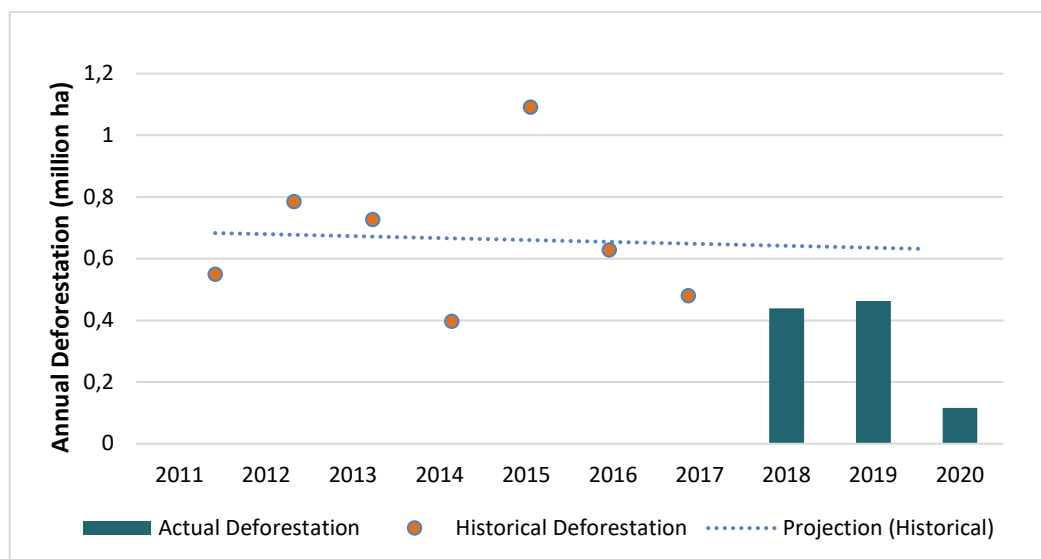
Due to the differences in definitions (Box 1), the Global Forest Watch data is used as proxy to

⁵⁵ Director of Inventory and Forest Resource Monitoring, MoEF as cited in Forest Digest. [Membandingkan Reforestasi dan Deforestasi Indonesia](#) (Comparing Indonesia's Reforestation and Deforestation); (Accessed October 7, 2021).

support the GoI's statement on reduction of deforestation/forest loss. As per MoEF data, most of the deforestation in 2019 (162.8 thousand ha) occurred in secondary forests, where 55.7% (90.6 thousand ha) occurs in state forests, while the remaining 44.4% (72.2 thousand ha) occurs outside the state forest areas⁵⁶.

Deforestation data from MoEF 2012 to 2017 (reported in the initial JECA report) is used to construct projected deforestation until 2020. The projection for current re-assessment period (2018-2020) uses a linear trendline based on these historical data of actual deforestation in 2011 to 2017 (Figure 4). This projection shows that the deforestation in 2018, 2019, and 2020 are below the projected deforestation.

Figure 5. Deforestation from 2010 to 2020 with trendline as projection. Source: *Global Forest Watch*.



⁵⁶ Agro Indonesia. 2020. [Laju Deforestasi Indonesia Naik-Turun, Begini Penjelasan KLHK](#) (MoEF's Explanation Regarding Indonesia's Fluctuating Deforestation Rate); [Accessed October 7, 2021].

3.2 Forest fires

In addition to deforestation, forest fire is another major disturbance in forest and peatland areas. Fire occurrences are primarily caused by expansion of plantation (i.e., Palm Oil). In the re-assessment period, forest fires affected 1.65 million ha in 2019 and 0.30 million ha in 2020⁵⁷, comparing to 0.16 million ha in 2017 and 0.53 million ha in 2018. The “spike” of forest fires in 2019 with a trend (indicated by the size of burn scar area) is shown in Figure 4.

Forest (and peatland) quality is also affected by disturbances. One of the main disturbances common to mineral forests and peatlands is fire. The scale of fire disturbances is reflected as the size (area) of the ‘burn scar’ summarised in Figure 6.

Box 1. Deforestation definitions in Indonesia

Deforestation Definitions in Indonesia

- Deforestation: permanent change from forested to non-forested areas; and
- Degradation: decrease of forest cover or forest quality that affects the carbon stock over a period of time.

The monitoring of deforestation in Indonesia through Simontana¹ uses three key terminologies in relation to deforestation, and these must be referred to by anyone that conducts deforestation studies in relation to Indonesia:

- **Bruto deforestation** is defined as the change in land cover classes from forested (natural and man-made forest) to non-forested;
- **Net deforestation** is defined as the change/reduction of forested land cover classes (natural and man-made forest) over a period of time that accounts for forest re-growth and forest plantations detected by satellite imagery over that same period of time;
- **Gross deforestation** is a loss of only natural forest cover, excluding the dynamic change (harvesting) of the man-made forest class.

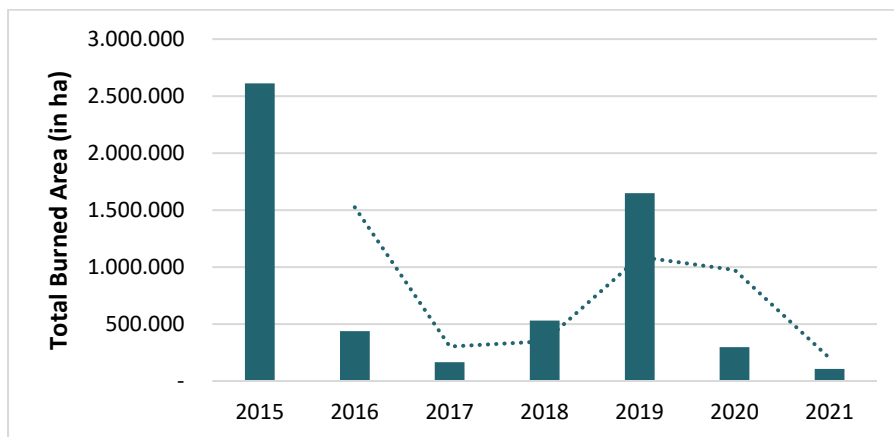
While bruto and net deforestation are mainly used for in-country statistical reports, for purposes of forest resource management, including maintaining the dynamic change of man-made forest (forest re-growth and forest plantations), the gross deforestation is used to only to monitor Indonesia's natural forest extent and dynamic.

Official reports submitted by the Indonesian Government to various international institutions and publications, including for REDD+, use the definition of gross deforestation, not bruto deforestation¹.

The **Global Forest Watch** data set defines primary forests as "mature natural humid tropical forest cover that has not been completely cleared and regrown in recent history", while the tree cover is defined as all vegetation taller than five meters in height as of 2000¹. It must be noted that the MoEF has a different definition of the primary forest than the Global Forest Watch. The MoEF defines the primary forest as forest cover that does not have (never experienced) disturbances, while the Global Forest Watch includes all vegetation cover above five meters as tree covers (this may include natural forest, plantation forest, and agroforestry)¹. By the definition from Global Forest Watch, the primary forest area is a sub-set of the total tree cover areas.

⁵⁷ MoEF Performance Report 2020.

Figure 6. Size of burned areas due to forest fire (analyzed from MoEF data).

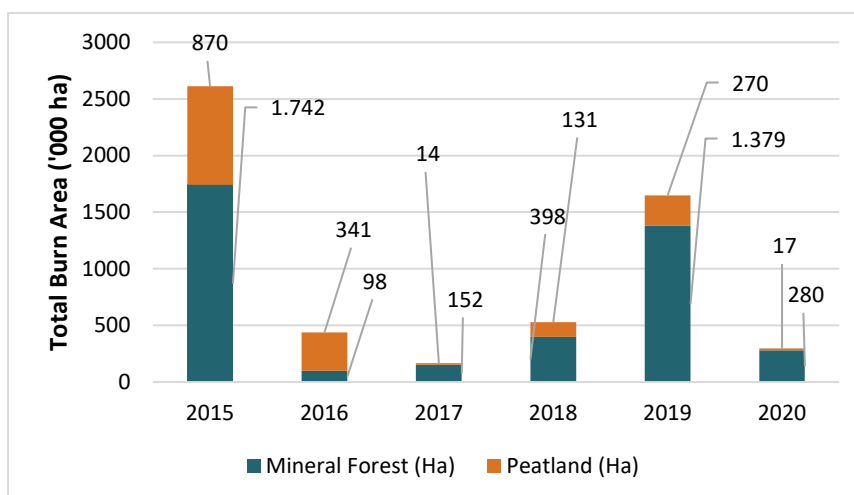


A moving average is shown in dashed line based on two periods (current and previous period). This moving average shows a decreasing trend of fire disturbance (i.e., burn scar area) in this re-assessment period in 2018-2020, compared to the previous assessment period in 2015 to 2017.

MoEF data aggregates burned areas (disturbed area) for mineral forests and peatland. In this re-assessment period (data 2018-2020) most of the fire occurred in mineral forest area while in the previous assessment period (2015-2017) peatland fire is more dominant compared to the mineral forest. This indicates a decreasing trend of peatland disturbance (Figure 7).

The size of burn areas in mineral forests and peatland is summarised in the following figure. This graph shows that the initial assessment period (2015-2017) witnessed a notably larger percentage of areas with peat fires compared to the current re-assessment period.

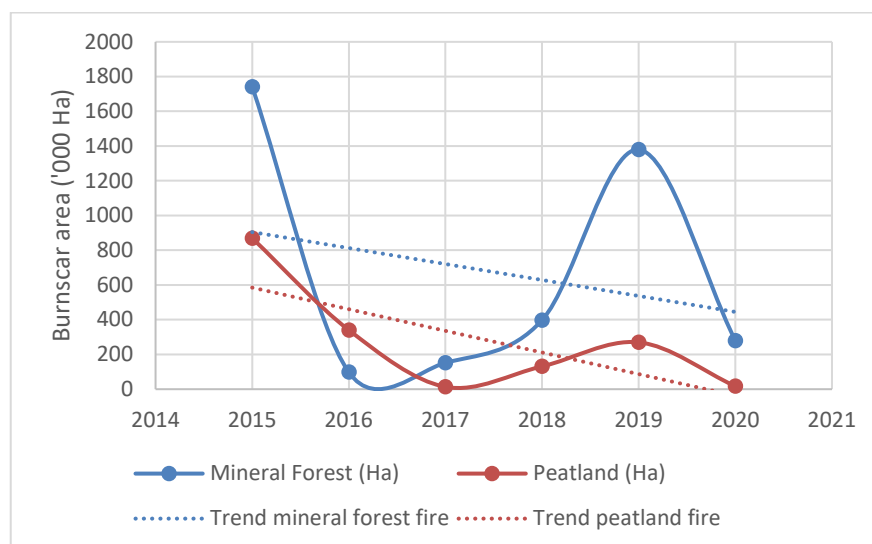
Figure 7. Size of burned areas aggregated by mineral and peatland (analyzed from MoEF and National Bureau for Disaster Response-BNPB).



The peatland areas impacted by the forest fire⁵⁸ decreased by 58.2% in the reassessment period:

Peatland	Area ('000 ha)	
	2015-2017	2018-2020 ⁵⁹
Disturbed (fire)	1,220	510
Total Indonesia	14,870	14,870

Figure 8. Trend of forest fire 2015-2020. Source: MoEF & BNPB



⁵⁸ It is almost impossible to identify and determine the area with peat decomposition using remote sensing and spatial analysis.

⁵⁹ The figure in this table is cumulative from the time period. Peatland fire decreased from 494,450 ha in 2019 to 19,988 ha in 2020.

Country <i>Indonesia</i>	Date of Report <i>8th of November, 2021</i>	Author <i>Hatfield Group</i>
sub-national jurisdiction <i>n/a</i>	Date of AB Decision <i>[...]</i>	Approval Status Under review

Version History

Date	Version	Author
08/11/2021	3	Hatfield Group

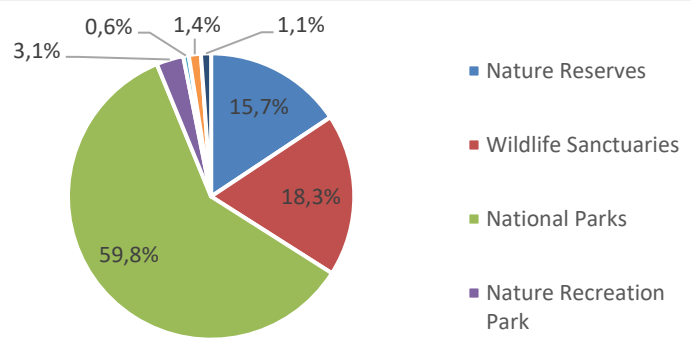
Checklist JEC 1: Scope Re-assessment

Indonesia

Item	Criteria	Analysis	Check	References
1.1	Amount of forest/peatland in the jurisdiction	<p><i>Summary: In 2020, forests covered 95.56 million ha in Indonesia (an increase from 93.95 million ha in 2017). Of these, 46.8 million ha are primary forests. The amount of peatlands remains the same across 17 provinces (14.87 million ha). Fires affected 0.51 million ha in the current re-assessment period (2018-2020) comparing to 1.22 million ha in the previous assessment period (2015-2017).</i></p> <p><i>Forest</i></p> <p><i>Total forested and non-forested areas in Indonesia as of 2019 [1]:</i></p> <p><i>a. Forested area: 95.56 million ha made up of;</i></p> <ul style="list-style-type: none"> <i>- Primary forest: 46.8 million ha;</i> <i>- Secondary forest: 42.2 million ha; and</i> <i>- Plantation forest: 5.1 million ha.</i> <p><i>b. Non-forested area: 93.6 million ha.</i></p> <p><i>Forest distribution based on these criteria is shown in Appendix A4.</i></p> <p><i>The total forested areas in Indonesia state-owned forests include [1]:</i></p> <ul style="list-style-type: none"> <i>a. Conservation forests: 22.1 million ha (18%);</i> <i>b. Protection forests: 29.7 million ha (25%);</i> <i>c. Limited production forest: 26.8 million ha (22%);</i> <i>d. Permanent production forest: 29.2 million ha (24%); and</i> <i>e. Convertible production forest: 12.8 million ha (11%).</i> <p><i>Peatland</i></p> <p><i>There is no changes in the size and geographic distribution of Peatland in Indonesia (Appendix A5). Based on land designation, the 14.87 million ha peatland area [2] is located in:</i></p> <ul style="list-style-type: none"> <i>■ Production forest and other use areas (44% of the peatland);</i> 	OK	<p><i>[1] <u>The state of Indonesia Forest 2020</u>, Ministry of Environment and Forestry, Jakarta, 2020.</i></p> <p><i>[2] Peatland Restoration Agency, " Rencana Strategis Badan Restorasi Gambut 2016-2020. Jakarta: Badan Restorasi Gambut Republik, Indonesia," Peatland Restoration Agency, Jakarta, 2016.</i></p> <p><i>[3] Ministry of Environment and Forestry, "Land cover recalculation 2017," Ministry of Environment and Forestry, Jakarta, 2017.</i></p> <p><i>[4] Ministry of Environment and Forestry, "Land cover recalculation 2020.," Ministry of Environment and Forestry, Jakarta, 2020.</i></p>

