Document of

The World Bank

FOR OFFICIAL USE ONLY

Report No: PAD2748

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$200 MILLION

TO THE

REPUBLIC OF INDONESIA

FOR A

PROGRAM TO ACCELERATE AGRARIAN REFORM (ONE MAP PROJECT)

July 18, 2018

Social, Urban, Rural And Resilience Global Practice

East Asia And Pacific Region

CURRENCY EQUIVALENTS

Exchange Rate Effective May 31, 2018

Currency Unit	=	US$
IDR 14141	=	US$1
US$ 1	=	IDR 0.000071

FISCAL YEAR
January 1 - December 31

Regional Vice President:	Victoria Kwakwa
Country Director:	Rodrigo A. Chaves
Senior Global Practice Directors:	Ede Jorge Ijjasz-Vasquez, Karin Erika Kemper
Practice Managers:	Jorge A. Munoz, Iain G. Shuker
Task Team Leaders:	Mika-Petteri Torhonen, Iwan Gunawan

ABBREVIATIONS AND ACRONYMS

Adat	Indigenous peoples and their customs in Malaysia and Indonesia.
ADB	Asian Development Bank
APBN	GoI's State Budget *(Anggaran Pendapatan dan Belanja Negara)*
ATR/BPN	Ministry of Agrarian Affairs & Spatial Planning / National Land Agency (*Kementerian Agraria dan Tata Ruang / Badan Pertanahan Nasional*)
BAL	Basic Agrarian Law (#5 of 1960)
BAPPENAS	National Development Planning Agency / Ministry of National Development Planning *(Kementerian Perencanaan Pembangunan Nasional / Badan Perencanaan Pembangunan Nasional)*
BDS	BeiDou Navigation Satellite System of China
BIG	Geospatial Information Agency (*Badan Informasi Geospasial*)
BPK	Audit Board of Indonesia *(Badan Pemeriksa Keuangan)*
CMEA	Coordinating Ministry for Economic Affairs (*Kementerian Koordinator Bidang Perekonomian*)
CORS	Continuously Operating Reference Station
CO_2	Carbon Dioxide
CPF	Indonesia-World Bank Group Country Partnership Framework
CSO	Civil Society Organization
DA	Designated Account
DG	Director General
DEM	Digital Elevation Model
DHS	Demographic and Health Survey
DIPA	GoI's Budget Document
DSM	Digital Surface Model
FAO	Food and Agriculture Organization (of the United Nations)
FCPF	Forest Carbon Partnership Facility
FIP	Forest Investment Program
FY	Financial Year (of the World Bank Group)
Galileo	Global Navigation Satellite System of the European Union
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gases
GLONASS	Global Navigation Satellite System of Russia *(Global'naya Navigatsionnaya Sputnikovaya Sistema)*
GoI	Government of Indonesia
GPS	Global Positioning System

eLand	Electronic Land Administration System
EIRR	Economic Internal Rate of Return
ESA	Environmental and Social Assessment
ESMF	Environmental and Social Management Framework
EX-ACT	Ex-Ante Carbon-Balance Tool
FMA	Financial Management Assessment
GRS	Grievance Redress Service
ICT	Information and Communication Technologies
IFR	Interim Financial Report
INA-Geoportal	Indonesian Geoportal
INIS	World Bank Indonesia Infrastructure Support Trust Fund
IP	Indigenous Peoples
IPF	Investment Project Financing
IPPF	Indigenous Peoples Planning Framework (in ESMF)
ISFL / BioCF ISFL	BioCarbon Fund Initiative for Sustainable Forest Landscapes
ISP	Implementation Support Plan
JICA	Japan International Cooperation Agency
KBA	Key Biodiversity Areas
KKP	Land Office Computerization [*application*] (*Komputerisasi Kantor Pertanahan*)
KPH	Forest Management Unit *(Kesatuan Pengelolaan Hutan)*
KPPN	Treasury Office
LADM	Land Administration Domain Model (ISO 19152)
LAP	Land Administration Project
LAPAN	Indonesian National Institute of Aeronautics and Space *(Lembaga Penerbangan dan Antariksa Nasional)*
LIS	Land Information System
LKPP	National Public Procurement Agency *(Lembaga Kebijakan Pengadaan Barang / Jasa Pemerintah)*
M&E	Monitoring & Evaluation
MCA-I	Millennium Challenge Account - Indonesia
MoEF	Ministry of Environment and Forestry (*Kementerian Lingkungan Hidup dan Kehutanan*)
MoEMR	Ministry of Energy and Mineral Resources (*Kementerian Energi dan Sumber Daya Mineral*)
MoHA	Ministry of Home Affairs *(Kementerian Dalam Negeri)*
MoPWH	The Ministry of Public Works and Housing *(Kementrian Pekerjaan Umum)*
MoV	Ministry of Villages, Development of Disadvantaged Regions and Transmigration *(Kementerian Desa, Pembangunan Daerah Tertinggal, dan Transmigrasi)*

MDTF-SLM	World Bank Multi-Donor Trust Fund for Sustainable Landscapes Management
NDCs	Nationally Determined Contributions (UNFCCC)
NGO	Non-Governmental Organization
NPV	Net Present Value
NR4D	World Bank Natural Resources for Development Trust Fund
NSDI	National Spatial Data Infrastructure
NTFP	Non-Timber Forest Product
OMP	One Map Policy
OP	Operational Policy (of the World Bank Group)
PBB	Land and Building Tax *(Pajak Bumi dan Bangunan)*
PCC	Project Coordinating Committee
PDO	Project Development Objective
PF	Process Framework (in ESMF)
PIM	Provincial Implementation and Monitoring Unit
PIU	Project Implementation Unit
PMU	Project Management Unit
POM	Project Operations Manual
PPE	Personal Protection Equipment
PPK	Project Officer/Commitment Making Officer
PPSD	Project Procurement Strategy for Development
PPTKH	Settlement of Land Tenure in Forest Areas (*Penyelesaian Penguasaan Tanah Dalam Kawasan Hutan*)
PRONA	National Agrarian Certification Program (*Program Nasional Agraria*)
PTSL	Systematic and Complete Land Registration (*Pendaftaran Tanah Sistematis Lengkap*)
QCBS	Quality and Cost Based Selection
QZSS	Quasi-Zenith Satellite System
RAN-API	National Action Plan for Climate Change Adaptation
RAP	Resettlement Action Plan
REDD	Reducing Emissions from Deforestation and Degradation
RDTR	Detailed Spatial Plan (*Rencana Detail Tata Ruang*)
RPF	Resettlement Policy Framework (in ESMF)
RPJM	Medium Term National Development Plan (*Rencana Pembangunan Jangka Menengah Nasional*)
RTK	Real-Time Kinematic
SID	Village Information System (*Sistem Informasi Desa*)
SLA	Service Level Agreement
SLMP	Sustainable Landscapes Management Program

SOE	Statement of Expenditure
SPAN	GoI's Treasury Information System
SP2D	Remittance Order
SPM	Payment Order
SPSE	GoI's Electronic Procurement System *(Sistem Pengadaan Secara Elektronik)*
SRGI	Geospatial Reference System of Indonesia *(Sistem Referensi Geospasial Indonesia)*
STEP	Systematic Tracking Exchange in Procurement
TA	Technical Assistance
TORA	Land [*made*] Available for Agrarian Reform (*Tanah Obyek Reforma Agraria*)
ULP	Procurement Service Unit
UNFCCC	United Nations Framework Convention on Climate Change
WBG	World Bank Group

BASIC INFORMATION

Country(ies)	Project Name
Indonesia	Program to Accelerate Agrarian Reform (One Map Project)

Project ID	Financing Instrument	Environmental Assessment Category
P160661	Investment Project Financing	A-Full Assessment

Financing & Implementation Modalities

[ ] Multiphase Programmatic Approach (MPA)	[ ] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[ ] Fragile State(s)
[ ] Disbursement-linked Indicators (DLIs)	[ ] Small State(s)
[ ] Financial Intermediaries (FI)	[ ] Fragile within a non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made Disaster
[ ] Alternate Procurement Arrangements (APA)	

Expected Approval Date	Expected Closing Date
18-Jul-2018	31-Oct-2023

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The Project Development Objective is to establish clarity on actual land rights and land use at the village level in the target areas.