		<ul style="list-style-type: none">▪ Moratorium areas – non protected areas (34% of the peatland); and▪ Moratorium areas – protected areas (22% of the peatland). <p>No change is observed in the area based on forest status (forest designation). However, changes based on forest cover demonstrate an increase in the Planted Forests area (16.95% comparing to the previous assessment period, corresponding to 0,79 million ha) and a reduction of non-forested areas of equal size⁶⁰.</p> <table><tr><th rowspan="2">Forest Status</th><th colspan="2">Size (million ha)</th><th rowspan="2">Change (%)</th></tr><tr><th>2017 [3]</th><th>2020 [4]</th></tr><tr><td>Primary Forest</td><td>46.14</td><td>46.99</td><td>1.84</td></tr><tr><td>Secondary Forest</td><td>43.15</td><td>43.11</td><td>-0.09</td></tr><tr><td>Plantation Forest</td><td>4.66</td><td>5.45</td><td>16.95</td></tr><tr><td>Total Forested</td><td>93.95</td><td>95.56</td><td>1.71</td></tr><tr><td>Non-Forested</td><td>93.80</td><td>92.19</td><td>-1.72</td></tr></table>	Forest Status	Size (million ha)		Change (%)	2017 [3]	2020 [4]	Primary Forest	46.14	46.99	1.84	Secondary Forest	43.15	43.11	-0.09	Plantation Forest	4.66	5.45	16.95	Total Forested	93.95	95.56	1.71	Non-Forested	93.80	92.19	-1.72		
Forest Status	Size (million ha)			Change (%)																										
	2017 [3]	2020 [4]																												
Primary Forest	46.14	46.99	1.84																											
Secondary Forest	43.15	43.11	-0.09																											
Plantation Forest	4.66	5.45	16.95																											
Total Forested	93.95	95.56	1.71																											
Non-Forested	93.80	92.19	-1.72																											
1.2	Quality of forest/peatland in the jurisdiction	<p>Summary: The majority of forested areas (59.79%) is designated as conservation areas. The integrity of these ecosystems received international recognition as World Heritage Sites, ASEAN Heritage Parks, Ramsar sites, Global Geoparks, and Biosphere reserves. Three new biosphere reserves (2.2 million ha) were designated in 2020.</p> <p>Conservation Areas</p> <p>Indonesia has 556 designated conservation areas spread throughout all provinces of the country and include marine conservation areas and terrestrial conservation areas [1]. The conservation areas are comprised of 4.25 million ha of Nature Reserves; 4.98 million ha of Wildlife Sanctuaries; 16.23 million ha of National Parks; 0.83 million ha of Nature Recreation Park; 0.17 million ha of Game Hunting Parks; 0.37 million ha of Grand Forest Parks; and 0.31 million ha of other protected areas:</p>	OK	<p>[1] <u>The state of Indonesia Forest 2020</u>, Ministry of Environment and Forestry, Jakarta, 2020.</p> <p>[15] <u>Nine new sites in Asia and the Pacific join UNESCO's World Network of Biosphere Reserves</u>, UNESCO, 2020. (Accessed 7 October 2021).</p>																										

⁶⁰ Increase of primary forest area is likely due to the low accuracy of the map interpretation.



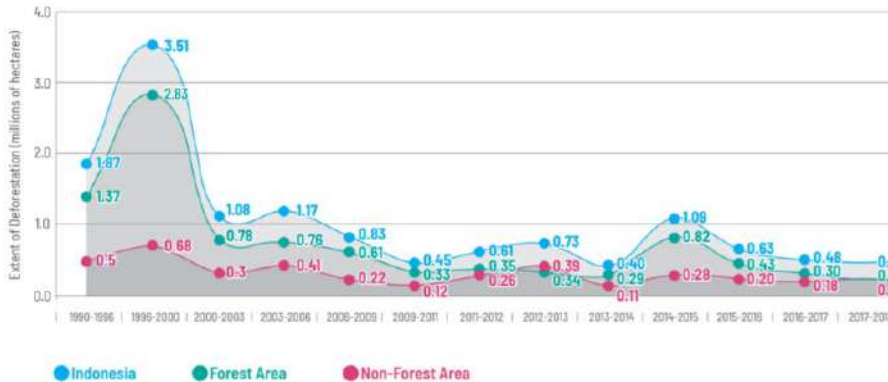
The majority of this area (59.8%) is designated as National Parks. Some conservation areas have been recognized globally, with six World Heritage sites; 22 Biosphere Reserves; six ASEAN Heritage Parks, seven Ramsar sites, and four Global Geoparks.

Changes include the addition of 2,237,373.26 ha designated as new biosphere reserves in 2020: Bunaken Tangkoko Minahasa (746,412.54 ha) in Sulawesi Island, Karimunjawa Jepara Muria (1,236,083.97 ha) in Java Island, and Merapi Merbabu Menoreh (254,876.75 ha)⁶¹ in Java Island [15].

⁶¹ Kompas. 2020. [UNESCO Resmi Tetapkan 3 Cagar Biosfer Baru di Indonesia](#) (UNESCO Officially Establishes 3 New Biosphere Reserves in Indonesia); [Accessed October 25, 2021].

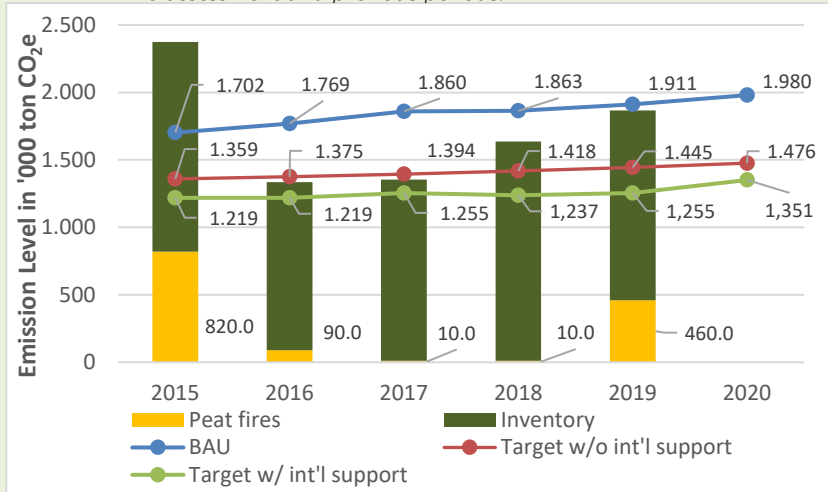
Checklist JEC 2: Ambition and Strategy Re-assessment

Indonesia

Item	Criteria	Analysis	Check	References
2.1	Quantitative target against historic rates of gross deforestation	<p><i>Summary:</i> The total net deforestation rate in 2018-2019 period is one of the lowest since 1990. Comparing to the previous period, rate remains almost flat, though with a reduction of deforestation in non-forest and increase in forest areas. For the re-assessment period, the target as per NDC was 0.450 million ha in 2020 and the rate in 2018-2019 was 0.462 million ha and in 2019-2020 was 0.115 million ha. Although the emission level from the forestry sector was below the BAU in 2019, neither conditional nor unconditional targets have not been achieved mainly due to a spike in forest fires and peat decomposition.</p> <p>The quantitative target was set based on historical data and remains valid in this re-assessment period. The BAU is changed from 2.881 GtCO₂e to 2.869 GtCO₂e (714 GtCO₂e from FOLU & peat). The GoI updated the NDC, and annually monitors the rate of deforestation based on remote sensing and using a set of definitions to reflect the achievements of the mitigation strategy in the forestry sector. The targets remain the same (set at 17.2% and 24.1%</p>  <p>emission reduction from BAU FOLU sector under unconditional and conditional, respectively).</p>	OK	<p>[1] <i>The state of Indonesia Forest 2020</i>, Ministry of Environment and Forestry, Jakarta, 2020.</p> <p>[6] <i>Updated NDC of Indonesia</i>. 2021.</p> <p>[7] Direktorat Jenderal Pengendalian Perubahan Iklim, "Laporan Inventarisasi Gas Rumah Kaca (GRK) dan Monitoring, Pelaporan, Verifikasi (MRV) Tahun 2020. Jakarta: KLHK,," Ministry of Environment and Forestry, Jakarta, 2021.</p> <p>[8] Ministry of Environment and Forestry, "The State of Indonesia Forest 2018," Ministry of Environment and Forestry, Jakarta, 2018.</p> <p>[9] Agro Indonesia, "Laju Deforestasi Indonesia Naik-Turun, Begini penjelasan KLHK,," [Online]. Available: http://agroindonesia.co.id/2020/04/laju-deforestasi-indonesia-naik-turun-begini-penjelasan-klhk/. [Accessed 7 October 2021].</p> <p>[10] Peatland Restoration Agency (BRG), "Performance Report Peatland Restoration Agency 2020,," Peatland Restoration Agency, Jakarta, 2020.</p>

Item	Criteria	Analysis	Check	References
		<p>The GoI still refers to the GHG emission data from 1990 to 2012 as the basis for the BAU scenario to determine GHG emission reductions. In the updated NDC, the BAU calculation is set to achieve 2.869 GtCO_{2e} unconditional by 2030 with 714 GtCO_{2e} from FOLU sector [6]. Based on inventory in 2020, 50% of this emission comes from FOLU and peat [7]. The previous assessment states that assumptions for deforestation rate includes:</p> <ol style="list-style-type: none"> 1) BAU scenario for 2013-2020 assumes: <ol style="list-style-type: none"> a. Deforestation rate of 0.920 million ha/year; and b. Counter Measure 1 (CM1, unconditional without international support) and Counter Measure 2 (CM2, conditional with international support) scenarios assume the rate of planned and unplanned deforestation would not exceed 0.450 million ha. 2) BAU scenario for 2021-2030 assumes: <ol style="list-style-type: none"> a. Deforestation rate of 0.820 million ha/year; and b. CM1 and CM2 scenarios assume the rate of planned and unplanned deforestation would not exceed 0.325 million ha. <p>This remains the same when compared to the updated NDC [6]. Net deforestation in 2016-2017 reached 0.48 million ha [8], while 2018-2019 reduced to 0.46 million ha [1]. This is still 41% higher than the target on 0.33 million ha per year envisioned based on the FREL. The net deforestation in this re-assessment period is 50% of the BAU scenario 2013-2020; still lower than CM1 and CM2 scenarios⁶². There was an increase in net deforestation between 2018 and 2019, taking into account approximately 3,000 ha of reforestation in this period [9].</p> <p>In 2016, the total target for peatland intervention was set 2 million ha (for a 5-year period), including 122,000 ha for restoration. Achievement by the</p>		<p>[11] Ministry of Environment and Forestry, "Performance Report Ministry of Environment and Forestry 2020," Ministry of Environment and Forestry, Jakarta, 2020.</p>

⁶² The deforestation data is obtained from <http://sipongi.menlhk.go.id/> and was calculated as net deforestation (gross deforestation minus reforestation).

Item	Criteria	Analysis	Check	References																																										
		<p>BRGM in 2016-2020 is 0.835 million ha (41.74% of the target) for intervention⁶³ and 52,987 ha (43.43% of the target) for restoration. This can be attributed to the budget cut experienced by the BRGM in the 2020 state budget [10].</p> <p>Figure 9 shows the emission reduction target and achievement in the forestry sector in the re-assessment and previous [11] [7].</p> <p>Figure 9. Emission reduction target and achievement in the forestry sector in the re-assessment and previous periods.</p>  <table><caption>Data for Figure 9: Emission reduction target and achievement in the forestry sector</caption><thead><tr><th>Year</th><th>Peat fires</th><th>Inventory</th><th>BAU</th><th>Target w/o int'l support</th><th>Target w/ int'l support</th></tr></thead><tbody><tr><td>2015</td><td>820.0</td><td>820.0</td><td>1.702</td><td>1.359</td><td>1.219</td></tr><tr><td>2016</td><td>90.0</td><td>90.0</td><td>1.769</td><td>1.375</td><td>1.219</td></tr><tr><td>2017</td><td>10.0</td><td>10.0</td><td>1.860</td><td>1.394</td><td>1.255</td></tr><tr><td>2018</td><td>10.0</td><td>10.0</td><td>1.863</td><td>1.418</td><td>1.237</td></tr><tr><td>2019</td><td>460.0</td><td>460.0</td><td>1.911</td><td>1.445</td><td>1.255</td></tr><tr><td>2020</td><td>460.0</td><td>460.0</td><td>1.980</td><td>1.476</td><td>1.351</td></tr></tbody></table>	Year	Peat fires	Inventory	BAU	Target w/o int'l support	Target w/ int'l support	2015	820.0	820.0	1.702	1.359	1.219	2016	90.0	90.0	1.769	1.375	1.219	2017	10.0	10.0	1.860	1.394	1.255	2018	10.0	10.0	1.863	1.418	1.237	2019	460.0	460.0	1.911	1.445	1.255	2020	460.0	460.0	1.980	1.476	1.351		
Year	Peat fires	Inventory	BAU	Target w/o int'l support	Target w/ int'l support																																									
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2.2	Ambition	<p>Summary: The emission reduction target has been integrated into the Low Carbon Development Plan and is projected to go until 2050, beyond the 2030 target of the Paris Agreement. To achieve the NDC target, 600,000 ha of</p>	OK	<p>[4] <i>Indonesian Mangrove Restoration Momentum in World Mangrove Day 2021</i>. (Accessed November 3, 2021).</p>																																										

⁶³ Interventions by the BRGM consists of rewetting, revegetation of peatland, and revitalization of communities.

Item	Criteria	Analysis	Check	References
		<p><i>mangrove restoration as well as coastal carbon have been included in the emission reduction target.</i></p> <p><i>The updated NDC reflects the progression beyond the existing NDC and integration of the Katowice Package in the following standpoints:</i></p> <ul style="list-style-type: none"> ▪ <i>Enhanced ambition on adaptation as elaborated in the programmes, strategies, and actions to achieve economic, social and livelihood, and ecosystem and landscape resilience;</i> ▪ <i>Enhanced clarity on mitigation by adopting the Paris Agreement rule book (Katowice Package) on information to be provided in NDC, as well as updated policies which potentially contribute to the additional achievement of NDC target;</i> ▪ <i>The national context that relates the existing condition, milestones along with national development for the period of 2020-2024, and indicative pathways towards long-term vision (Visi Indonesia 2045 and the Long-Term Strategy on Low Carbon and Climate Resilient Development 2050); and</i> ▪ <i>Translating the Katowice Package into Indonesia's context with a view to enhancing effectiveness and efficiency in implementing the agreement and in communicating its progress and achievement as part of the responsibility of the party to the agreement. This includes elaborated chapters on the transparency framework at the national level (National Registry System as the backbone of transparency framework) and means of implementation (finance, technology development and transfer, and capacity building).</i> <p><i>The ambition has been adjusted to allow the integration of low carbon development into a longer-term development plan (beyond the 2030 commitment of the Paris Agreement).</i></p>		

Item	Criteria	Analysis	Check	References
		<p>Following the mandate change of the agency from BRG to BRGM, the target for peatland intervention in 2020-2024 is reduced from 2,000,000 ha to 1,200,000 ha. An additional target of 600,000 ha for mangrove restoration was added to the responsibilities of the BRGM in order to contribute to the NDC [4].</p> <p>This ambition is reflected in the Low Carbon Development Plan 2050 that contains both mitigation and adaptation strategies. These strategies are further described in Criteria 3.3.</p>		
2.3	...equaling or exceeding national targets	<p>Summary: The emission level from the forestry sector is below the BAU, but conditional and unconditional targets have not been achieved (achieved 26% of the 29% unconditional reduction by 2020). This is attributed to fire and peat decomposition. Additionally, previous assessment stated that the target setting at the subnational level was not consistent with the national targets. This gap was significantly improved in the re-assessment period with application of centralized FREL and GHG inventory.</p> <p>Indonesia is pursuing the "One GHG Data Policy" where the national registry system (established in 2016) will be instrumental [6]. Strengthening the emission inventory mechanism between subnational and national levels is regulated through the DG Climate Change Mitigation of MoEF Decree No. 8/2019 regarding the Forest Reference Emission Level (FREL). This mainstreams the FREL at the subnational and national levels to allow synchronized emission inventory⁶⁴.</p> <p>Peat fires and peatland decomposition contribute (by approximately 24%) to the GHG emission in this re-assessment period [11]. The national REDD+ Strategy 2012-2020 targeted 11 priority provinces for implementation which has increased in the national strategy for 2020-2030 as it aims to implement REDD+ in 34 provinces [11].</p>	OK	<p>[6] <i>Updated NDC of Indonesia. 2021.</i></p> <p>[7] Direktorat Jenderal Pengendalian Perubahan Iklim, "Laporan Inventarisasi Gas Rumah Kaca (GRK) dan Monitoring, Pelaporan, Verifikasi (MRV) Tahun 2020. Jakarta: KLHK.," Ministry of Environment and Forestry, Jakarta, 2021.</p> <p>[11] Ministry of Environment and Forestry, "Performance Report Ministry of Environment and Forestry 2020," Ministry of Environment and Forestry, Jakarta, 2020.</p>

⁶⁴ Based on the Decree of DG Climate Change: SK.8/PPI/IGAS/PPI.2/3/2019 about [Determination on Forest Reference Emission Level \(FREL\) Sub National \(Province\)](#); {Accessed October 25, 2021}.

Item	Criteria	Analysis	Check	References
		GHG inventory at sub-national level and Implementation of the DG of Climate Change Decree No. 8/2019 should be conducted every two years to ensure emission reductions at the subnational level support the national target. Currently, the emission profile is calculated for 2019, consisting of emission profiles from all sectors [7]. The next inventory should occur in 2021 (every two years from the issuance of the Decision Letter).		
2.4	Feasible strategy	<p>Summary. The Launch of the Low Carbon Development Plan includes financing strategy, technical cooperation, and capacity development to enable the strategy. This represents a significant milestone for institutionalization and financial feasibility of the strategy as well as its continuity. The increase of budget allocation for MoEF, and additional budget (IDR 1.5 billion in 2021) for peatland and mangrove restoration are important enablers for strategy feasibility, as it is addressed in the newly passed regulation that sets a price on carbon emissions and creates a mechanism to trade carbon.</p> <p>Low Carbon Development Plan</p> <p>To optimally address the coordination between subnational and national governments, the concept of national and provincial GHG emission reduction action plans were transformed into the Low Carbon Development Plan (Perencanaan Pembangunan Rendah Karbon [PPRK]) by BAPPENAS in 2019 [22]. The PPRK-D at the subnational level will be aligned with the PPRK at the national level. This transformation is done to maintain a commitment to the Article 3.4 of the United Nations Framework Convention on Climate Change (UNFCCC), Sustainable Development Goals, Paris Agreement, and alignment with the National Medium Term Development Plan 2020-2024. Details of the provincial target for emission reduction is provided in Appendix A3.</p> <p>Decentralization of Peatland and Mangrove Rehabilitation</p> <p>In this re-assessment period, protection and management of peatland (and mangrove) in Indonesia is now mandated to BRGM which is also responsible</p>	OK	<p>[22] National Planning Agency (BAPPENAS), "Laporan Implementasi Perencanaan Pembangunan Rendah Karbon.," BAPPENAS, Jakarta, 2019.</p> <p>[12]. Indonesia sets carbon pricing policy to spur carbon trading. (Accessed November 2021).</p>

Item	Criteria	Analysis	Check	References
		<p>for mangrove rehabilitation in North Sumatera, Riau, Kepulauan Riau, Bangka Belitung, West Kalimantan, East Kalimantan, North Kalimantan, Papua, and West Papua provinces. There is also delegation of peatland restoration efforts from MoEF to Riau, Jambi, South Sumatera, West Kalimantan, Central Kalimantan, South Kalimantan, and Papua provinces.</p> <p><i>Carbon regulation</i></p> <p>President Joko Widodo announced the new regulation at the United Nations Climate Change Conference (COP26) in Glasgow, where he also highlighted the importance of the carbon market and carbon pricing in fighting climate change. Details of Indonesia's regulation are not immediately available, but based on its earlier draft, companies will be allowed to sell their carbon units if they comply with the reporting and recording procedures for inclusion under the Environment and Forestry Ministry's national registry. Carbon trading will be done through a bourse in Indonesia, and levies will be charged on transactions.</p> <p>The regulation outlines a few trading mechanisms, including the trade between two business entities through the so-called cap and trade schemes, carbon offset scheme, and result-based payment, according to a statement from the ministry [12].</p>		

Checklist JEC 3: Progress update

Indonesia

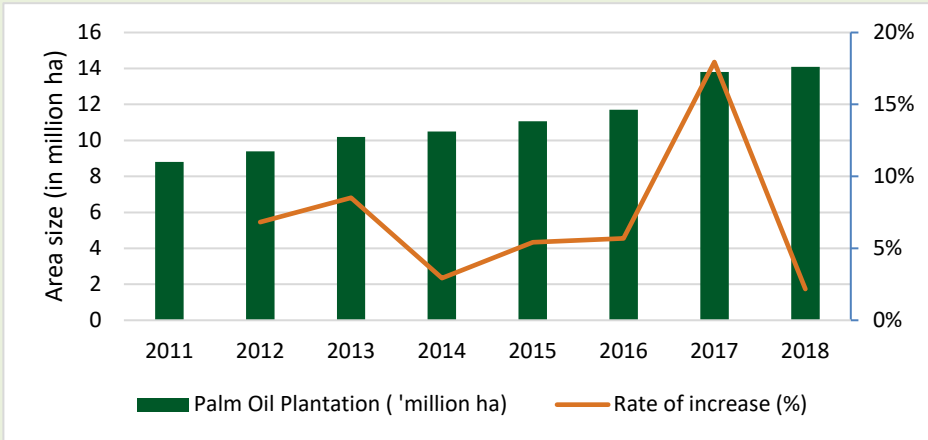
Item	Criteria	Analysis	Check	References
3.1	Timely progress towards milestones of the strategy...	<p><i>Summary: The GoI submitted an updated NDC with climate mitigation and adaptation strategies. It developed new regulations to address GHG emissions reductions from ocean and coasts (Blue Carbon). The MoEF publishes documents and performance reports that reflect progress against the set targets for emission reduction, that can be accessed by public through official web of DG of Climate Change. The 3rd BUR was due in 2020 and is outstanding.</i></p> <p><i>Strategies</i></p> <p><i>Based on the updated NDC [6], mitigation strategies aim for 2 million ha of peatland restoration in addition to 12 million ha of forest restoration by 2030.</i></p> <p><i>Adaptation strategies in the updated NDC [6] include the following milestones:</i></p> <ul style="list-style-type: none"> ▪ Reducing drivers of vulnerability to climate change impacts; ▪ Responding to climate change impacts and managing risks; ▪ Enhancing the capacity of communities and sustainability of ecosystem services; and ▪ Enhancing engagement of stakeholders at all levels in building climate resilience. <p><i>The effectiveness of policies in emission reduction, through adaptation and mitigation programs, can be found in an official release from the MoEF (for the FOLU sector) and the Ministry of Energy and Mineral Resources (for the energy sector). There are publicly accessible documents and reports that reflect progress against the set targets for emission reduction. In the forestry sector, such information is available from:</i></p> <ul style="list-style-type: none"> ▪ The Status of Indonesian Forest 2020, released by the MoEF every year [1]; ▪ Performance Report of MoEF that can be downloaded from the official source at the MoEF [11]; 	OK	<p>[1] <i>The state of Indonesia Forest 2020</i>, Ministry of Environment and Forestry, Jakarta, 2020.</p> <p>[6] <i>Updated NDC of Indonesia</i>, 2021.</p> <p>[7] <i>Direktorat Jenderal Pengendalian Perubahan Iklim, "Laporan Inventarisasi Gas Rumah Kaca (GRK) dan Monitoring, Pelaporan, Verifikasi (MRV) Tahun 2020</i>. Jakarta: KLHK,," Ministry of Environment and Forestry, Jakarta, 2021.</p> <p>[11] Ministry of Environment and Forestry, "Performance Report Ministry of Environment and Forestry 2020," Ministry of Environment and Forestry, Jakarta, 2020.</p> <p>[24] Ministry of Energy and Mineral Resources, "Policy and Plan for Achieving NDC Target from Energy Sector. Jakarta: Ministry of Energy and Mineral Resources,," Ministry of Energy and Mineral Resources, Jakarta, 2021.</p>