Components

Component Name	Cost (US$, millions)
Participatory Mapping and Agrarian Reform	202.00
Geospatial Data Infrastructure for Environmental and Natural Resource Management	10.00
Project Management, Institutional Development and Monitoring	28.00

Organizations

Borrower:	Republic of Indonesia
Implementing Agency:	Ministry of Agrarian Affairs and Spatial Planning / National Land Agency (ATR/BPN) Geospatial Information Agency; Badan Informasi Geospasial (BIG)

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	240.00
Total Financing	240.00
of which IBRD/IDA	200.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	200.00

Non-World Bank Group Financing

Counterpart Funding	40.00
National Government	40.00

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2018	2019	2020	2021	2022	2023	2024
Annual	0.00	8.54	15.70	24.69	45.96	62.28	42.82
Cumulative	0.00	8.54	24.24	48.93	94.89	157.18	200.00

INSTITUTIONAL DATA

Practice Area (Lead)

Social, Urban, Rural and Resilience Global Practice

Contributing Practice Areas

Environment & Natural Resources

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?	
a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF	Yes
b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment	Yes
c. Include Indicators in results framework to monitor outcomes from actions identified in (b)	Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	Substantial
2. Macroeconomic	Low
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Low
6. Fiduciary	Substantial
7. Environment and Social	High
8. Stakeholders	Substantial
9. Other	
10. Overall	High

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Performance Standards for Private Sector Activities OP/BP 4.03		✓
Natural Habitats OP/BP 4.04		✓
Forests OP/BP 4.36	✓	
Pest Management OP 4.09		✓
Physical Cultural Resources OP/BP 4.11	✓	
Indigenous Peoples OP/BP 4.10	✓	
Involuntary Resettlement OP/BP 4.12	✓	
Safety of Dams OP/BP 4.37		✓
Projects on International Waterways OP/BP 7.50		✓
Projects in Disputed Areas OP/BP 7.60		✓

Legal Covenants

Sections and Description

Loan Agreement, Schedule 2, Section I.A.1.(a): The Borrower shall establish and thereafter maintain, throughout the duration of the Project, the Project Coordination Committee – co-chaired by ATR/BPN and Geospatial Information Agency – comprising officials from inter alia: BAPPENAS, Coordinating Ministry of Economic Affairs, Ministry of Finance, Ministry of Environment and Forestry, Ministry of Public Works and Housing, Ministry of Energy and Mineral Resources Ministry of Home Affairs and Ministry of Village, Development of Disadvantaged Regions and Transmigration, which shall be responsible for facilitating inter-agency coordination and cooperation in executing Project activities.

Sections and Description

Loan Agreement, Schedule 2, Section I.A.1.(b): The Borrower shall establish in ATR/BPN and thereafter maintain, throughout the duration of the Project, the Project Management Unit - comprising specialists in inter alia: project management, financial management, procurement, contract management, monitoring and evaluation, survey and mapping, land registration, information and communication technology, capacity development, outreach and communications as well as community development, indigenous peoples and gender - which shall be responsible for overall management, and fiduciary, reporting and monitoring activities of the Project and implementation of the Parts 1 and 3 of the Project (in coordination as needed with MoEF).

Sections and Description

Loan Agreement, Schedule 2, Section I.A.1.(c): The Borrower shall establish in ATR/ BPN and thereafter maintain, throughout the duration of the Project, Provincial Implementation and Monitoring Offices (PIM Offices) in each of the Project Provinces.

Sections and Description

Loan Agreement, Schedule 2, Section I.A.1.(d): The Borrower shall (c) establish in ATR/ BPN and thereafter maintain, throughout the duration of the Project, Provincial Implementation and Monitoring Offices (PIM Offices) in each of the Project Provinces, which shall be responsible for the Project implementation in Project Regencies.

Sections and Description

Loan Agreement, Schedule 2, Section I.A.2.: Once established, the Borrower shall provide, or cause to be provided, as the case may be, each of the Project Coordination Committee, the Project Management Unit, PIM Offices and the Project Implementation Unit, at alltimes with adequate funds (allocated in the DIPA budget) and other resources, mandate/functions, and with qualified and experienced personnel in adequate numbers, as shall be necessary to accomplish the Project objective as further detailed in the Project Operations Manual.

Sections and Description

Loan Agreement, Schedule 2, Section I.A.3.:The Borrower shall recruit and retain such consultants as may be needed to support the functions of the entities referred to in these paragraphs, all with composition and terms of reference acceptable to the Bank and the Borrower as further detailed in the Project Operations Manual.

Sections and Description

Loan Agreement, Schedule 2, Section I.D.3: Wherever required pursuant to the terms of the Indigenous Peoples Planning Framework, Resettlement Policy Framework (or Process Framework), the Borrower, through Designated Custodians of State Lands, shall:

(a) proceed to have the Indigenous Peoples Plan or Resettlement Action Plan, as appropriate, prepared and consulted upon adequately with, as applicable, pertinent Indigenous Peoples or Project Affected Persons, all in form and substance satisfactory to the Bank;

(b) submit any of such plans to the Bank for review and approval and, after their approval, ensure that such plans are adopted and publicly disclosed; and

(c) take all measures to implement the corresponding approved Indigenous Peoples Plan or the Resettlement Action Plan in a manner and timeframe satisfactory to the Bank.

Appendix I.11.: "Designated Custodians of State Lands" means the Borrower's institutions such as ATR/BPN (in case of non-Forest Area), MoEF (in case of Forest Area) or the MoPWH (in case of river banks).

Conditions

Type	Description
Effectiveness	The Borrower has adopted the Project Operations Manual in form and substance satisfactory to the Bank.

INDONESIA
ACCELERATION PROGRAM OF AGRARIAN REFORM AND ONE MAP POLICY IMPLEMENTATION

TABLE OF CONTENTS

I. STRATEGIC CONTEXT

A. Country Context

1. Indonesia has over 6,000 inhabited islands, and the world's third-largest tropical forest, which is globally significant due to its extent, biodiversity and carbon storage capacity. Indonesia is the fourth largest country by population and among the richest in cultural diversity.[1] Indonesia is also the largest economy in Southeast Asia[2], and the tenth largest overall, and the only Southeast Asian member of the G-20. The economy is based largely on extraction of non-renewable resources (16 percent of GDP, 40 percent of exports). Agriculture and forestry count together 34 percent of GDP, although farm productivity is low and limited by wide-spread land degradation, the world's highest rate of deforestation, erratic access to water, and dated methodologies and equipment. Still, 33 percent of labor force depends on agriculture, forestry, hunting or fishing, and many others in downstream activities and one percent on extractives. People who depend on forests and rural livelihoods are disproportionally poorer than the national average with a higher impact on women than men and including many *Adat*[3] communities. While the commodity boom of the last decade halved the Indonesian poverty rate to 11.2 percent, the economic growth slowed and by 2014, 34 million people (14 percent of the population) lived below the poverty line of US$21 per month, and another 65 million people (27 percent) lived just above it.

2. Indonesia is among the biggest emitters of greenhouse gases (GHG) globally, two-thirds of which come from land use conversions[4]. Expanding agriculture, logging, mineral extraction, and globally leading rate of urbanization[5] and housing development have increased land conversions. As a consequence, forests have diminished and degraded, reducing environmental benefits they provide (e.g. biodiversity, carbon sequestration, etc.), disrupting rural livelihoods and settlements, and further exacerbating poverty. Meanwhile, hydro meteorological hazards (floods, drought, storms, and sea level rise) are projected to increase with climate change[6], threatening natural assets (e.g. mangroves, watersheds, etc.), physical assets (e.g. shelters, infrastructure), and agricultural production. In particular, communities in Sumatra and Kalimantan face high to very high risk of floods and coastal inundation[7], which also increases the risk of temporal internal displacement. Investments in climate change adaptation and mitigation are critical to address these challenges. However, weak land governance and administration, poor tenure security, and uncertainties over access to land and resources incentivize quick-win approaches to cash-out on natural resources rather than longer term climate-resilient investments, management, and stewardship. These undermine efforts to conserve, restore and sustainably manage forests and landscapes including peatlands. Therefore, the Government of Indonesia (GoI) recognizes the importance of land-based climate actions and identifies improving land tenure security and spatial planning as key enabling conditions for a low carbon and

[1] 250 million people, 300 native groups, 2,300 ethnic communities, over 700 languages/dialects, 208 districts, 642 sub-districts, and 71,771 villages.
[2] Indonesia's gross domestic product (GDP) was $1.3 trillion in 2015.
[3] *Adat* refers to the indigenous peoples, communities and their customs in Malaysia and Indonesia.
[4] Currently arable land represents 14 percent of land use, forests 52 percent, and meadows and pastures 10 percent.
[5] 54 percent of Indonesians lived in urban areas in 2010, and prediction is 67 percent by 2050.
[6] GoI (2016), Indonesia's Nationally Determined Contributions (NDCs – UNFCCC).
[7] GoI (2013), National Action Plan for Climate Change Adaptation (RAN-API) - Synthesis Report.

climate resilient society.[8]

3. As a response, President Joko Widodo's *Nawa Cita* vision recognizes that reducing extreme poverty requires sustainable management of natural resources and broadly improving the rural economy. The vision places agrarian reform as a foundation for national economic policy to reduce poverty and income gaps, and create rural jobs. Clarity on land-use, access rights and licenses is seen a key to improving the management and protection of natural resources, and reducing poverty.

B. Sectoral and Institutional Context

4. An unclear policy, regulatory and institutional framework and a fragmented and incomplete land administration system hinder the management and governance of land and natural resources in Indonesia. Land administration is divided between the Forest Area hosting Titled Forests and State Forests[9], which are managed and de facto administered by the Ministry of Environment and Forestry (MoEF) and cited to cover 65 percent of the territory, and the non-Forest Area administered by the Ministry for Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN[10]). Land management and administration system dualism causes duplication, overlap and weak governance, which is why global experience encourages a unified system to register all lands and rights including state lands. As Forest Area boundaries have not been demarcated in most of Indonesia, uncertainty over tenure arrangements prevails and hinders recognition of land rights. For example, regularization of *Adat* communities' rights on land have been slow.[11] The unclear tenure also impacts GoI's ability to optimize land use and protect resources. Licensing for use of natural resources (extractives, timber and forest products and estate crops including oil palm) is spread across ministries and government levels causing issues with transparency and overlaps, which are further complicated by the absence of a common base map and data platform. Progress with Forest Area boundary affirmation[12], clarity between Titled and State Forests, and adoption of a single map and platform is a key to success with agrarian reform and sustainable management of natural resources.