Item	Criteria	Analysis	Check	References
		<ul style="list-style-type: none"> ▪ Report on GHG inventory (soon to be on GHG policy through a national registry system) [7]; ▪ Updated NDC [6], [24] [25]; and ▪ Various press releases were provided by the MoEF regarding updates and data on emission reduction strategies. <p>There are five new and two replacement regulations to improve environmental practices in Indonesia. The replacement regulations are the implementing regulations of Law 11/2020 on Job Creation (Omnibus Law) that simplifies the environmental licensing process by regulating the environmental assessment into one regulation.</p> <p>Furthermore, regulatory analysis shows that there is an addition of regulations to address carbon from ocean and coastal resources (Blue Carbon). This is an improvement made to reduce emissions.</p>		[25] Ministry of Environment and Forestry, "Indonesia Net Sink FOLU 2030," Ministry of Environment and Forestry, Jakarta, 2021.
3.2	...measurably on a trajectory towards the targets for reduced deforestation	<p>Summary: Deforestation in this re-assessment period shows a decreasing trend (Figure 1) and the rate of deforestation is lower than the projected deforestation based on 2015-2017 data. The Gol achieved 12.13% and 2.40% of the emission reduction targets in 2018 and 2019, respectively; hence targets in these years were not achieved.</p> <p>Indonesia is eligible to receive compensation for preventing the emission of 11.23 million tCO₂e (in 2016-2017) by reducing deforestation rate from 1.09 million ha in 2014-2015 to 0.48 million ha in 2016-2017. Indonesia is committed to maintain the deforestation rate below 0.43 million ha in 2021. The decision for a payment of 56 million USD was announced by the government of Norway as compensation for preventing 11.23 million tons of CO₂e (in 2016-2017) through a newly established Indonesian Environment Fund [30], [31].</p> <p>Emission in 2018 was 1.64 million tCO₂e (from target 1.39 tCO₂e), while in 2019 was 1.87 million tCO₂e (from target 1.45 tCO₂e). Based on the emission and the emission target without international support, the Gol achieved 12.13% and 2.40% of the emission</p>	OK	<p>[2] Ministry of Environment and Forestry, "<u>Sipongi Karhutla Monitoring System Kementerian Lingkungan Hidup dan Kehutanan</u>". Ministry of Environment and Forestry, Jakarta, 2021.</p> <p>[7] Direktorat Jenderal Pengendalian Perubahan Iklim, "Laporan Inventarisasi Gas Rumah Kaca (GRK) dan Monitoring, Pelaporan, Verifikasi (MRV) Tahun 2020. Jakarta: KLHK," Ministry of Environment and Forestry, Jakarta, 2021.</p>

Item	Criteria	Analysis	Check	References
		<p>reduction targets in 2018 and 2019, respectively; hence targets in these years were not achieved. There are no GHG inventory data available yet for 2020 [2]. This information is publicly disclosed, and the fluctuation in achieving the emission reduction commitment is published in public media [26].</p> <p>The DG Climate Change within the MoEF is the designated institution to conduct the GHG inventory [7]. This is justified by Presidential Regulation No. 16/2015.</p> <p>The result of the inventory is a part of BUR to UNFCCC. The GoI submitted the 2nd BUR to the UNFCC in 2018. The methods for documenting how targets for emission reduction from all sectors (including the forestry sector) are described in this document [27]. The methods for calculating the BAU, CM1, and CM2 scenarios, as well as for the GHG inventory, remain consistent with the one used in the previous assessment period [28].</p> <p>Both the GHG inventory report and the BUR are important documents for identifying measures and trajectories towards the targets (i.e., CM1 and CM2 of the NDC), as these reports contain quantitative data on emission reduction. These methods are aimed mainly at above-ground biomass. Methods for calculating below-ground biomass (e.g., roots) are often excluded from the inventory [29].</p> <p>The GHG inventory is proven to be sufficient for identifying the sectoral emission profile in relevance with the targets. Possible improvements of the inventory report include: improvement of data quality (activity and emission factor) that are country-specific (e.g., inclusion of carbon pools and fire); inclusion of parameters based on IPCC refinement 2019; analysis to include carbon stock changes; application of national registry system; and inclusion of other mitigation actions such as reclamation and mining area rehabilitation. Indonesia is scheduled to receive compensation for achieving the target of reduced deforestation.</p>		<p>[26] Antara News, "Tren Emisi GRK Indonesia Fluktuatif Meningkat Sejak 2000". (Accessed 8 October 2021).</p> <p>[27] Directorate General of Climate Change, "2nd Biennial Update Report under the UNFCC, Republic of Indonesia. Jakarta;," Ministry of Environment and Forestry, Jakarta, 2018.</p> <p>[28] Directorate of Climate Change, "Emission Reduction Report for the Indonesia-Norway Partnership," Ministry of Environment and Forestry, Jakarta, 2019.</p> <p>[29] Climate Policy Watcher, "Methods for Below Ground Biomass". 2021. (Accessed 8 October 2021).</p> <p>[30] Mongabay, "Indonesia Terminates Agreement with Norway on \$1B REDD+ Scheme". 2021. (Accessed 8 October 2021).</p> <p>[31] NICFI, "Press statement: The Indonesia-Norway climate and forest partnership," 2021. (Accessed 7 October 2021).</p>

Item	Criteria	Analysis	Check	References
3.3	Verifiable improvement of the enabling environment	<p>Summary: Indonesia's Long Term Strategy for Low Carbon and Climate Resilience 2050 is an important improvement to align the climate goals and targets with national, sub-national and international objectives. Another important governance enabler is the fact of consolidation of forest, peatland, and mangrove management under the MoEF which facilitates inter-ministry coordination and monitoring of activities.</p> <p>Low Carbon Development Strategy Indonesia's Long Term Strategy for Low Carbon and Climate Resilience 2050 can be regarded as enabling environment. This document is mandated but not legally binding [32]. The LTS-LCCR plays a central role in: (i) aligning the climate goals and targets with national, sub-national and international objectives, including Sustainable Development Goals (SDGs); (ii) engaging non-party stakeholders (NPS), (iii) enhancing opportunities for innovation, and (iv) enabling communities to earn benefits of early actions [33]. Additionally, the LTS-LCCR will also strengthen the vision of One Hundred Years Indonesia (Visi Indonesia 2045) [33].</p>	OK	<p>[6] <u>Updated NDC of Indonesia</u>. 2021.</p> <p>[10] Peatland Restoration Agency (BRG), "Performance Report Peatland Restoration Agency 2020.," Peatland Restoration Agency, Jakarta, 2020.</p> <p>[23] National Planning Agency (BAPPENAS), <u>AKSARA. Aplikasi Perencanaan dan Pemantauan Aksi Pembangunan Rendah Karbon Indonesia</u>, 2019. (Accessed 10 October 2021).</p> <p>[27] Directorate General of Climate Change, "2nd Biennial Update Report under the UNFCC, Republic of Indonesia. Jakarta;," Ministry of Environment and Forestry, Jakarta, 2018.</p> <p>[32] Directorate General Climate Change, "Pencapaian the First NDC, Updated NDC, dan LTS-LCCR 2050," <u>Pojok Iklim - Ministry of Environment and Forestry</u>, Jakarta, 2021.</p>

Item	Criteria	Analysis	Check	References
		<p>The LTS-LCCR contains the following two climate change strategies:</p> <ul style="list-style-type: none"> ■ Mitigation strategy with three pathways consisting of: current policy scenario (Unconditional, or CM1 without international support), transition scenario, and low carbon scenario compatible with Paris Agreement target (CM2 with international support) [33]. ■ The adaptation strategy is to reduce the impact of climate change on the GDP by 3.45% in 2050. This will be achieved by increasing resilience in four basic necessities: food, water, energy, and environmental health. Economic resilience aims for long-term investments, capacity building, and “green jobs” that consider risks such as climate hotspots, climate vulnerability (Sectoral Pathway), in addition to local and regional-based adaptive developments that focus on food and water provisions, energy generation, and disaster risk management (Regional Pathway) [33]. 		<p>[33] Ministry of Environment and Forestry, "Indonesia Long Term Strategy for Low Carbon and Climate Resilience 2050," Ministry of Environment and Forestry, Jakarta, 2021.</p> <p>[34] Greenpeace, "<u>Karhutla dalam Lima Tahun Terakhir</u>" (Accessed October 2021).</p> <p>[35] Madani Foundation, "Madani Insight,," Madani Foundation, Jakarta, 2019.</p> <p>[36] Mongabay, "<u>Inpres Moratorium Sawit Hampir Usai, Bagaimana Kelanjutannya?</u>," 2021. (Accessed 8 October 2021).</p> <p>[37] Sawit Watch, "Monitoring Report: One-year Implementation of Presidential Instruction on Palm Oil Moratorium," Sawit Watch Consortium., Bogor, 2019.</p> <p>[38] Research & Development Ministry of Environment and</p>

Item	Criteria	Analysis	Check	References																											
		<div><div>■</div><div>Monitoring the transformation and implementation of Low Carbon Development at national and provincial levels is done through a MRV system called AKSARA [23].</div><div><div>Moratorium Strategy</div><div>Improvements in the enabling conditions is also relevant with policies such as the moratorium for palm oil and suspension of new forestry concession licenses. Expansion of palm oil and pulp and paper estates trigger fires, as burning is still used as the main method for clearing the forested area for palm oil plantation [34]. The increase of planted palm oil (i.e., palm oil plantation) is summarized in the following diagram. : The diagram shows that the rate of palm oil plantation increases in 2018 was the lowest compared to recent, earlier years; coinciding with the issuance of the palm oil moratorium. Therefore, the moratorium also contributes to the enabling regulatory framework for reducing deforestation. This moratorium ends in September 2021 and the Coalition for Palm Oil Moratorium advised the government to extend the moratorium [36], [37].</div></div></div> <div><table><caption>Data for Palm Oil Plantation and Rate of Increase (2011-2018)</caption><thead><tr><th>Year</th><th>Palm Oil Plantation ('million ha)</th><th>Rate of increase (%)</th></tr></thead><tbody><tr><td>2011</td><td>8.8</td><td>10.0</td></tr><tr><td>2012</td><td>9.5</td><td>12.0</td></tr><tr><td>2013</td><td>10.2</td><td>10.0</td></tr><tr><td>2014</td><td>10.5</td><td>5.0</td></tr><tr><td>2015</td><td>11.2</td><td>8.0</td></tr><tr><td>2016</td><td>11.8</td><td>8.0</td></tr><tr><td>2017</td><td>14.0</td><td>18.0</td></tr><tr><td>2018</td><td>14.2</td><td>2.0</td></tr></tbody></table></div>	Year	Palm Oil Plantation ('million ha)	Rate of increase (%)	2011	8.8	10.0	2012	9.5	12.0	2013	10.2	10.0	2014	10.5	5.0	2015	11.2	8.0	2016	11.8	8.0	2017	14.0	18.0	2018	14.2	2.0		<div>Forestry, "<u>Penataan Zonasi dan Perhutanan Sosial, Strategi Pulihkan Ekosistem Gambut Bram Itam</u>," 2019. (Accessed 7 October 2021).</div> <div>[39] Ministry of Finance, "<u>OMSPAN System Ministry of Finance</u>". (Accessed October 2021).</div> <div>[40] Millenium Challenge Corporation, "Measuring Interim Results of the Indonesia Participatory Land Use Planning Activity," 2017 (Accessed 8 October 2021).</div> <div>[41] USAID Lestari, "Village-based Forest Management: The Importance of Engaging Villages within USAID Lestari's Landscape Approach.," USAID, Jakarta, 2018.</div> <div>[42] Ministry of Environment and Forestry, "Performance Report of Ministry of Environment and Forestry 2019," Ministry of</div>
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2018	14.2	2.0																													

Item	Criteria	Analysis	Check	References
		<p><i>It is necessary to verify whether the policy changes are in place and effective, including Indonesia Certification System on Sustainable Palm Oil (ISPO). There have been reports produced by the Madani Foundation [35], as well as the Sawit Watch Coalition, that can serve as verification (or criticism) to the level of efforts and impacts of such policies. Gol issued an indicative map for suspension of concession licensing (Peta Indikatif Penundaan Pemberian Ijin Baru [PIPIB]) that potentially halts conversion of forests and peatlands designated in this indicative map⁶⁵.</i></p> <p><i>Performance and Budget Monitoring Systems</i></p> <p><i>The Gol updated its commitment for the GHG reduction in the updated NDC submitted on August 12th 2021 [6], and reported the progress in the 2nd BUR [27]. Indonesia is yet to submit the 3rd BUR.</i></p> <p><i>Starting 2020 forest, peatland, and mangrove are now consolidated under the MoEF. In 2021, the MoEF received 1.5 billion IDR in the state budget to address peatland and mangrove issues. This facilitates inter-ministry coordination⁶⁶ that allows monitoring of:</i></p> <ul style="list-style-type: none"> ▪ <i>The efficacy of peatland restoration and rehabilitation activities under the BRGM published in the performance report [10];</i> ▪ <i>The results of the restoration program and re-zoning of peatland areas as protected areas from the 45 companies and concessioners that are under the supervision of the MoEF. Re-zoning and social forestry mechanisms were implemented in Jambi Province [10], [38]. Reports on peatland zoning can be accessed from the BRGM Performance Report 2020. In 2020, 67 peatland areas (of 73 target) were re-zoned to maintain carbon stock, hydrological function, biodiversity, and other natural resources [10], [38];</i> ▪ <i>The interaction of forest and peatland policies was combined with Presidential Regulation No. 120/2020 that “merged” the peatland and forest policies into the MoEF.</i> 		<p><i>Environment and Forestry, Jakarta, 2019.</i></p>

⁶⁵ Decree of the MoEF No. 4945/MENLHK-PKTL/IPSDH/PLA.1/8/2020 tentang [Penetapan Peta Indikatif Penghentian Pemberian Izin Baru Hutan Alam Primer dan Lahan Gambut Tahun 2020 Periode II \(PIPIB\)](#) (Determination of the Indicative Map for Termination of New Permits for Primary Natural Forests and Peatlands in 2020 Period II); [Accessed October 25, 2021].)

⁶⁶ The peatland and mangrove restoration agency (BRGM) are an institution equal to ministry level. Therefore, coordination between MoEF and BRGM is considered as inter-ministry coordination in this re-assessment.