5. The overall lack of clarity makes it difficult to enforce laws and regulations designed to manage land use, including to prevent land conversion. The situation encourages agricultural expansion onto Forest Areas often through the use of fire under the assumption that cultivation will provide direct returns to the community and lead to permanent property and resource rights. State Forests are regularly encroached (and/or State Forest boundaries may have been enacted in a clandestine/erroneous way splitting historical land uses and causing conflicts). Also, uncertainty on access to land increases business risks of land based investments, in particular of industries with high upfront costs, such as geothermal energy.

[8] GoI (2006). Nationally Determined Contributions (NDCs – UNFCCC).
[9] The Forest Law 41 of 1999 stipulates the Forest Area *(Kawasan Hutan)* including State Forests *(Kawasan Hutam Negara)* and individually held Titled Forests *(Hutan Hak)* that is to be retained as forest. However, in reality GoI declared Forest Areas host a wide variety of land uses including other than 'forest' land use. On the other hand, non-Forest Areas include 'forests'.
[10] The Basic Agrarian Law (BAL) 5 of 1960 vests the Indonesian Land Registry to ATR/BPN, and all non-Forest Area lands and the Titled Forests of the Forest Area are registered in ATR/BPN. The Forestry Law 1991 vests the management of State Forests to the MoEF, but as Titled Forests are rare and boundaries unclear, the MoEF is the main authority for the entire Forest Area.
[11] According to a Constitutional Court ruling of 2012 *Adat* lands in Forest Areas are (to be recognized as) Titled Forests.
[12] An inter-agency Forest Boundary Committee (MoEF Regulations No P.93, 2016; P.44, 2016; and P.62, 2013) affirms forest boundaries through a Boundary Map and Minutes.

6. Land disputes between communities and large-scale land users are common. Unclear land tenure arrangements and lack of formal land rights decrease landholders' negotiation power against potential displacement, and loss of access to land, resources and livelihoods. More intangible, large land-based investments cause disputes over environmental impacts, the availability of formal employment to community members, and an influx of a transient male workforce. Land use conversion, industrial expansion and deforestation impacts women disproportionally more than men, as women tend to bear the brunt without enjoying the potential benefits. Discriminatory customs on women's land rights increase the negative impact on women.

7. More generally, land administration and customs in Indonesia do not provide equal protection and opportunities for all women and men. Tenure uncertainty and unequal recognition of land rights is particularly acute for women. There is a common lack of awareness about the benefits of registering family land holdings to the names of both spouses, resulting in male dominant ownership of land. According to a Demographic and Health Survey (DHS, 2012) 58 percent of men own land, with about half under a joint ownership. In comparison, an Asian Development Bank study (ADB, 2016) finds only 36 percent of married women owning land individually or jointly. This disadvantages women in the event of a divorce as spouses are legally required to divide joint assets equally and retain whatever property they owned prior to marriage. Despite the provisions of equality as specified in the Indonesian Constitution and Book Two of the Indonesian Civil Code on inheritance, the DHS 2012 found that women were in danger of losing their land rights upon widowhood, divorce, or desertion with some ending up landless and destitute.

8. At the local government level, lack of access to reliable land records and spatial data inhibits infrastructure investments and service delivery, and perpetuates lack of clarity and transparency in decision-making, spatial planning and resource allocation. The central government's fiscal transfers under the Village Law[13] and village fund budgeting depend on demarcation of administrative boundaries (by the Ministry of Home Affairs, MoHA), which is often left pending due to the considerable cost of surveying the boundaries.[14]

9. As a response, in 2011 the GoI introduced the Geospatial Information Law and the One Map Policy (OMP) aiming to establish a unified base set of geospatial data (i.e., topography, land use, and tenure) and the National Spatial Data Infrastructure (NSDI[15]) to inform decision-making. Progress includes a common geospatial reference system[16], a publicly available portal (INA-Geoportal), and OMP coordination mechanism led by the Coordinating Ministry for Economic Affairs (CMEA). However, only a limited range of geospatial data is accessible, and there are significant inconsistencies among geospatial datasets of key line ministries.[17] In 2017, CMEA compiled 1:50,000 scale One Map databases on Kalimantan and Sumatra with 80 thematic land use datasets from over 20 Indonesian authorities. While this is an important step forward, the data has

[13] Law No. 6 of 2014.
[14] The Village Law stipulates unusually high positional accuracy for the administrative boundary surveys and requires consensus over the boundary demarcation between villages, which is often an issue.
[15] Indonesia adopted a NSDI framework in 2007 (through Presidential Decree 85/2007) instating the BIG as the lead agency.
[16] SRGI 2013, i.e. *Sistem Referensi Geospasial Indonesia*. BIG and ATR/BPN operate separate Continuously Operating Reference Station (CORS) systems to facilitate accurate surveys in the SRGI, but aim to unify them to a national CORS network.
[17] The NSDI line ministries and key agencies include: ATR/BPN; BIG; MoEF; MoEMR; the Ministry of Public Works and Housing; the Ministry of Villages, Development of Disadvantaged Regions and Transmigration (MoV); the Agency of Maritime Meteorology and Geophysics; the Central Bureau of Statistics; the Institute of Sciences; the Ministry of Marine Affairs and Fisheries; the Ministry of Transportation; the National Agency for Disaster Management; and the Meteorological Agency.

not been field-verified, and the resulting One Map shows overlaps and has not been released for public use.

10. Taking a step further, the GoI's Medium-Term Development Plan (RPJM) for 2015 - 2019 adopted ambitious targets for 1:5,000 scale mapping, Agrarian Reform and Forest Area demarcation.[18] Firstly, the aim is to foster community forestry partnerships[19] in 12.7 million hectares of State Forests, and release 4.1 million hectares of State Forests to non-forestry uses. MoEF has launched the PPTKH[20] participatory mapping process to regularize land rights, resolve disputes, and register titles on Forest Areas to the Land Registry in ATR/BPN[21], as well as to issue communal land use licenses under the Social Forestry program. Secondly, RPJM calls for issuance of 23 million land certificates[22] (4.1 million hectares) in non-Forest Areas making the participatory land registration (PTSL)[23] work ATR/BPN's priority task[24] with the production growing from 1 million land parcels in 2016 to 5 million in 2017. The target is 7 million for 2018, and then 10 million land certificates annually until completing the land registry for non-Forest Areas by 2024. Achieving the targets require streamlining participatory parcel mapping approaches and quality control, and significantly involving the private sector. Mass scale parcel by parcel approach, close collaboration between ATR/BPN and MoEF, and linking of the PPTKH and PTSL processes are the keys for success. Consequently, in February 2018, President Joko Widodo issued Presidential Instruction Number 2/2018[25] to accelerate inter-ministerial collaboration on parcel mapping and instructed ATR/BPN to use the PTSL process to identify Forest Area boundaries for affirmation.

C. Higher Level Objectives to which the Project Contributes

11. The project is fully aligned with to the World Bank Group's (WBG) Country Partnership Framework for Indonesia FY16-FY20 (CPF[26]), which is guided by the twin goals of eliminating poverty and boosting shared prosperity. The CPF calls for forward-looking management of Indonesia's natural resources and supports sustainable landscape management by (i) building capacity for spatial planning and land administration; (ii) enhancing transparency of forest boundaries; and (iii) improving security of land tenure (and reducing land conflicts). Further, the CPF supports a policy reform agenda including on land and forest governance and administration. The CPF pledges to support a national inventory of land parcels covering all public and private lands as necessary to support harmonization of spatial plans at provincial, district and village levels. The CPF aims also to strengthen the capacity of subnational entities to allocate, manage and monitor land and support the rights of indigenous communities within the Forest Area. Public availability of One Map in the context of NSDI is anticipated among the CPF's intended development outcomes.

[18] 100 percent coverage requires 189,000 km of forest boundary demarcation, and creation of 629 Forest Management Units (KPH).
[19] The Social Forestry component of the *Tanah Obyek Reforma Agraria* (TORA).
[20] *Penyelesaian Penguasaan Tanah Dalam Kawasan Hutan* (PPTKH), the Presidential Regulation 88/2017.
[21] ATR/BPN's regulation No. 10 of 2016 stipulates registering communal lands in Forest Areas and beyond.
[22] The RPJM targets for 60 percent coverage of parcel mapping and 70 percent coverage of land certification in non-Forest Areas. Total 126 million land parcels exist in non-Forest Area, 49 million registered and 24 million both registered and surveyed.
[23] *Pendaftaran Tanah Sistimatis Lengkap* (PTSL) refers to "first-time [systematic, area by area] land registration".
[24] The PTSL targets were set in Minister of BPN/ATR's Regulations No 1 of 2015, 28 and 35 of 2016, and 1 of 2017.
[25] The instruction obliges ministries/agencies (ATR/BPN, MoEF, the Ministry of Public Works and Housing, MoHA and BIG) to provide data and support to PTSL including for defining the boundary for Forest Areas.
[26] WBG Report #99172, Board date: December 1, 2015.

12. The project will support the GoI's Agrarian Reform and OMP programs through: a) asset legalization by participatory mapping and registration[27] and b) promoting the One Map concept to inform decision-making across the government and beyond. Apart from the RJPM, President Joko Widodo's Economic Package no. 15 (January 2017) recognizes the importance of preparing One Maps for making progress in the land sector by the 'collection of all data and maps on land tenure'.