Item	Criteria	Analysis	Check	References
		<p><i>Peatland protection and management still follow Government Regulation No. 57/2016 and progress will be included in the MoEF annual performance report; and</i></p> <ul style="list-style-type: none"> ▪ <i>Presidential Instruction No. 5/2019 and Presidential Instruction No. 6/2019 on the National Action Plan of Sustainable Palm Oil (2019-2024) are reviewed independently by Sawit Watch Consortium [37].</i> <p><i>This coordination allows management and evaluation of the budget used for forest, mangrove, and peatland activities. Budget monitoring is done using the Online Monitoring of the State Budget System (Online Monitoring Sistem Perbendaharaan Anggaran Negara / OMSPAN) system, a web-based application managed and operated by the Ministry of Finance [39]. The OMSPAN data is not publicly available, but the budget spent by the MoEF and BRGM is published in the annual performance reports.</i></p> <p><i>Tenure and Land use Planning</i></p> <p><i>The regulatory framework relevant to tenure and land use planning is part of the enabling condition that allows community (and public) participation in mitigation and adaptation strategies. The framework observed in the re-assessment period includes:</i></p> <ul style="list-style-type: none"> ▪ <i>Village land-use planning as part of various bilateral and multilateral collaborations (e.g., Millennium Challenge Account Indonesia in 2016 [40], ongoing Forest Programmes, and USAID Lestari [41]). However, the reporting system of the progress on village land use planning is still conducted separately by the programs. This mechanism is followed up by the district and provincial governments and linked with the national spatial plan;</i> ▪ <i>Land for agrarian reform (Tanah Obyek Reforma Agraria [TORA]) is a policy that allocates 4.85 million ha of state forest for community livelihood⁶⁷. The progress of TORA is published through an <u>information system</u> within MoEF designated as SITORA. This is coordinated between the MoEF in the central government with the Forest Management Units in the provincial government; and</i> 		

⁶⁷ Decree of Ministry of Environment and Forestry No. SK. 5050/MENLHK-PKTL/KUH/PLA.2/9/2020 tentang [Peta Indikatif Alokasi Kawasan Hutan untuk Penyediaan Sumber Tanah Obyek Reforma Agraria \(TORA\)](#) (Indicative Map of Forest Area Allocation for Provision of Land Resources for Agrarian Reform Objects) [Accessed October 25, 2021].

Item	Criteria	Analysis	Check	References
		<p>■ Conservation partnership does not provide tenurial rights to the communities but allows utilization of forest resources - i.e., NTFPs - to support livelihoods as well as ecosystem restoration in conservation areas⁶⁸. The conservation partnership is included in the annual performance report of MoEF [11]. This is normally done in coordination with sub-district or district governments.</p> <p>In order to improve the condition, training on non-burning methods as technology in preparing plantation estate is provided to the local community so that fire incidents can be reduced [42].</p> <p>The BRGM employed 209 employees in 2018 and this number increased to 225 employees in 2020 [10]. The MoEF and BRGM experienced budget cuts in 2020 due to a re-focusing of financial resources to address the Covid-19 pandemic but, in 2021, IDR 1.5 billion was added to the MoEF budget to address peatland and mangrove restoration targets.</p>		

⁶⁸ Regulation of DG Conservation of Natural Resource and Ecosystem No. P.6/KSDAE/SET/KUM.1/6/2018 tentang [Petunjuk Teknis Kemitraan Konservasi Pada Kawasan Suaka Alam dan Kawasan Pelestarian Alam](#) (Technical Guidelines for Conservation Partnerships in Nature Reserves and Nature Conservation Areas); [Accessed October 25, 2021].

Checklist JEC 4: Monitoring, Reporting, and Verification (MRV) update

Indonesia

Item	Criteria	Analysis	Check	References
4.1	Transparent system operational	<p><i>Summary: There are several systems that can be used to provide information on MRV. To ensure TACCC of GHG inventory, GoI is using the SIGN-SMART system (simplification of IPCC method). Additionally, there are other portals for One Map Policy, as well as AKSARA from the National Planning Agency for planning, monitoring, evaluating, and reporting progress related to Low Carbon Development.</i></p> <p><i>Paris Agreement Article 5 states that state parties are encouraged to implement and support, including through results-based payments. This framework has been agreed under the Convention for a policy approach and positive incentives for REDD+ activities. In order to fully implement REDD+, Indonesia has implemented all the required instruments or infrastructure, namely: FREL, NFMS, MRV System, REDD+ National Strategy, National Climate Change Registry System, SIS REDD+, and Funding Instruments [43]. The National Climate Change Registration System is used to collect information on all activities carried out in order to support mitigation and adaptation to climate change, then present the information in a clear, transparent, and easy understand manner⁶⁹;</i></p> <p><i>The MoEF is still using the National Forest Monitoring System (Simontana) for monitoring, reporting, and verifying its forests nationally related to climate change adaptation and mitigation, all part of a commitment to promote information transparency. This system is also intended to support Indonesia's NDC implementation and help establish a baseline for the national FREL. Simontana can be accessed through a website located at webgis.menlhk.go.id and the periodical monitoring of forest resources has been conducted annually [1];</i></p> <p><i>To monitor forest and land fires, since 2018, a thermal CCTV system (SIPONGI) has been added at fire-prone locations. This program aims to improve the reliability of the monitoring system in particular areas and respond faster with ground checks. SIPONGI is an integrated system that provides hotspot information close to real-time by combining hotspot data from</i></p>	OK	<p><i>[9] National Disaster Management Bureau, "National Disaster Management Bureau (BNPB) Report 2020," BNPB, Jakarta, 2020.</i></p> <p><i>[1] <u>The state of Indonesia Forest 2020</u>, Ministry of Environment and Forestry, Jakarta, 2020.</i></p> <p><i>[43] DG Climate Change, "Rencana Strategis Direktorat Jenderal Pengendalian Perubahan Iklim Tahun 2020-2024," Ministry of Environment and Forestry, Jakarta, 2020.</i></p> <p><i>[44] Badan Informasi Geospasial, "Ilokowi Resmikan Portal Kebijakan Satu Peta Agustus 2018," 2018. (Accessed 8 October 2021).</i></p> <p><i>[45] BAPPENAS, "Peluncuran dan Lokakarya Aksara Aplikasi Perencanaan dan Pemantauan Rendah Karbon Indonesia," 2019. (Accessed 11 October 2021).</i></p>

⁶⁹ Regulation MoEF No. P.16/MENLHK/SETJEN/SET.1/8/2020 tentang [Rencana Strategis Kementerian Lingkungan Hidup dan Kehutanan Tahun 2020-2024](#) (Ministry of Environment and Forestry Strategic Plan 2020-2024); [Accessed October 25, 2021].

Item	Criteria	Analysis	Check	References
		<p>NOAA, Terra/Aqua, SNPP and field data from regional government offices;</p> <p>To fulfill the Transparency, Accuracy, Completeness, Comparability, and Consistency (TACCC) principle of GHG inventory activities, the GoI is still using the National GHG Inventory System (SIGN-SMART), which was developed in early 2015. This SIGN-SMART is a simplification of the IPCC method that is widely accessible both nationally and internationally⁷⁰;</p> <p>The GoI uses the Indonesian National Accounting Carbon System (INCAS) to provide information on carbon emissions at the subnational level (provinces). In addition, INCAS collects data on emissions and biological oxidation from land fires in mineral and peatlands and data and information about fires [1].</p> <p>The GoI launched a web portal for One Map Policy in 2018. Currently, this portal contains 85 geospatial thematic maps, 19 ministries/agencies, and 34 provinces [44]. The alignment and synchronization processes are ongoing.</p> <p><i>Addressing Recommendations from Previous Assessment</i></p> <p>The national MRV is integrated with National Forestry Management at the MoEF, and reporting complies with the 2006 IPCC guideline on the principles of clarity, transparency, and understanding. No specific recommendation is proposed aside from checking the annual reports as noted in 3.2. Official reports produced from the GoI includes:</p> <ul style="list-style-type: none"> ▪ The state of Indonesian forests published annually; ▪ Performance report of MoEF containing information on deforestation rate/reforestation activities published annually; and ▪ Performance report of BRGM containing information on peatland restoration activities, published annually. <p>As part of the improvement, BAPPENAS launched an application system called AKSARA to monitor low carbon development in Indonesia (Mitigation Pathway) [45]. The system features [46]:</p> <ul style="list-style-type: none"> ▪ AKSARA-Rancang: Design and planning of low carbon development intervention; 		<p>[46] BAPPENAS, "<u>AKSARA Application for planning and monitoring low carbon development in Indonesia</u>." BAPPENAS., 2020. (Accessed 11 October 2021).</p> <p>[46] BAPPENAS, "<u>AKSARA Application for planning and monitoring low carbon development in Indonesia</u>." BAPPENAS., 2020. (Accessed 11 October 2021).</p> <p>[47] International Climate Initiative, "<u>MRV System for Mitigation Actions in Indonesia</u>," 2021. (Accessed 8 October 2021).</p>

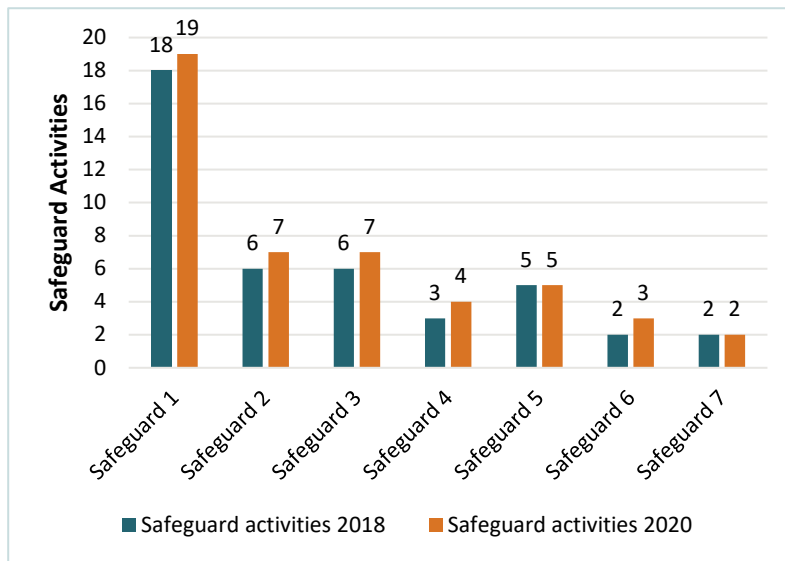
⁷⁰ <http://signsmart.menlhk.go.id/v2.1/app/>

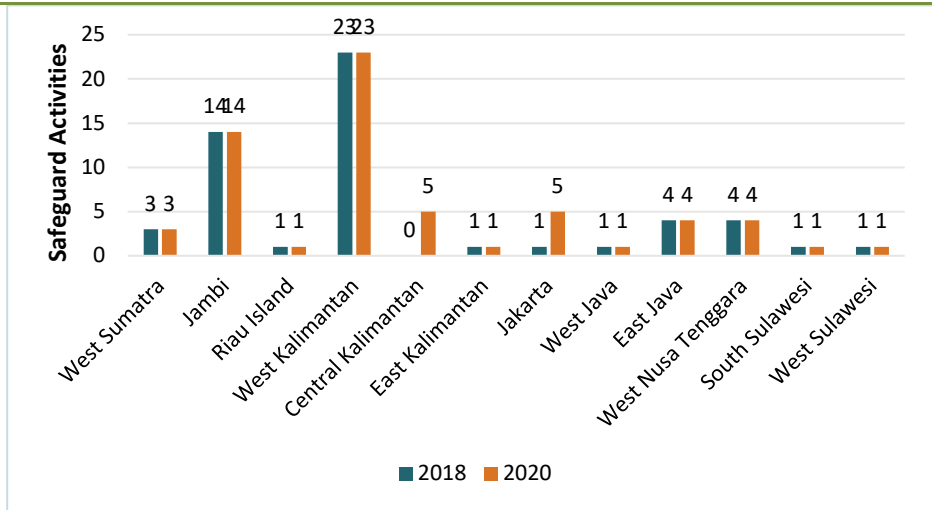
Item	Criteria	Analysis	Check	References
		<ul style="list-style-type: none"> ■ AKSARA-Sangkala: evaluation of achievement in low carbon development at national and sub-national levels; ■ AKSARA-Kumawas: Monitoring of low carbon intervention implementation; and ■ AKSARA-Biwara: Providing a systematic and regular report on the overall low carbon development for relevant stakeholders. <p>The AKSARA is linked to the national registry system (SRN) and designed to allow exchange between the two systems [47]. The abovementioned reports contain an analysis of current progress compared to the baseline and achievements in the previous years. This will allow tracking of ambition stated in JEC 2.</p> <p>Independent verification was done to support the overall MRV, such as support from the International Climate Initiative (IKI) [47], academics, and practitioners [9]. The involvement of experts and academics increased the credibility and the transparency of the reports.</p>		
4.2	Progress towards implementation of the MRV system	<p>Summary: Emission levels and the contribution of sectors towards emission reduction are included in the GHG inventory and MRV report. Systems are operational with occasional maintenance time. Independent verification was done to support the overall MRV such as support from the International Climate Initiative (IKI), academics, and practitioners.</p> <p>AKSARA (monitoring low carbon development) has been developed to integrate data and information relevant to low carbon development. The MRV mechanism includes a publication containing information on the national system of mitigation measures and describing the GHG calculation methods to be used for AKSARA and the national registry system (SRN). It also describes a total of 52 methods for calculating GHG emission reductions that were used in AKSARA [46]. The AKSARA development project supports sector ministries in developing methods for calculating emissions reduction of mitigation measures. A total of 12 sectoral methodologies have been updated (four for the energy sector, two for the transport sector, four for the agricultural sector, and two for the maritime/coastal sector).</p> <p>Academics, researchers and research institutes are involved in the development of GHG inventory reports under the coordination of the DG Climate Change at the MoEF. This allows verification by the internal team with a diverse background. The 2020 GHG inventory report has been published and can be downloaded without delays.</p>	OK	