13. Further, the project will contribute to the WBG's Sustainable Landscapes Management Program (SLMP)[28] in improving land administration, information and allocation through OMP and Agrarian Reform investments. Furthermore, the project will benefit various of the SLMP's forest management activities[29] by enabling land use and spatial planning, and sustainable forest management by the improved clarity on land use and access to up-to-date geospatial data. Also, the project will contribute to the GoI's climate change mitigation objectives[30] of 26 percent reduction of greenhouse gas emissions by 2020, and 29 percent (unconditional) by 2030. It will also support the GoI's climate change adaptation objectives, which identify land tenure security and certainty in spatial planning and land use as key enabling conditions for climate-resilient development. The project will also contribute to the GOI's goal to develop an adaptation information system to evaluate and map regional vulnerabilities and improve adaptation planning.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

14. The project development objective (PDO) is to establish clarity on actual land rights and land use at the village level in the target areas.

15. The increased clarity over land rights and land use will enhance agrarian reform, sustainable landscape management, land governance, social stability, access to land for investments, inclusive growth, conflict resolution, and environmental protection and conservation including positive co-benefits to climate change adaptation and mitigation, and women's awareness and access to legal land rights individually or through joint ownership.

16. The objective will be achieved by (i) participatory mapping including fit-for-purpose mapping of parcels, land use, indicative village administrative boundaries, and other land use occupation (Forest Area boundaries and mining concessions, etc.); (ii) land rights regularization and registration in the Electronic Land Administration System (eLand); (iii) enhancing the availability and access to up-to-date geospatial information; (iv) promoting access to and availability of electronic land administration services; (v) improving capacity, procedures and legal

[27] The cost for the land registration and documentation activities will be 100 percent financed by the Government's national budget.
[28] SLMP includes also a) management and restoration of lowlands, peatlands; b) improvement of forest management, including fire prevention and management; c) promotion of equity for inclusive growth, through sustainable management of natural resources; and d) improvement of institutional coordination for sustainable landscapes management.
[29] For example, activities under the Reducing Emissions from Deforestation and Degradation (REDD) pilots with the Forest Carbon Partnership Facility (FCPF) and BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL), and Social Forestry.
[30] Source: Indonesia's Nationally Determined Contributions (NDCs), the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat; the Government of Indonesia (2016).

framework for accelerating implementation of Agrarian Reform, OMP and modern e-Land Administration; (vi) assessing, addressing and monitoring social and environmental vulnerabilities and monitoring project impact to vulnerabilities; and (vii) promoting gender disaggregated monitoring and reporting, awareness raising and regularization of indigenous peoples and women's land rights. The project will target Agrarian Reform and the GoI's priority fire-prone provinces in Sumatra (Riau, Jambi and South Sumatra) and Kalimantan (East, Central, West and South).

B. Project Beneficiaries

17. Project beneficiaries include all private/public/individual/men/women/group/communal land users whose security of tenure and access to land and natural resources will improve, and central and local government whose capacity for decision-making will improve through NSDI, electronic land administration services, clarified tenure, and parcel/cadastral map. Altogether, the project will positively contribute to growth, poverty reduction, governance, environmental conservation, climate change mitigation and adaptation, equal access to land rights by men, women and communities, and reduced social conflicts on land.

18. Tangible public sector beneficiaries will include ATR/BPN (improved ICT systems, business processes and production capacity, and access to unified base map for spatial planning); BIG (improved service capacity); MoEF (unified base map for forest management, Forest Area boundary demarcation); MoHA (unified base map for local administration, village administrative boundary demarcation); MoEMR (unified base map for concession management); BAPPENAS (unified base map for regional planning); CMEA (consolidated data on land use and ownership for analytical/policy studies and monitoring); Ministry of Villages, Development of Disadvantaged Regions and Transmigration (MoV, unified base map for village administration and subsidies); Sub-national (provincial, district and village) government administrations (unified base map for local governance); and taxation authorities and municipalities (improved records for property tax collection and verification).

19. Private sector's location-based business development will benefit from the improved information on land use. Local surveying companies, and among others precision agriculture applications, will benefit from improved quality and access to geodetic reference data. The geodetic reference will provide basis for spatial planning, land and natural resources management, including for agriculture, forestry, mining and extractives, and conservation.

20. The project will encourage sustainable land and resources use and provide up-to-date geospatial data for tenure regularization and allocation. Inclusive participatory mapping approaches will benefit all interest holders to land without gender, ethnicity, custom, or tradition, etc. based discrimination. Women and indigenous peoples will benefit from increased awareness on legal land rights, improved access to gender disaggregated information on land rights, the PTSL as an avenue for claiming permanent land rights, and increased tenure security and transparency over the actual land use compared to current informality and lack of clarity. The parcel/cadastral map could also be used by non-governmental organizations (NGOs) supporting participatory mapping and regularization of rights in communities.

21. The improved access to up-to-date geospatial data on land use will expose, and reduce incentives for, unsustainable land use practices and increase local capacity to manage resources. On the other hand,

investing in land will become easier, less risky and cheaper with increasing land register coverage. Land use is enhanced by secure rights, increasing investment and better access to financing. Related to the latter, the project will contribute to improved governance and spatial planning through reducing the risk of issuing overlapping forest, extractive and agricultural concessions/licenses. Increased clarity over land use boundaries will directly reduce incentives for agricultural land conversion, including through the use of fire, and the improved geospatial data will also improve fire response preparedness.

22. The project will result in substantial climate change mitigation co-benefits. Firstly, the parcel/cadastral maps and up-to-date base maps prepared by the project will underpin the process to demarcate and affirm Forest Area boundaries. The affirmed boundaries will have a direct impact in reducing deforestation, improving security of tenure and land use clarity on both sides of the boundaries. The increased clarity on land use will reduce incentives to encroachment and land use conversion, and increase incentives for investing in sustainable forest and land management practices with mid-term and long-term returns. Sustainable forest and land management investments will reduce GHG emissions. Secondly, the increased clarity over land rights and land use, and up-to-date geospatial information, will support the environmental protection and conservation, including peatland restoration and peat fire management. In addition, increased clarity over land rights and land use will facilitate application of performance-based payments for reduced emissions, and regularized land rights will improve beneficiaries' access to carbon financing schemes such as the Forest Carbon Partnership Facility (FCPF) Carbon Fund, the BioCarbon Fund Initiative for Sustainable Forest Landscapes (BioCF ISFL), and the Forest Investment Program (FIP).

23. The project will also bring substantial climate change adaptation co-benefits. Firstly, increased tenure security and land use clarity provides incentives for households and communities to adopt climate-resilient agricultural practices through long-term investments.[31] Secondly, improved information on property assets at risk to natural hazards will increase climate risk preparedness, inform spatial planning in climate-vulnerable locations, facilitate climate risk recovery in cases of temporary displacement, and enable parcel boundary fabric reconstruction when destroyed. Updated land records and parcel maps will provide value data for disaster compensation, and facilitate insurance coverage of assets and populations. In addition, the participatory mapping will provide a geospatial base dataset for community-based adaptation initiatives, particularly for communities in climate-vulnerable areas such as in coastal zones or landslide prone areas.

C. PDO-Level Results Indicators

24. The key development performance indicators are:

a. Share of land parcels mapped in a parcel map (percent);
b. Number of land parcels mapped in the project target areas (number);
c. Direct project beneficiaries (including landholders, concessionaires, government agencies, community members, men and women) in the project target areas with their land parcels mapped (number, to be gender disaggregated at implementation);
d. Area of country with publicly accessible ortho-rectified satellite imagery equivalent to map scale 1:5,000 (sq.km), and the number of core government agencies using it for its activities (number).
e. Share of districts in the project areas with forest boundaries reconstructed from a MoEF

[31] See "Climate Change and Land Tenure, the Implications of Climate Change for Land Tenure and Land Policy" by Julian Quan and Nat Dyer. FAO, Rome 2008.

enactment or demarcated for an enactment by MoEF (percent).

III. PROJECT DESCRIPTION

A. Project Components

25. The project costs are estimated at US$240 million (US$200 million IBRD, US$40 million[32] Parallel Financing from the National Budget). The project will include three components:

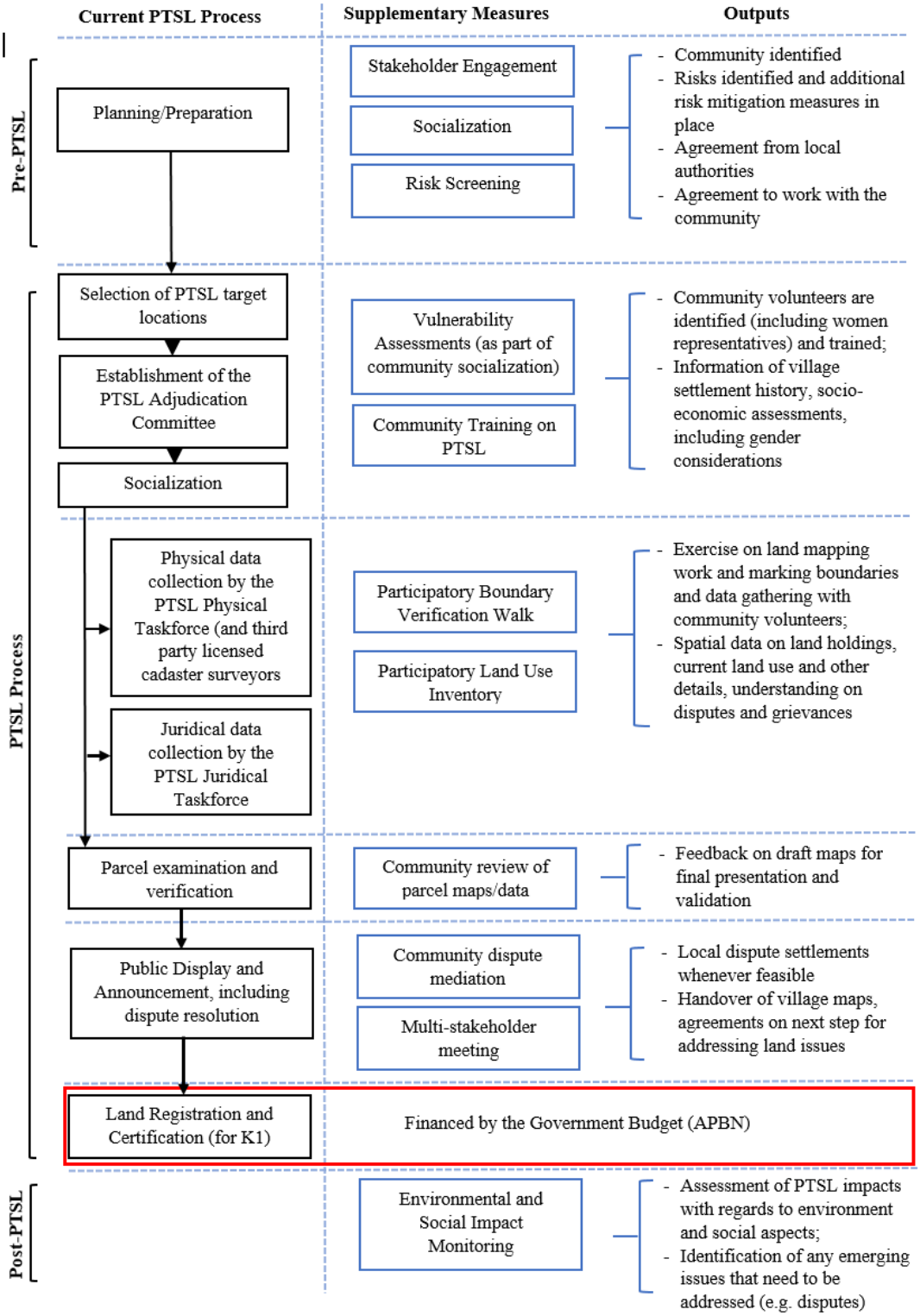
a. Component 1; Participatory Mapping and Agrarian Reform[33], (US$202 million including US$162 million from IBRD and US$40 million from National Budget)
b. Component 2; Geospatial Data Infrastructure for Environmental and Natural Resource Management[34], US$10 million
c. Component 3; Project Management, Institutional Development and Monitoring[35], US$28 million.

Component 1 – Participatory Mapping and Agrarian Reform (US$ 162 million IBRD, US$40 million National Budget)

26. The objective of this component is to produce village level parcel boundary maps in the project target areas, record all land right claims, and facilitate land rights regularization and registration in the Electronic Land Administration System (eLand), covering all legal rights including communal rights, and joint and individual ownership registration for women. The approach is participatory and inclusive with regular community consultations and engagement during implementation. The component will implement ATR/BPN's systematic and complete land registration process (PTSL) through an inclusive fit-for-purpose approach resulting in a comprehensive map of tenure rights (ownership, possession, occupancy, concessions, licenses, leases, etc.), land use, indicative Forest Area boundaries and eventual affirmation (through a legal MoEF process), and other agreed boundaries, and significant features of the project target provinces. Also, areas of overlapping rights and interests, and areas or boundaries under dispute will be identified. Legal assistance will be made available to disadvantaged groups, and local dispute resolution and court appeal line will be facilitated. The component will strengthen the local land office infrastructure and services including by adopting the eLand system and digital archives. The component will finance: (i) preparatory data acquisition, collection and processing for PTSL; (ii) inclusive and participatory implementation of PTSL in project target provinces; (iii) development of eLand; and (iv) rolling out of eLand in project regencies; and (v) land rights regularization and registration in the eLand system, and (vi) land rights documents issuance[36]; and (vii) legal assistance, and support to dispute resolution and appeals.

[32] The land registration and documents issuance activity will be financed through Annual National Budget in Indonesian Rupiah. US$40 million USD is an estimation based on unit costs and can vary also based on currency exchange rate.
[33] In the GoI's Readiness Criteria for the Green Book this Component is called *Cadaster for Agrarian Reform.*
[34] In the GoI's Readiness Criteria for the Green Book this Component is called *Improvement of Geospatial Data Infrastructure for Environmental and Natural Resource Management.*
[35] In the GoI's Readiness Criteria this component is called *Project Management and Institutional Development.*
[36] Activities v) and vi) are 100 percent GoI funded from the National Budget in the Indonesian Rupiah amount estimated at US$ 40 million using the exchange rate at the time of Appraisal.

Figure 1. The extended PTSL approach of the project.



Component 2 –Geospatial Data Infrastructure for Environmental and Natural Resource Management (US$10 million IBRD)

27. The objective of this component is to improve the access to and the availability of geospatial information for agrarian reform, land and tenure rights regularization and administration, and environmental and natural resource management in the target provinces. The project will (i) support the densification of the CORS network; (ii) strengthen the NSDI technology infrastructure and services; and (iii) support the geo-referencing of existing data of high-resolution satellite imagery (in LAPAN[37]) for the Working Map in project target areas.

Component 3 – Project Management, Institutional Development and Monitoring (US$28 million IBRD)

28. The objective of this component is to ensure efficient implementation of the Project; full inclusion and transparency in the project conduct, and compliance with the World Bank's safeguards policies; and improve the institutional capacity and operational framework to implement participatory mapping based on regular community consultations and practical experiences from piloting innovative approaches and technologies. The component will also finance legal assistance to indigenous peoples, small holders and identified disadvantaged groups including women for claiming land rights in the project target areas. Also local dispute resolution and court appeals during PTSL implementation will be facilitated. The component will support: (i) project management, monitoring and evaluation to meet the procurement, fiduciary and safeguards requirements; (ii) conducting studies and analysis to strengthen the policy, legal, regulatory and institutional frameworks; (iii) pilots to test new practical approaches, capacity development, regulatory and institutional arrangements and innovative technologies in support of participatory mapping; (iv) awareness raising, vulnerability mapping and social monitoring for PTSL; (v) legal assistance, and support to dispute resolution and appeals for PTSL; and (vi) policy dialogue to promote land and geospatial system integration in Indonesia.

[37] National Institute of Aeronautics and Space in Indonesia.

B. Project Cost and Financing

Project Components	Project cost	IBRD or IDA Financing	Trust Funds	GoI Parallel Funding
Total Costs				
Total Project Costs	240,000,000	200,000,000		40,000,000
Component 1; Participatory Mapping and Agrarian Reform Land Registration	162,000,000	162,000,000		40,000,000
Component 2; Geospatial Data Infrastructure for Environmental and Natural Resource Management	10,000,000	10,000,000		
Component 3; Project Management, Institutional Development and Monitoring	28,000,000	28,000,000		
Front End Fees				
Total Financing Required	240,000,000	200,000,000		40,000,000

C. Lessons Learned and Reflected in the Project Design

29. The WBG has a strong relationship with the GoI in tackling development challenges, including on natural resources and forest management. The project will employ the WBG's leading institutional knowledge on land tenure and administration, and geospatial data and services, stemming from decades of the WBG funded land reform and administration projects globally. A relevant comparison to Indonesia is drawn from over twenty years of WBG experience in the Europe and Central Asia (ECA) region where over 40 land projects have been completed. Twenty years ago, ECA countries did not have good land registers or cadastres, and the land administration sectors were operationally and institutionally fragmented, paper based and bureaucratic. Today, many of these countries operate comprehensive and electronic systems for land and property registers and cadastres, and provide geospatial data and electronic services online as part of the overall electronic government structure. Several ECA countries (such as the Kyrgyz Republic, and Russia) that the WBG has supported in land administration rank in the top 10 of the World Bank's Doing Business Index for Registering Property 2018. Even though Indonesia[38] currently ranks 106th in Registering Property it has capacity to follow the ECA sample, and make a quantum leap forward in completing and modernizing its land administration system. Among others, the project design has incorporated the following lessons from the

[38] Indonesia in the Doing Business Index 2018 *http://www.doingbusiness.org/data/exploreeconomies/indonesia#registering-property#jakarta*.

ECA experience: a) Public participation and socially appropriate awareness raising and engagement is critical for success with first registration; b) Business process reform, digitalization and the legal/regulatory framework revision need to move in parallel for full impact of electronic land administration; c) Service oriented land register can be sustainable and operate as a business on service fee income; d) Incremental expansion of proven basic ICT systems (as in place in Indonesia) allow a secure path to ICT development success; e) Addressing gender inequality in access to formal property rights is important even if the law prescribes equal rights; f) Providing access to gender disaggregated data and including gender specific messages in public awareness campaigns, training, and education can have significant positive impact; and g) Tailoring project activities and consultation mechanisms to customary and Indigenous peoples (IP) groups help to prevent unintended biases and negative gender and social impacts. Country-specific lessons learned with previous Bank engagements in Indonesia[39] and in South East Asia[40] include the importance of the political commitment in all levels of government to implement successful programs. Importantly, Indonesia has a vast repository of knowledge and experience[41] in participatory mapping, and such processes' capacity to increase community cohesion, resolve land-related conflicts, promote inclusive decision-making, raise awareness on land rights, and empower local communities. Finally, global and international knowledge experience endorses the NSDI as an excellent model for organizing access to standardized geospatial information, but its success depends on the commitment of government agencies to make the geospatial data available.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

30. ATR/BPN is the Executing Agency of the project and it will host the Project Management Unit (PMU), small Provincial Implementation and Monitoring (PIM) offices[42] in target provinces, and take on the overall management and coordination responsibility for the project, as well as directly manage the implementation of the Project Components 1 and 3. The BIG will establish a Project Implementation Unit (PIU) for managing activities of the Component 2. PMU, PIMs and PIU will be responsible for day-to-day implementation of project activities by ATR/BPN and by BIG, respectively, the project's fiduciary functions, social and environmental safeguards implementation, and monitoring and evaluation.