Checklist JEC 5. Social and Environmental Safeguard update

Indonesia

Item	Criteria	Analysis	Check	References
5.1	Safeguards against social and environmental risks associated with the strategy in place	<p>Summary: Environmental and social safeguard implementation is documented in a Safeguard Information System (SIS REDD+) managed by DG Climate Change at the MoEF. Implementation of safeguards is in line with the regulatory framework in Indonesia (forestry and environmental governance).</p> <p>Safeguard Implementation and Regulation</p> <p>To comply with Appendix I of Decision 1 COP16, Indonesia developed a web-based REDD+ safeguard information system, with seven principles, 17 criteria, and 32 indicators [48]. Updates on regulatory framework relevant for safeguard implementation in this re-assessment period include:</p> <ul style="list-style-type: none"> ▪ Law No. 11/2020 Omnibus Law of Job Creation that addresses the forest and environmental governance/processes; ▪ Government Regulation (PP) No. 22/2021 regarding environmental protection and management; ▪ Government Regulation (PP) No. 23/2021 regarding forestry governance; ▪ Presidential Regulation No. 77/2018 regarding fund management for the environment; and ▪ MoEF Regulation No. 70/2017 on REDD+ implementation guidelines. <p>The previous assessment has identified regulations applicable for environmental and social safeguard implementation according to Cancun Agreement. There have been no regulatory and structural changes for safeguard implementation. Mandates for safeguard implementation still lies within the DG Climate Changes (PPI) at the MoEF, whose role includes:</p> <ul style="list-style-type: none"> ▪ Becoming the designated national authority. ▪ Facilitating capacity for fair benefit-sharing. ▪ Facilitating the development of funding instruments and rules of results-based payment. <p>A role for facilitating REDD+ Safeguards instrument (Principles, Criteria, Indicators [PCI]), safeguards information system, establishment of REDD+ Committee, authorizing and coordinating safeguards and audit system for fiduciary, social, and environmental</p>	OK	<p>[48] Ministry of Environment and Forestry, "Sistem Informasi Safeguards REDD+ Indonesia;" 2021. (Accessed 11 October 2021).</p> <p>[49] Madani, "Safeguards dan Instrumen Pendanaan REDD+ di Indonesia," 2017. (Accessed October 2021).</p>

Item	Criteria	Analysis	Check	References																								
		<i>safeguards are not mentioned specifically. Safeguards are categorized under “mitigation framework,” with DG PPI responsible for formulation, implementation and evaluation of norms and policies in the mitigation sector, including REDD+[49].</i>																										
5.2	Progress	<p>Summary: <i>Safeguard activities have been implemented and recorded in 2018 and 2020. Of the 64 registered REDD+ programs, only a few comply with the safeguards. The SIS REDD+ system needs an update, there is a plan in place to integrate this system with the national REDD registry. Training have been provided to the FMU (as front liners of the REDD+ program), and the needs for improving the indicators have been identified.</i></p> <p><i>There are 64 registered REDD+ programs in SIS REDD+, but not all of the activities have recorded compliance with safeguards [50]. From the MoEF, there has been no appeal to the organizers of REDD+ activities to update the SIS REDD. This is because there are plans to integrate SIS REDD with the National REDD registry system in the near future.</i></p> <p><i>Progress on safeguard activities from 2018 to 2020 is provided in the following figures:</i></p> <div><table><caption>Safeguard Activities Data</caption><thead><tr><th>Safeguard</th><th>2018</th><th>2020</th></tr></thead><tbody><tr><td>Safeguard 1</td><td>18</td><td>19</td></tr><tr><td>Safeguard 2</td><td>6</td><td>7</td></tr><tr><td>Safeguard 3</td><td>6</td><td>7</td></tr><tr><td>Safeguard 4</td><td>3</td><td>4</td></tr><tr><td>Safeguard 5</td><td>5</td><td>5</td></tr><tr><td>Safeguard 6</td><td>2</td><td>3</td></tr><tr><td>Safeguard 7</td><td>2</td><td>2</td></tr></tbody></table></div>	Safeguard	2018	2020	Safeguard 1	18	19	Safeguard 2	6	7	Safeguard 3	6	7	Safeguard 4	3	4	Safeguard 5	5	5	Safeguard 6	2	3	Safeguard 7	2	2	OK	<p>[49] Madani, "Safeguards dan Instrumen Pendanaan REDD+ di Indonesia," 2017. (Accessed October 2021).</p> <p>[50] Ministry of Environment and Forestry, "Sistem Registri Nasional Pengendalian Perubahan Iklim," 2021. [Online]. Available:.. [Accessed 11 October 2021].</p> <p>[51] DG Climate Change, "KPH Sebagai Ujung Tombak Pelaksanaan REDD+ Di Tingkat Tapak dalam rangka Mendukung Pencapaian Target Nationally Determined Contributions (NDC) Mitigasi Sektor Kehutanan," Ministry of Environment and Forestry, 2018. [Online]. Available: (Accessed October 2021).</p>
Safeguard	2018	2020																										
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Safeguard 7	2	2																										

Item	Criteria	Analysis	Check	References																																							
		<div><table><caption>Safeguard Activities Data</caption><thead><tr><th>Region</th><th>2018</th><th>2020</th></tr></thead><tbody><tr><td>West Sumatra</td><td>3</td><td>3</td></tr><tr><td>Jambi</td><td>14</td><td>14</td></tr><tr><td>Riau Island</td><td>1</td><td>1</td></tr><tr><td>West Kalimantan</td><td>23</td><td>23</td></tr><tr><td>Central Kalimantan</td><td>0</td><td>5</td></tr><tr><td>East Kalimantan</td><td>1</td><td>1</td></tr><tr><td>Jakarta</td><td>1</td><td>5</td></tr><tr><td>West Java</td><td>1</td><td>1</td></tr><tr><td>East Java</td><td>4</td><td>4</td></tr><tr><td>West Nusa Tenggara</td><td>4</td><td>4</td></tr><tr><td>South Sulawesi</td><td>1</td><td>1</td></tr><tr><td>West Sulawesi</td><td>1</td><td>1</td></tr></tbody></table></div> <p>As the plan for further development, the MoEF conducted socialization and training to improve the capacity of Forest Management Units (FMU). This is done to ensure that the FMUs are capable of becoming the frontliner of REDD+ implementation on-site [51].</p> <p>As described in 2.3, the FOLU sector's achievements towards emission reduction stated in NDC in 2018 and 2019 are 225 and 45 million tons CO₂e, respectively. Relative to the target emission reduction (from BAU) in each of these years, this achievement is calculated as 12.13% in 2018 and 2.40% in 2019. This is achieved by implementing strategies and programs according to the principles and criteria agreed in Cancun Agreement. This agreement includes the implementation of safeguards.</p> <p>Safeguard implementation in Indonesia has been analyzed and monitored against the Cancun Principles [49]. All implementation has been done in compliance with the Cancun Principles with the following opportunity for improvements:</p> <ul style="list-style-type: none">▪ Refining the indicator for transparency (e.g., information disclosure, SOP and mechanism for Grievance Redress);▪ Facilitating recognition of legal rights;▪ Inclusion of non-eviction indicators;	Region	2018	2020	West Sumatra	3	3	Jambi	14	14	Riau Island	1	1	West Kalimantan	23	23	Central Kalimantan	0	5	East Kalimantan	1	1	Jakarta	1	5	West Java	1	1	East Java	4	4	West Nusa Tenggara	4	4	South Sulawesi	1	1	West Sulawesi	1	1		
Region	2018	2020																																									
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West Java	1	1																																									
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Item	Criteria	Analysis	Check	References
		<ul style="list-style-type: none"> ▪ <i>Guidance for stakeholder engagement and participation;</i> ▪ <i>Affirmative actions such as simplification of licensing process for communities wishing to participate in REDD+;</i> ▪ <i>Grievance and Redress Mechanism needs to be set up at all levels with reference to the existing regulatory/governance structure;</i> ▪ <i>Protection of natural forest beyond existing national laws (i.e., protection of intact forest at landscape level); and</i> ▪ <i>Regulation that mandates participatory process in defining benefit sharing mechanism.</i> 		

Annex 1 Deforestation Data 2018 & 2020

Table A1.1 Provincial Selection Data, 2020

No.	Provinces	Peatland Area			Forest Cover 2020			Total Deforestation (2018-2020)			Weighted Value				Included in JECA
		Area (ha)	Rank	% of Total	Area (ha)	Rank	% of Total	Area (ha)	Rank	% of Total	Value of Peatland	Value of Forest Cover	Value of Deforestation	Total Value	
1	Riau	3,866,330.53	1	26.00%	1,912,800	12	2.00%	146,498.1	1	25.47%	5	1	3	9	Y
2	Central Kalimantan	2,654,819.37	2	17.85%	7,459,300	4	7.81%	33,152.4	5	5.76%	4	2	5	11	Y
3	Papua	2,635,509.17	3	17.72%	25,396,600	1	26.58%	16,120.6	9	2.80%	4	5	3	12	Y
4	West Kalimantan	1,679,679.88	4	11.30%	5,656,600	6	5.92%	40,429.6	4	7.03%	3	2	5	10	Y
5	South Sumatera	1,276,451.53	5	8.58%	1,549,800	16	1.62%	61,118.4	2	10.63%	2	1	2	5	Y
6	West Papua	1,032,098.55	6	6.94%	8,967,300	2	9.38%	7,106.2	18	1.24%	2	2	1	5	Y
7	Jambi	603,847.66	7	4.06%	1,345,300	18	1.41%	28,696.2	7	4.99%	1	1	3	5	Y
8	North Sumatera	258,708.49	8	1.74%	1,899,500	13	1.99%	15,762.3	11	2.74%	1	1	1	3	N
9	Aceh	215,418.24	9	1.45%	3,126,200	8	3.27%	13,525.9	13	2.35%	1	1	2	4	N
10	North Kalimantan	170,015.10	10	1.14%	5,763,227	5	6.03%	19,275.8	8	3.35%	1	2	2	5	Y
11	East Kalimantan	161,503.07	11	1.09%	7,526,273	3	7.88%	60,969.2	3	10.60%	1	2	5	8	Y
12	South Kalimantan	104,832.71	12	0.70%	948,500	20	0.99%	15,646.3	12	2.72%	1	1	2	4	N
13	West Sumatera	100,568.40	13	0.68%	2,665,700	10	2.79%	9,443.3	16	1.64%	1	1	1	3	N
14	Lampung	49,060.39	14	0.33%	344,200	28	0.36%	- 1,686.4	34	-0.29%	1	1	1	3	N
15	Bangka Belitung Island	44,848.19	15	0.30%	191,900	30	0.20%	8,720.6	17	1.52%	1	1	1	3	N
16	Riau Island	8,184.89	16	0.06%	284,100	29	0.30%	1,795.4	27	0.31%	1	1	1	3	N
17	Bengkulu	8,033.35	17	0.05%	665,000	25	0.70%	2,935.2	24	0.51%	1	1	1	3	N
18	Central Sulawesi	0.00		0.00%	3,802,400	7	3.98%	4,710.9	21	0.82%	1	1	2	4	N
19	Southeast Sulawesi	0.00		0.00%	1,891,200	14	1.98%	15,997.4	10	2.78%	1	1	2	4	N
20	North Maluku	0.00		0.00%	2,023,200	11	2.12%	10,560.9	15	1.84%	1	1	2	4	N
21	South Sulawesi	0.00		0.00%	1,534,400	17	1.61%	2,415.2	25	0.42%	1	1	1	3	N
22	West Nusa Tenggara	0.00		0.00%	869,600	21	0.91%	28,808.9	6	5.01%	1	1	1	3	N
23	Maluku	0.00		0.00%	3,075,500	9	3.22%	3,948.9	22	0.69%	1	1	1	3	N
24	East Nusa Tenggara	0.00		0.00%	1,725,400	15	1.81%	11,032.1	14	1.92%	1	1	1	3	N
25	West Sulawesi	0.00		0.00%	837,600	22	0.88%	2,955.6	23	0.51%	1	1	1	3	N
26	Gorontalo	0.00		0.00%	731,100	23	0.77%	593.8	29	0.10%	1	1	1	3	N
27	North Sulawesi	0.00		0.00%	560,000	27	0.59%	1,328.7	28	0.23%	1	1	1	3	N
28	East Java	0.00		0.00%	1,192,600	19	1.25%	5,804.7	19	1.01%	1	1	1	3	N
29	Bali	0.00		0.00%	97,500	32	0.10%	136.1	31	0.02%	1	1	1	3	N
30	West Java	0.00		0.00%	710,400	24	0.74%	4,977.3	20	0.87%	1	1	1	3	N
31	Central Java	0.00		0.00%	634,500	26	0.66%	1,904.0	26	0.33%	1	1	1	3	N
32	Banten	0.00		0.00%	152,900	31	0.16%	117.7	32	0.02%	1	1	1	3	N
33	DI Yogyakarta	0.00		0.00%	20,300	33	0.02%	326.4	30	0.06%	1	1	1	3	N
34	DKI Jakarta	0.00		0.00%	900	34	0.00%	-	33	0.00%	1	1	1	3	N
		14,869,909.52		100%	95,561,800		100.00%	575,128		100%					

Legend:

	Provinces with peatland area
	Provinces with no peatland area
	9 selected provinces in JECA
	Not selected provinces in JECA

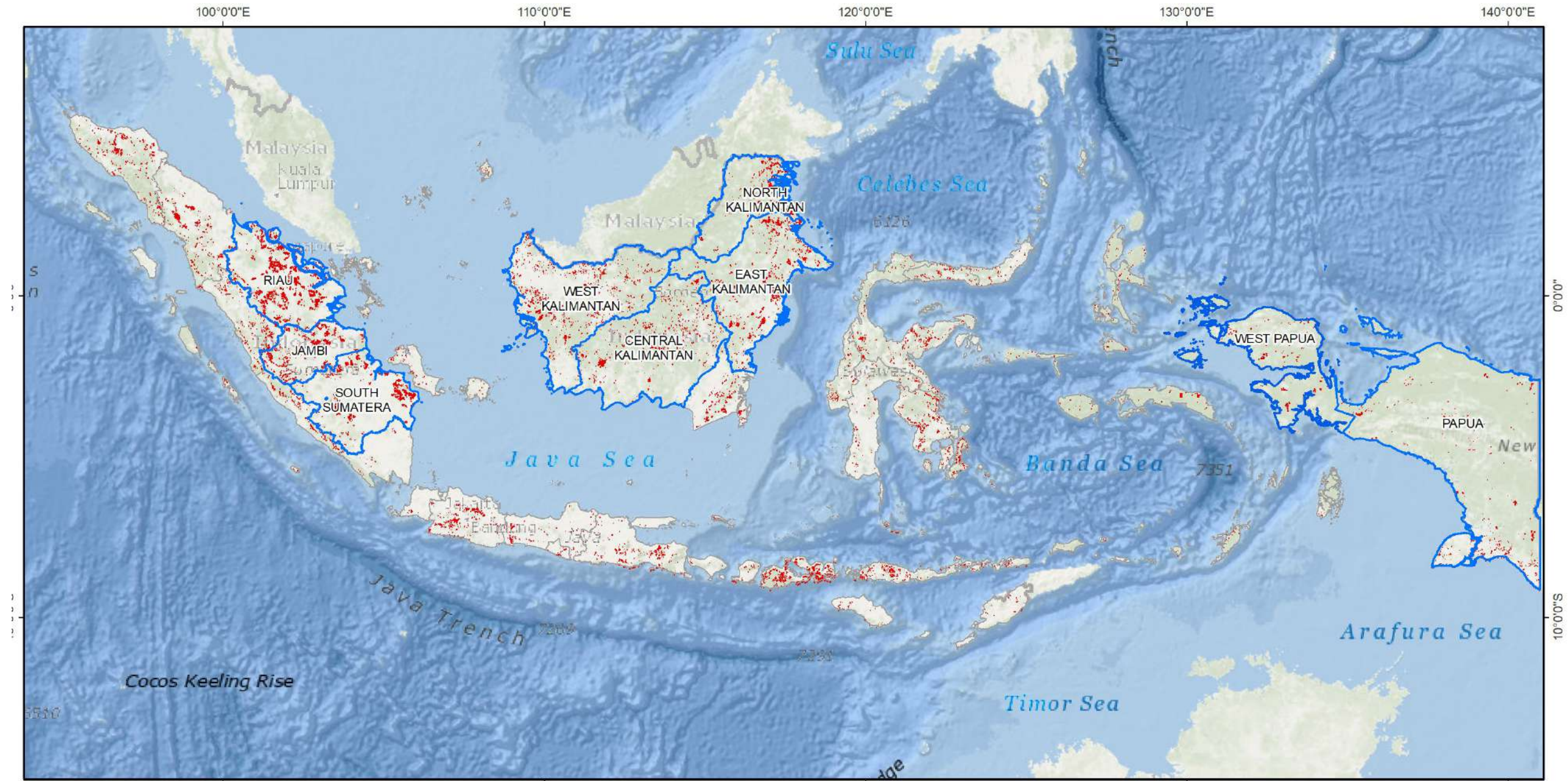
Table A1.2 Provincial Selection Data, 2018

No.	Provinces	Peatland Area			Forest Cover 2018			Total Deforestation (2015-2018)			Weighted Value				in JECA
		Area (ha)	Rank	% of Total	Area (ha)	Rank	% of Total	Area (ha)	Rank	% of Total	Value of peatland	Value of forest cover	Value of deforestation	Total Value	
1	Riau	3,866,330.53	1	26.00%	1,931,000	13	2.06%	76,585.5	7	4.96%	5	1	3	9	Y
2	Central Kalimantan	2,654,819.37	2	17.85%	7,516,500	3	8.04%	242,152.4	1	15.67%	4	2	5	11	Y
3	Papua	2,635,509.17	3	17.72%	24,993,600	1	26.72%	102,776.1	4	6.65%	4	5	3	12	Y
4	West Kalimantan	1,679,679.88	4	11.30%	5,590,800	5	5.98%	186,544.6	2	12.07%	3	2	5	10	Y
5	South Sumatera	1,276,451.53	5	8.58%	1,141,000	19	1.22%	30,337.4	16	1.96%	2	1	2	5	Y
6	West Papua	1,032,098.55	6	6.94%	8,751,100	2	9.36%	40,080.5	14	2.59%	2	2	1	5	Y
7	Jambi	603,847.66	7	4.06%	1,274,200	18	1.36%	66,929.9	8	4.33%	1	1	3	5	Y
8	North Sumatera	258,708.49	8	1.74%	1,778,300	15	1.90%	39,583.0	15	2.56%	1	1	1	3	N
9	Aceh	215,418.24	9	1.45%	3,110,200	8	3.33%	46,089.6	12	2.98%	1	1	2	4	N
10	North Kalimantan	170,015.10	10	1.14%	5,470,718	6	5.85%	84,476.4	6	5.47%	1	2	2	5	Y
11	East Kalimantan	161,503.07	11	1.09%	7,144,282	4	7.64%	184,381.2	3	11.93%	1	2	5	8	Y
12	South Kalimantan	104,832.71	12	0.70%	840,900	21	0.90%	46,811.7	11	3.03%	1	1	2	4	N
13	West Sumatera	100,568.40	13	0.68%	2,260,500	10	2.42%	20,313.4	17	1.31%	1	1	1	3	N
14	Lampung	49,060.39	14	0.33%	333,200	28	0.36%	4,326.3	28	0.28%	1	1	1	3	N
15	Bangka Belitung Island	44,848.19	15	0.30%	218,100	30	0.23%	10,512.3	23	0.68%	1	1	1	3	N
16	Riau Island	8,184.89	16	0.06%	269,100	29	0.29%	4,054.6	29	0.26%	1	1	1	3	N
17	Bengkulu	8,033.35	17	0.05%	677,300	25	0.72%	13,925.2	20	0.90%	1	1	1	3	N
18	Central Sulawesi	0.00		0.00%	3,825,200	7	4.09%	92,559.8	5	5.99%	1	1	2	4	N
19	Southeast Sulawesi	0.00		0.00%	1,846,500	14	1.97%	61,154.8	9	3.96%	1	1	2	4	N
20	North Maluku	0.00		0.00%	2,009,400	11	2.15%	59,645.5	10	3.86%	1	1	2	4	N
21	South Sulawesi	0.00		0.00%	1,409,800	16	1.51%	42,809.6	13	2.77%	1	1	1	3	N
22	West Nusa Tenggara	0.00		0.00%	783,200	23	0.84%	17,796.2	18	1.15%	1	1	1	3	N
23	Maluku	0.00		0.00%	3,007,800	9	3.22%	12,027.7	21	0.78%	1	1	1	3	N
24	East Nusa Tenggara	0.00		0.00%	1,957,100	12	2.09%	17,690.0	19	1.14%	1	1	1	3	N
25	West Sulawesi	0.00		0.00%	815,600	22	0.87%	11,865.5	22	0.77%	1	1	1	3	N
26	Gorontalo	0.00		0.00%	710,300	24	0.76%	1,878.3	31	0.12%	1	1	1	3	N
27	North Sulawesi	0.00		0.00%	553,200	27	0.59%	6,860.5	26	0.44%	1	1	1	3	N
28	East Java	0.00		0.00%	1,356,400	17	1.45%	8,810.3	24	0.57%	1	1	1	3	N
29	Bali	0.00		0.00%	94,700	32	0.10%	7,966.6	25	0.52%	1	1	1	3	N
30	West Java	0.00		0.00%	639,800	26	0.68%	6,200.5	27	0.40%	1	1	1	3	N
31	Central Java	0.00		0.00%	1,019,000	20	1.09%	3,115.5	30	0.20%	1	1	1	3	N
32	Banten	0.00		0.00%	163,200	31	0.17%	- 5,545.1	34	-0.36%	1	1	1	3	N
33	DI Yogyakarta	0.00		0.00%	34,100	33	0.04%	319.5	32	0.02%	1	1	1	3	N
34	DKI Jakarta	0.00		0.00%	900	34	0.00%	- 0.8	33	0.00%	1	1	1	3	N
		14,869,909.52		100%	93,527,000		100.00%	1,545,035		100%					

Legend:

	Provinces with peatland area
	Provinces with no peatland area
	9 selected provinces in JECA
	Not selected provinces in JECA

Annex 2 Deforestation Map 2018 & 2020



Legend
Deforestasi 2018-2020



0 125 250 500 km
Scale: 1:20.500.000
Projection: GCS WGS 1984
Drawn/Check/Approved by: AJP/IA/AA
Version : 0.1

Data Source:
- Province Boundary from BPS, 2016 and 2010
- Forest cover 2020 from MoEF
- Country Boundary from World Map (ESRI)
- ESRI Basemap Imagery

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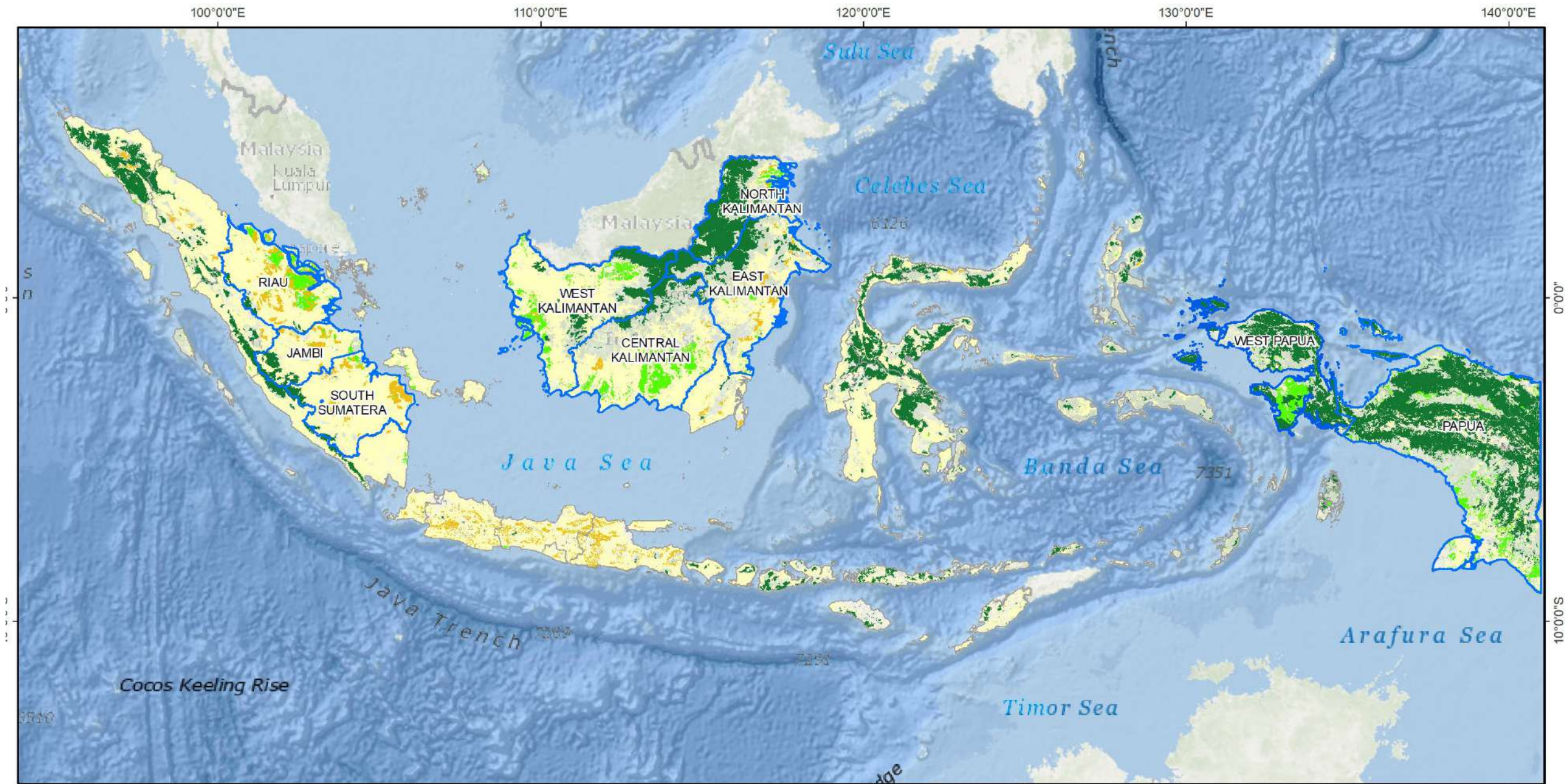
Annex 3 Provincial Emission Reduction Targets

Table A3.1 Provincial Emission Reduction Targets.