31. MoEF, MoHA, MoEMR and possibly other line ministries and agencies will participate in the project as equal partners funding their involvement through the national budget, or through project resources on cost-recovery basis as agreed upon with ATR/BPN. A Project Coordination Committee (PCC) will be established at the national level, co-chaired by ATR/BPN and BIG with members from the various stakeholder agencies

[39] Both ATR/BPN and BIG have experience in working with the World Bank and development assistance partners on significant land and geospatial projects. ATR/BPN has about three decades experience of working with multiple development assistance partners (Such as the *Kadaster* of the Netherlands) on land administration. BIG has a particular international experience in working with the Japan International Cooperation Agency (JICA).
[40] The WBG supported first generation of land administration projects in Cambodia, Laos, and the Philippines (and Indonesia) in 1990's - 2000's, earlier in Thailand, and a land investment project is still on-going in Vietnam.
[41] This experience dates to the mid-1990's and has resulted in over 6 million hectares of participatory community level mapping. The Government also has significant experience in facilitating participatory mapping for village planning, disaster risk mitigation and urban renewal activities.
[42] *Kansil.*

including CMEA, BAPPENAS, MoHA, MoEF, MoPWH, MoV and MoEMR, to facilitate inter-agency coordination and cooperation of project activities.

32. The PMU will be headed by a Senior ATR/BPN official as the Project Director (government appointee) who will report to the Head and the Director General of ATR/BPN and will oversee the work of the PMU and liaise with other participating institutions and stakeholders both at national and subnational levels. it will also include a: (i) Project Manager/Coordinator (consultant); (ii) Financial Management (FM) specialist (consultant); (iii) Procurement specialist (consultant); (iv) Monitoring & Evaluation (M&E) specialist (consultant); (v) Contract Management specialist(s) (consultant(s)); (vi) Survey and Mapping specialist (government appointee/consultant); (vii) Land Registration specialist (government appointee/consultant); (viii) Information and Communication Technologies (ICT) specialist (consultant); (ix) Capacity Development, Outreach and Communications specialist (consultant); (x) Community Development, Indigenous Peoples (IP) and Gender Specialist (government appointee/consultant); (xi) Secretarial, Translation and Support staff (government appointees).

33. The PIU and PIMs will be headed by appointed officers who also serve as Project Officers/Commitment Making Officers (PPK) for the project in the GoI's governance system. The PIU will include: (i) Project Coordinator (government appointee); (ii) Geospatial specialist (consultant); and (iii) Secretarial, Translation and Support staff (government appointees). The fiduciary services to the PIU will be provided by the PMU staff. ATR/BPN and BIG may also decide to implement a joint PMU. The PIM will include: (i) Provincial Project Coordinator (government appointee); (ii) Provincial Monitoring & Evaluation (M&E) specialist (consultant); (iii) Fiduciary assistant (consultant); and (iv) Support staff (government appointees).

34. The PMU will be responsible for submitting Interim Financial Reports (IFRs) every quarter. The PMU will also provide implementation progress reports biannually reporting: (i) progress with reaching project targets, (ii) environmental and social safeguards compliance status, (iii) procurement and disbursement progress, and (iv) general qualification of the project progress. The PMU will implement the project in accordance with the provisions of the Project Operations Manual (POM) that elaborates the planning and implementation arrangements, roles, responsibilities, reporting lines, communication procedures, procurement and financial management procedures, M&E and outreach programs, social monitoring and vulnerability mapping under the project in the Environmental and Social Management Framework (ESMF), and oversight of the project in the targeted provinces. User-friendly formats, checklists and templates for monitoring and evaluation will be included in the POM.

B. Results Monitoring and Evaluation

35. The PMU will be responsible for project implementation monitoring with inputs from the PIU in BIG and the PIMs. Monitoring and Evaluation (M&E) will be essential in tracking the effectiveness of the project, and it will focus on progress under the components, along with financial management, procurement, safeguards and progress on achievement of results indicators. A project performance and evaluation system will be established in the first few months of project implementation. Baseline will be confirmed during the first year of the project implementation. A Grievance Redress Mechanism set up in ATR/BPN will monitor feedback received from beneficiaries of the project. ATR/BPN will respond to all feedback, and the information gathered will also be used to improve services provided and to mitigate against negative social impacts on individuals and vulnerable groups, including female-headed households, women, *Adat* groups, and indigenous peoples (IP).

36. A dedicated officer in the PMU will be assigned with the M&E function to provide not only statistical reports but also analysis for the quarterly progress reports, which will be provided to ATR/BPN, BIG, the Bank team and the PCC. The PMU will ensure the direction of the project implementation in achieving its development objective. The monitoring and evaluation arrangements will be detailed in the POM.

37. The Project's Results Framework provides the basis for measuring progress towards the PDO. It includes the PDO-level outcome indicators related to parcel mapping and land registration progress in the target areas, and broader intermediate results indicators with baselines and targets for main project activities. The monitoring and reporting formats will require gender-disaggregated information, to better understand changes in gender relations and improvements in gender equality, particularly in terms of decision-making, joint landholding and economic empowerment. This will be evaluated in terms of control over assets and access to services, agency and meaningful participation, informal and formal policies, and gender-responsive budget allocations. It is notable that in Indonesia data on shared decision-making is mixed, depending on context and social groups. Decentralization has resulted in the erosion of women's rights in some regions. Also, while women's rights are well respected in some *Adat* communities, in others custom practices inhibit women's agency and voice (even matrilineal societies) thereby reinforcing and perpetuating gender inequalities.

C. Sustainability

38. The keys for the project's outcomes sustainability are a) institutional capacity building with a strong focus on ICT infrastructure maintenance, the governance of land administration system and geospatial infrastructure, and b) improved and customer focused service delivery, including the ability of ATR/BPN to provide land information to the government and the private sector. It is also believed that the project's sustainability will depend heavily on establishing a clearer link between services and resources that ATR/BPN provides and uses respectfully. Finally, public liability and positive perception as keys to institutional sustainability require progress with regularizing women's and IP rights on land.

D. Role of Partners

39. The World Bank Group's partnerships with bilateral donors will be leveraged for complementary technical assistance support to extend project related outcomes, non-exclusively including, the World Bank's Natural Resources for Development (NR4D) Trust Fund supported by the Government of Canada, the Indonesia Infrastructure Support (INIS) Trust Fund by the Government of Australia, and the World Bank's Sustainable Landscapes Management Multi-Donor Trust Fund (SLM-MDTF) financed by the Governments of Australia and Norway.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

40. The overall project risk is *high* and the project has been classified as a Category A project for Environmental Assessment. This is due to third party and downstream Environmental and Social risks associated with the project scope not covering the Forest Areas. The downstream environmental risks are

relevant given the extensive and globally significant forest asset base in Indonesia coupled with the competing land claims and lack of tenure security, particularly in Forest Areas. The project design originally covered full territory with participatory mapping, but the focus changed to Agrarian Reform in non-Forest Areas. Consequently, the project will map and regularize land rights in non-Forest Areas and demarcate Forest Area boundaries, but it will include no activities inside Forest Areas. This project scope will lead to high social risks related to the Forest Area boundary demarcation. Although the project does not involve land acquisition or direct displacement of people, the key social risk of the project will be a third party driven and downstream involuntary resettlement (or access restriction to) in Forest Areas/State Forests that have a project affirmed Forest Area boundary. Similar risk will also be associated with the State Lands in non-Forest Areas. The new clarity over Forest Area of State Land boundary could trigger third partly actions with regard to informal settlement in State or Public properties in Forest and non-Forest Areas, such as MoEF starting to clear Conservation or Protection Forests from informal settlers.

41. ATR/BPN's systematic registration approach (PTSL) has an in-built mechanism to exclude areas under territorial land disputes from PTSL, and a mechanism to facilitate dispute resolution and appeal avenues over individual land disputes. These measures minimize the risks of exacerbating existing disputes and/or tension or of restricting people's access to their assets and properties by formally recognizing claims challenged by other parties.

42. The risk of involuntary resettlement and access restriction is mitigated by triggering the O/BPP 4.12 policy on involuntary resettlement and including an Resettlement Policy Framework (RPF) and Process Framework (PF) in the Environmental and Social Management Framework (ESMF). The involuntary resettlement risk is elevated by the fact that the custodian of State Forests in Indonesia, MoEF, is not a project implementing agency, and it will need to implement the RPF and PF if it pursued forced displacement or access restrictions in Forest Areas, which have a project demarcated boundary. Assuring the MoEF awareness, collaboration and compliance is a key risk management activity of the project, and modalities for collaboration between ATR/BPN and MoEF will be tested during the first project year pilots. Also, a parallel SLM-MDTF grant support is under preparation for engaging with MoEF on land tenure regularization in Forest Areas.

43. The project will mitigate the social risks by carrying out location specific vulnerability mapping and social monitoring activities allowing no place for ignoring legitimate land holder interests in target areas. This will include identifying and engaging with more reticent stakeholders (e.g., women, *Adat*, IP, and identified vulnerable groups). Consultations with these groups and individuals may require equity considerations, including targeted approaches to enable equivalent and meaningful participation. A mixed group approach to consultations (e.g., smaller groups of women-only, men-only, and mixed) is often necessary to encourage frank discussions with and among reticent stakeholders to compensate for legacies of social exclusion and gender inequalities or discrimination. In addition, particularly to increase women's involvement, the project implemented consultations will reflect gender-aware sensitivities in terms of timing/scheduling, widespread information-sharing and advanced notice, location of meetings and provision of transportation, language and translation, and facilitation. Inclusive and equitable consultations require upfront time and effort and reduces the potential for problems resulting from elite capture and/or social distrust, and increases sustainability through improved understanding and awareness, and greater local ownership and acceptance.

44. The direct environmental risks from the project are *substantial* and in part associated with minor renovation of land office facilities. The potential risks will be improper disposal of construction waste (e.g. asbestos materials) and injuries resulting from not using proper personal protection equipment (PPE), and

will be mitigated by Codes of Practice for Health, Safety and Environment that will be formulated during project preparation and embedded in renovation contracts. Higher environmental risks will relate to possible erroneous mapping of areas with high-conservation values (such as wetlands, mangroves, etc.), and the risk mitigation is covered in the social risks mitigation measures. Therefore, ESMF seeks to strengthen the PTSL to include measures for environmental screening as well as coordination with relevant agencies in conservation and protection. In addition, potential impact to physical cultural resources will be addressed within the Physical Cultural Resources Management Framework of the ESMF prior to the participatory mapping in the field.

45. The Political and Governance risks of the project are *substantial* largely due to a) intergovernmental collaboration required for the project implementation and b) the vast, delicate, and competing stakeholder interests in land rights in Indonesia. Critically, the project's success will require cooperation and coordination among government stakeholders, which are numerous, and with other stakeholders, which underline the importance of sound political support and leadership to the project implementation. This will be a complex project and ATR/BPN has not implemented many joint field activities with other government agencies. Nonetheless, the multi-agency collaboration will be facilitated to ease the stakeholder participation and PCC will provide a forum for facilitating governmental stakeholder collaboration. At the central level, the risk will be mitigated by maintaining multiple dialogues and ensuring the continuation of highest-level political support for the project.

46. MoEF collaboration with the project is in general critical to the project's success in the participatory mapping, Forest Area boundary demarcation and safeguards implementation. After prolonged discussions MoEF chose not to join the project as an implementing agency, preferring the role of a collaborating stakeholder. The original project design included a blended Global Environment Facility (GEF) Grant financing a Social Forestry Component, which would have facilitated and funded MoEF in the project. However, in the end, MoEF did not want a direct association with a WBG loan project on land. Thus, MoEF collaboration presents a substantial risk to the project as participatory mapping and land rights regularization (PPTKH – PTSL) collaboration between ATR/BPN and MoEF is at an early stage. While, positively, the PPTKH – PTSL collaboration was addressed in a recent Presidential Instruction, the collaboration risk remains until the approach is tested and mainstreamed in the first project year pilot. It is well known in Indonesia that ministries/agencies have not always shared geospatial data externally. As a further governance risk, it is possible that the political support and budget allocation to Agrarian Reform and OMP could lessen during the project implementation period. This will be mitigated through high-level dialogue with national and provincial governments, and by providing strong evidence on the project's impact to security of tenure, and other benefits.

47. Stakeholder risks are *substantial* in relation to Indigenous Peoples (IP) including *Adat* communities and their territories, since Agrarian Reform activities could take place in areas claimed by these communities. Project target areas around and/or near Forest Area boundaries, and possible communal tenure holdings in non-Forest Areas could include *Adat* communities. OP/BP 4.10 Indigenous Peoples safeguards policy has been triggered, and as the exact target areas have not yet been identified, a framework approach for the risk mitigation has been applied, and the ESMF includes an Indigenous Peoples Planning Framework (IPPF). More generally, stakeholder risks could include: a) Lack of participation due to issues with access to information, exclusion of certain groups including women in the village structures and consultation; b) disincentives to participation due to suspected negative tax implications or erroneous registration of rights; c) potential for tension and conflicts stemming from fears over land takings due to misinformation or unsuccessful

awareness raising and socialization of project activities. There may also be reputational risks and heightened political tension due to public expectations that the project will solve territorial land disputes and regularize land rights in State Forests, which are beyond the project scope.

48. The project's fiduciary risks are *substantial*. The risk is related to the lack of recent experiences of ATR/BPN on implementing World Bank funded operations. The Project's financial management will generally follow government systems, including budgeting, internal controls, accounting and reporting, flow of funds, and the auditing mechanism. Based on experience from other Bank-financed operations financial management risk is noted regarding timeliness of budget availability and weaknesses on payment verifications. The last two year's BPK[43] audit gave unqualified opinion toward ATR/BPN financial statements although findings are still noted regarding insufficient payment verification process. There are risks related to the dispersed locations of project activities that requires strong oversight.

49. The project's procurement risk is *substantial*. The key procurement risks are due to the possibilities of: (a) delays due to weak procurement capacity and limited understanding of the Bank's procurement procedures; (b) inadequate procurement planning and monitoring, and weak contract management; (c) Procedural non-compliance due to the implementing agencies' possible intention to follow the Government's Procurement procedures instead of the Bank's Procurement Regulations, which govern procurement under the Project; (d) Rejection of lower priced bids due to narrow interpretation of qualification criteria; and (e) implementing agencies' possible intention to use the national e-procurement systems for international competitive procurement and for consultant selection methods other than Quality and Cost Based Selection (QCBS) even though the e-procurement systems are not ready for use of these methods in Bank-financed projects. Mitigations measures are outlined in the financial management and procurement sections of the Implementation Arrangements in Annex 2.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

50. The Project's economic benefits are driven by clarity over land use and land rights, thus improving sustainable landscape management, land governance, social stability, access to land for investments, inclusive growth, and environmental protection and conservation. The main activity of the project is the participatory mapping and registration of non-Forest Areas which will have great impacts on enhancing tenure security of 4.3 million parcels[44], providing land rights' recognition to indigenous communities and *Adat* groups, minimizing land conflicts, improving access to finance to landowners by using their land as collateral, and strengthening the fiscal capacity of local governments through the increase in taxes and levies collection such as the Land and Building Tax[45] (PBB).The project is also expected to provide more accurate geospatial data and will support the delineation of indicative Forest Area boundaries and eventual affirmation (through a legal MoEF process), which will have substantial impacts for forest management and

[43] Audit Board of Indonesia i.e. *Badan Pemeriksa Keuangan*.
[44] The target is defined using current parcel mapping cost standards and production rate in ATR/BPN. The basis for calculation will most likely change after the first year piloting, and thus the target may have to be redefined at the project year 2.
[45] Land and building tax i.e. *Pajak Bumi dan Bangunan*.

biodiversity conservation. For example, the project areas overlap or are close to Key Biodiversity Areas (KBA) which are sites contributing significantly to the global persistence of biodiversity, representing the most important sites for biodiversity conservation worldwide, and providing direct economic benefits[46]. The project is also expected to improve existing policy and regulatory framework which will help to sustainably manage lowlands, restore and sustainably develop peatlands, and streamline access rights to natural resources by licenses and concessions.

51. Overall, there are many direct and indirect expected benefits from the project, however the economic analysis of the project will only quantify: a) the benefits from registering 4.3 million parcels, and b) the indicative demarcation of Forest/ non-Forest Areas boundaries for 16 percent of the districts in the Project's target area.

52. The economic benefits for the project are determined using impact evaluation studies from similar interventions in Indonesia and the Ex-Ante Carbon-balance Tool (EX-ACT) developed by FAO. The summary of the benefits is presented below and details can be found in Annex 4: Economic and Financial Analysis.

Net Present Value and Economic Rate of Return

53. Assuming a 5-year implementation and 5-year post-project period as well as the discount rate of 12 percent, the net present value (NPV) of the Project is estimated at USD 270 million and the economic internal rate of return (EIRR) is estimated at 61 percent. Since the NPV is positive and the EIRR is greater than the discount rate, the Project is considered economically viable and beneficial.

Section	Net Present Value of Flows
Expected Benefits from registration	$211 million
Expected Benefits from forest boundary demarcation	$243 million
Total Project Costs	($184) million
Net Benefits	$270 million
Economic Internal Rate of Return (EIRR)	61 percent

B. Technical

54. **Readiness at Appraisal**. The technical readiness for project implementation in both ATR/BPN and BIG is good. ATR/BPN increased it PTSL production from one million land parcels in 2016 to five million land parcels in 2017, and can further increase efficiency through the project's mass scale approach and outsourcing. ATR/BPN currently employs 3,055 land surveyors and the private sector could mobilize another 3,700 licensed surveyors and 4,500 assistant surveyors to the work. Also, contractors can make use of para-professionals for many tasks. BIG is the leading geospatial agency in Indonesia with high technical capacity

[46] Academics in the USA and the Netherlands have calculated the economic value of Leuser National Park in Sumatra, Indonesia – one of the two remaining habitats for Sumatran orangutans – which is under threat of deforestation. They calculated the value of the forest to people in the region over a 30-year period as if it were protected, to be US$128 per ha vs the value if it were destroyed for logging and subsequent cultivation to be US$91 per ha. (Van Beukering, Pieter JH, Herman SJ Cesar, and Marco A. Janssen. "Economic valuation of the Leuser national park on Sumatra, Indonesia." Ecological economics 44.1 (2003): 43-62.)

and NSDI that is supported by solid technologies and established standards and governance. First year technical specifications preparation was supported by the WBG grant funded technical assistance[47].