Provinces	References	Ambition	Projection	Target
Riau	Subnational action plan on GHG emission reduction (RAD- Penurunan Emisi GRK) Riau 2012	Average GHG emission period 2006 – 2011: peatland 635,591.70 tCO ₂ e; non peatland 135,979.36.36 tCO ₂ e Historical emission: <ul style="list-style-type: none"> Peatland 2006 – 2011: 2,756,434.77 tCO₂e Peatland forest 2006 -2011: 2,863,711 tCO₂e Non peatland 2006-2011: 2,590,008 tCO₂e 	Average annual projection rate emission 2006-2021: 29,341,608.53 tCO ₂ e/ year; Projection 2012 – 2016: 147,865,426 tCO ₂ e/ year Projection 2017 – 2021: 159,387,594 tCO ₂ e/ year Note: Emission level 2017-2020: 198.3 MtCO ₂ e or 49.58 MtCO ₂ e/year (GFW data)	
Jambi	Strategy Action Plan GHG Emission Reduction (SRAP-Penurunan Emisi GRK), Jambi period 2012 to-2032 (2013)	Average GHG emission period 2008 – 2012: 4,779,471.4 tCO ₂ e; Jambi province has opportunity to reduce GHG emission more than 55 MtCO ₂ e among other 47.3 MtCO ₂ e from peatland, LULUF, and conservation by 2030 or an average of 1.58 MtCO ₂ e per year, by properly integrating domestic (CM1) and international (CM2) policy	Average annual projection rate emission 2008-2030: 5,002,489.2 tCO ₂ e/ year; REL cumulative period 2008 – 2030: 121,858,826 tCO ₂ e/year GHG emission Jambi province in 2005 was 57 MtCO ₂ e or 3 % equivalent from total emission of Indonesia Note: Emission level 2017-2020: 190.7 MtCO ₂ e or 47.68 MtCO ₂ e/year (GFW data)	The quantitative target for reducing emission from deforestation and forest degradation is 30% of Business-as-Usual (BAU) emissions (FREL) period 2005 -2030, that is 57 to 74 MtCO ₂ e
South Sumatera	Subnational action plan on GHG emission reduction (RAD Penurunan Emisi GRK) Sumatera Selatan Period 2010 to 2030 (2018)	Average GHG emission period 2000 – 2011:5,208,277.6 tCO ₂ e Historical emission: 2000 – 2003: 8,982,632 tCO ₂ e 2003 – 2006: 31,823,912 tCO ₂ e 2006-2009: 10,035,740 tCO ₂ e 2009-2011: 6,448,220 tCO ₂ e	Average annual projection rate emission 2011 – 2030: 19,392,943 tCO ₂ e/ year; Reference emission level cumulative period 2011 to 2030: 386,465,913 tCO ₂ e/year Projected emissions from all sectors are estimated at around 43.7 million tons of CO ₂ e Note: Emission level 2017-2020: 276.4 MtCO ₂ e or 69.1 MtCO ₂ e/year (GFW data)	GHG emission reduction target with the BAU scheme, which is 2,354,406,642.98 tons of CO ₂ e in 2013
West Kalimantan	Strategy Action Plan GHG Emission Reduction (SRAP-Penurunan Emisi GRK) West Kalimantan (2017).	Greenhouse gas emissions from deforestation and forest degradation in period 2013 to 2016: 296,057 ha (2013), 37,084 ha (2014), 47,514 ha (2015), and 200,828 ha (2016) or, on average, 145,371 ha/year, The annual rates of forest degradation from 2013 to 2016 were 3,245 ha (2013), 5,490 ha (2014), 36,094 ha (2015), and 12,147 ha (2016) or an average 14,244 ha/year, The total rate of forest degradation (mineral and peat forest) was still above the historic baseline of forest degradation of 10,837 ha/year	Note: Emission level 2017-2020: 354 MtCO ₂ e or 88.5 MtCO ₂ e/year (GFW data)	The quantitative target for reducing emission from deforestation and forest degradation is 60% of Business-as-Usual (BAU) emissions (FREL) period 2012 – 2030
East Kalimantan	Subnational action plan on GHG emission reduction (RAD- Penurunan Emisi GRK) East Kalimantan Timur period 2010 to 2030 (2018)	Actual forest status area in ha (2015): <ul style="list-style-type: none"> Protected forest: 1,743,020 ha Conservation forest: 160,637 ha The reduction in GHG emissions in the 2012 to 2015 period was 82% from the baseline level and the rate of decline was far higher than the target of 8%	Forest cover area in ha BAU scenario (2030): <ul style="list-style-type: none"> Protected forest: 1,694,390 ha Conservation forest: 160,654 ha Emission projection BAU scenario 2016 to 2030: <ul style="list-style-type: none"> Protected forest 17,866,561 tCO₂e Conservation forest 13,073,970 tCO₂e Note: Emission level 2017-2020: 458.3 MtCO ₂ e or 114.58 MtCO ₂ e/year (GFW data)	Forest cover areal in ha (2030): <ul style="list-style-type: none"> Protected forest: 1,695,688 ha Conservation forest: 162,536 ha Emission projection target scenario 2016 to 2030: <ul style="list-style-type: none"> Protected forest 11,312,812 tCO₂e Conservation forest 12,219,830 tCO₂e
North Kalimantan	N/A	N/A	N/A	N/A
Central Kalimantan	Subnational action plan on GHG emission reduction (RAD-Penurunan Emisi GRK) East Kalimantan Tengah (2012)	Historical Forest cover and lost forest cover on period: 2000 <ul style="list-style-type: none"> Forest area: 9,322,892 ha Non forest area: 6,082,613 ha 2003 <ul style="list-style-type: none"> Forest area: 9,148,843 ha Non forest area: 6,220,662 ha 	Projection emission due to land cover changes forest to other land use type on period: 2006 – 2011: 109,021,179.26 tCO ₂ e 2012 – 2017: 98,053,832.24 tCO ₂ e 2018 – 2023: 90,233,730.96 tCO ₂ e On Period 2011 to 2017 emission level reduction: 10.06%, while on period 2017 to 2023 emission reduction: 7.98%	Set target to reduce emission on 2030 with CM2 scenario: 282 MtCO ₂ e for all sectors Scenario for reduce emission all sector – Central Kalimantan case: Scenario 1, do it now: low cost, barrier low to medium - can reduce 56 MtCO ₂ e/ year

Provinces	References	Ambition	Projection	Target
		<p>Lost forest cover 2000 – 2003: 138,049 ha average: 46,016 ha 2006</p> <ul style="list-style-type: none"> Forest area: 8,974,039 ha Non forest area: 6,431,466 ha <p>Lost forest cover 2003 – 2006: 210,084 ha average: 70,268 ha 2009</p> <ul style="list-style-type: none"> Forest area: 8,752,717 ha Non forest area: 6,652,788 ha <p>Lost forest cover 2006 – 2009: 221,322 ha average: 73,744 ha</p>	<p>Note: Emission level 2018-2020: 209.8 MtCo₂e or 69.93 MtCo₂e/year (GFW data)</p>	<p>Scenario 2, start now: low to medium cost, barrier low to medium can reduce 200 MtCo₂e/year Scenario 3, explore now: high cost, barrier high can reduce 100 MtCo₂e/year</p>
Papua	Subnational action plan on GHG emission reduction (RAD- Penurunan Emisi GRK) Papua Period 2013 to 2030	<p>Average land cover changes period 2006 – 2011: Deforestation: 25,679.64 ha equivalent with 11,705,487.88 tCO₂e</p> <p>Degradation: 181,770.92 ha equivalent with 36,112,229.27 tCO₂e</p> <p>Other Land Cover Change: 16,429.76 ha equivalent with 1,488,233.85 tCO₂e</p> <p>Total: 22,880.32 ha or equivalent with 49,305,951.00 tCO₂e</p>	<p>Historical emission level from deforestation and degradation: Period 2006 – 2011: 49,305,951 tCO₂e Projection: 49,305,951 tCO₂e</p> <p>Period 2011 – 2016: 46,184,989 tCO₂e Projection: 71,162,398.52 tCO₂e</p> <p>Period 2016 – 2021: 43,463,273.43 Projection: 52,061,706.32</p> <p>Result of emission cumulative explain: in 2020, Papua Province can contribute to reduce emission 6.55% Mitigation for reduce emission level in 2020: Stabilization stock carbon on forest</p> <ul style="list-style-type: none"> Pessimist scenario 103,726,788 tCO₂e Optimist scenario 518,633,943 tCO₂e <p>Improving stock carbon on forest</p> <ul style="list-style-type: none"> Pessimist scenario 110,460,774 tCO₂e Optimist scenario 552,303,873 tCO₂e <p>Note: Emission level 2018-2020: 71.5 MtCo₂e or 23.83 MtCo₂e/year (GFW data)</p>	N/A
West Papua	Subnational action plan on GHG emission reduction (RAD- Penurunan Emisi GRK) West Papua Barat Period 2013-2030	<p>Forest degradation area 2006 – 2011: 25,333.23 ha; net emission 4,372,892.28 tCO₂e/year Deforestation area 2006 – 2011: 2,516.20 ha, net emission 554,953.66 tCO₂e/year</p>	<p>Reference Emission Level from Province Spatial Plan (TRWP) 2020:</p> <ul style="list-style-type: none"> Pessimist scenario 22,398,235 tCO₂e Optimist scenario 67,254,792 tCO₂e <p>Note: Emission level 2018-2020: 40.3 MtCo₂e or 13.43 MtCo₂e/year (GFW data)</p>	N/A

Annex 4 Indonesia Forest Cover 2020



Legend

- Forest Cover 2020**
- Primary Forest
 - Secondary Forest
 - Plantation Forest
 - Non Forest
- Province Boundary
- Selected Provinces

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Data Source:

- Province Boundary from BPS, 2016 and 2010
- Forest cover 2020 from MoEF
- Country Boundary from World Map (ESRI)
- ESRI Basemap Imagery



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Scale: 1:20.500.000

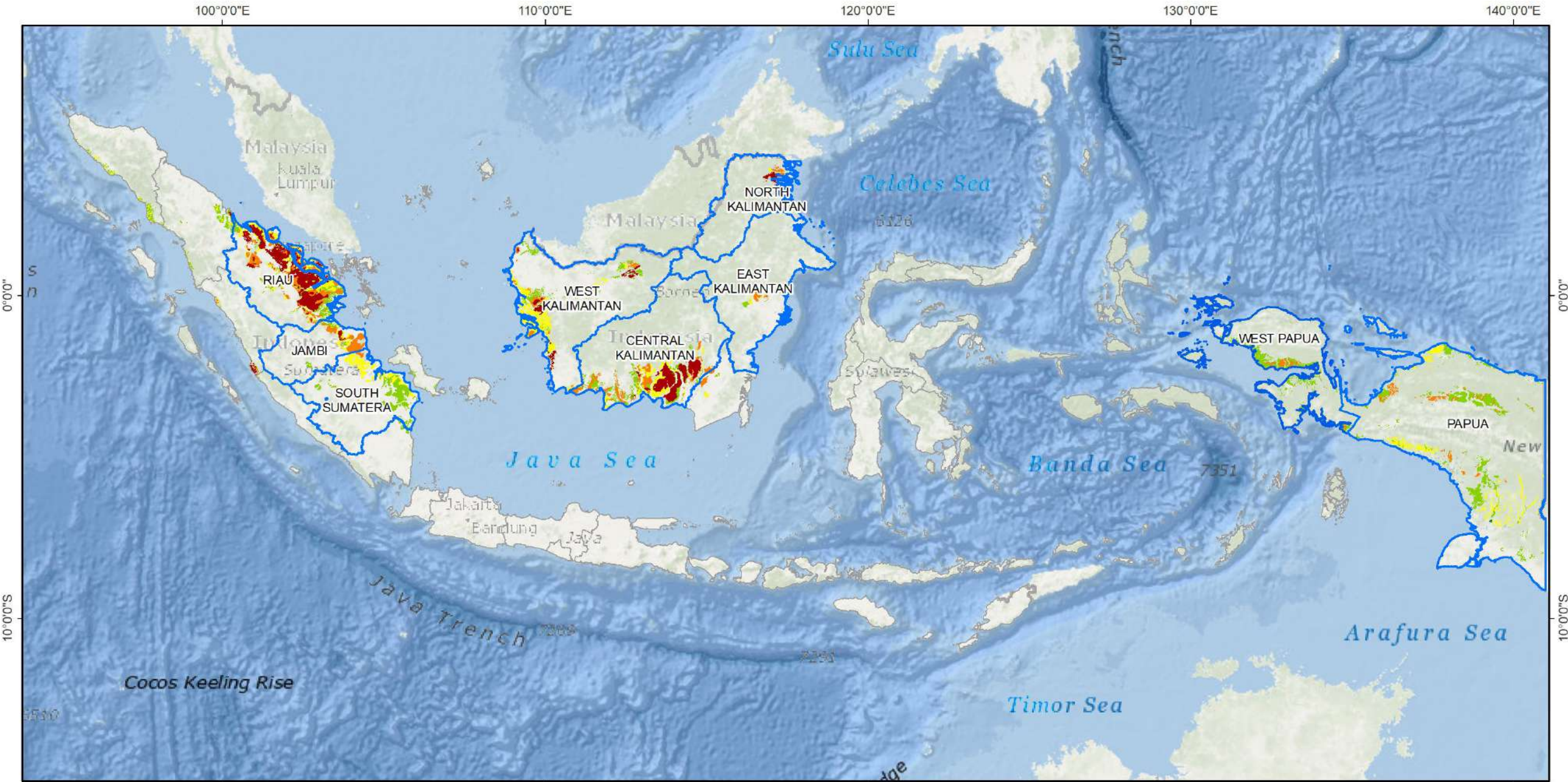
Projection: GCS WGS 1984

Drawn/Check/Approved by: AJP/IA/AA

Version : 0.1



Annex 5 Peatland Distribution 2020



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Data Source:

- Province Boundary from BPS, 2016 and 2010
- Peatland from Ministry of Agricultural 2011
- Country Boundary from World Map (ESRI)
- ESRI Basemap Imagery



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Scale: 1:20,500,000

Projection: GCS WGS 1984

Drawn/Check/Approved by: AJP/IA/AA

Version : 0.1