55. **Project Scope**. The project will provide clarity on actual land rights and land use at the village level and implement an electronic land administration system in seven provinces in Sumatra and Kalimantan. The executing agency of the project ATR/BPN is responsible for land administration in non-Forest Areas[48] in Indonesia and hosts the corresponding digital (KKP) and paper-based infrastructure for both the legal land registry and cadastre. The supporting implementing agency BIG is the national geospatial agency in Indonesia maintaining the geospatial reference network and NSDI. Importantly, MoEF, MoHA, MoEMR, BAPPENAS and CMEA will support the project by exercising their mandates to demarcate and map land tenure rights and land use. The project will produce a base map of the entire target territory, reconstruct and demarcate Forest Area boundaries (through an intergovernmental task force) and produce a parcel/cadastre map of the non-forest project target areas. This will be achieved in a participatory and inclusive process that will lead to legal documentation of legitimate land rights. The resulted 1:5,000 map will also be compatible with the MoEF, MoHA and MoEMR's geospatial data requirements for Forest Management, Village Administration and Energy Concession Management respectively.

56. **Field Methodology**. The project will target rural areas in seven provinces in Kalimantan and Sumatra that have been subject to particularly high rates of land conversion, including through forest and peat land fires, so as to maximize project impact on improved natural resource management. The project will introduce appropriate, low cost and easy-to-use technologies and apply a fit-for-purpose mapping approach to reach efficiency and synergies of scale. The project will showcase an all-digital field mapping and recording regime subject to successful piloting of such technologies adding value. Leaving flexibility for contractors to utilize best and latest approaches and technologies through definition of outputs rather than methodologies, PTSL mapping and recording will be collected in the field directly onto mobile devices. In the field there will be no annotating of boundaries onto paper Working Maps and recording of ownership, occupancy, boundary and other details into paper based field books. Instead, the data will be collected digitally using modern tablets and applications, etc. for data collection according to standards and data models provided by ATR/BPN. Completed field captured map data will be (daily) uploaded or (in areas with no internet coverage) transferred (weekly) directly to processing centers for editing, quality assurance and the production of public display maps and listings, and ultimately – land certificates.

57. **Electronic Land Administration**. KKP is a web-based solution, but provides a very limited access outside ATR/BPN apart from *ad hoc* tax authority access. In 2016, ATR/BPN implemented seven million land services including mortgage registration (32 percent), property transfer (29 percent), and first registration and sub-divisions (19 percent). Demand is on the rise and thus entailing the development of a modern digital land registry and cadastre (i.e. eLand) system to provide accessible services to the public and to develop fee-based business models for sustainable governance. eLand will improve local governance by interconnecting land and geospatial datasets from multiple providers. Initially, the approach is to improve access to datasets and their interconnectivity, and incrementally, the GoI will improve the coverage and quality of these datasets and eLand data will become authoritative. Technical specifications for eLand are being developed with the

[47] The World Bank's Natural Resources for Development (NR4D) Trust Fund by the Government of Canada, the Indonesia Infrastructure Support (INIS) trust fund by the Government of Australia, and the World Bank's Multi-Donor Trust Fund for Sustainable Landscapes Management (MDTF-SLM) by the Governments of Norway and UK among others provided grant support to the project preparation.

[48] By law ATR/BPN registers also Titled Forests in the Forest Area to the Land Register.

support of INIS-financed Technical Assistance (TA). The objective is to design a digital land registry and cadastre system, and services (i.e. an electronic land administration system, eLand) through needs assessment and technical analysis aligned with international good practice. The TA will also take project stakeholders to Korea and Australia to learn from proven eLand systems. The Indonesia eLand will integrate and link cadastre and land records, regulated spatial planning, resolution of disputes, and land valuation and taxation, and thus improve decision making, policy development, spatial planning and implementation of infrastructure investments and services, as well as improve land governance and quality of services. Apart from the central and local governments, the users of eLand will be expected to include the public, notaries, lawyers, land surveyors, geospatial service providers, commercial banks, real estate market facilitators, and land valuers. The starting point for the work is good as ATR/BPN's data exists already in digital form and the KKP is already a web-based application with online production connection to over 500 ATR/BPN offices countrywide. Thus, eLand will be a natural continuation from the existing situation.

58. **Sustainability**. The project will support ATR/BPN to consider its institutional, financial and business model options for sustainable land administration. Land and property registration can be operated as business, and it can easily generate adequate income for good infrastructure, applications and remuneration as demonstrated for example by the Land Registry of New South Wales in Australia. The ATR/BPN's land registry services generate about US$170 million annual revenue already now and there is assumable little reason for not operating latest approaches, solutions and technologies, which will also generate more revenue through service fees.

C. Financial Management

59. A Financial Management Assessment (FMA) was carried out to assess the adequacy of the financial management system of the implementing agencies to produce timely, relevant and reliable financial information on project activities. The FMA also assessed the adequacy of the accounting systems for project expenditures and underlying internal controls to meet fiduciary objectives and allow the Bank to monitor compliance with agreed implementation procedures and progress towards its objectives.

60. The financial management risk is *substantial*. The FMA concluded that, with implementation of the agreed actions, the risks will be substantially mitigated and the proposed financial management arrangements will satisfy the Bank's minimum requirements under the Bank Policy Investment Project Financing. These are considered adequate to provide, with reasonable assurance, accurate and timely information on the status of the loan as required by the Bank.

61. The project financial management arrangements follow the government system as agreed by the Bank and to be reflected in the POM, including budgeting, internal control, accounting and reporting, flow of funds, and the auditing mechanism. The central ATR/BPN PMU will coordinate financial management aspects including activities executed by BIG (PIU) and the ATR/BPN vertical organization (PIM). The financial management risk is related to the limited ATR/BPN and BIG experience on managing World Bank funded operations and related to the dispersed locations of project activities that requires strong oversight. Based on experience on other Bank-financed operations financial management risk is also noted regarding timeliness of budget availability and weaknesses on payment verification process. The last two years audit report of ATR/BPN gave unqualified opinion to the financial statements, however, some findings related to weaknesses of payment verification that results in overpayment of works are noted in the report. Some

mitigation measures are considered including: i) financial management specialists within the TA to be placed in PMU and tasked with assisting PIMs and all PIUs in ensuring timely availability of budget, financial reporting, and follow up of audit findings, ii) strengthening of oversight is also considered including involvement of Inspectorate General of ATR/BPN and BIG to include the project in the annual audit plan, iii) the annual audit of the project will be conducted by the Audit Board (BPK) as supreme audit institution of Indonesia, and iv) training on Financial Management aspect of Bank funded projects will be given to ATR/BPN and BIG staff.

D. Procurement

62. All Procurement financed from the Bank's loan will be carried out under the World Bank's Procurement Framework in accordance with the Procurement Regulations for IPF Borrowers dated July 2016 revised November 2017, and the provisions of the Loan Agreement. For procurement of goods and non-consultant services procured through national open competitive procedures, the Government's procurement regulations may be used to the extent they do not conflict with the Bank's Procurement Regulations and subject to the eight requirements listed in para. 5.4 of the Bank's Procurement Regulations and which are incorporated in the bidding documents acceptable by the World Bank for national open competitive procedures.

63. The project procurement will include several packages of consultant services requiring hiring of consulting firms; Goods for survey and mapping equipment, Continuously Operating Reference Station (CORS) system equipment and software; and non-consultant services for participatory mapping and supporting community engagement, public awareness campaigns and legal aid. Only minor civil works (office renovation) are envisaged to be procured under the Project. The Project Procurement Strategy for Development (PPSD) and Procurement Plan has been prepared by the PMU (dated June 5, 2018) as the basis for the procurement arrangements including appropriate packaging and methods. It is expected that similar procurement requirements under the Project will be consolidated into few number of larger value procurement packages to maximize competition, benefit from economy of scale, and streamline procurement processing.

64. ATR/BPN and BIG have some limited previous experience in carrying out procurement under Bank financed projects (Land Management and Policy Development Project) and the other donor's financed project respectively, but they have no experience in applying the Procurement Regulations under the Bank's Procurement Framework. Further details of the procurement arrangements, procurement risks and mitigation measures are provided in Implementation Arrangements in Annex 2.

E. Social (including Safeguards)

65. The social risk rating for the project is *high.* An ESMF has been prepared for the Project to describe the processes, institutional arrangements, and frameworks for addressing and mitigating environmental and social risks. A framework approach was chosen because the Project supports a regional process for land mapping where site-specific interventions will not be identified until project implementation. However, the project target regencies will cover mostly rural areas in seven provinces in Sumatra and Kalimantan that have suffered from forest and peatland fires, which have been partly attributed to lack of clarity of Forest and non-

Forest Area boundaries, land use right allocation and land ownership, and poor natural resource management compounded by weak law enforcement. Across Indonesia, and particularly in Sumatra and Kalimantan, poor farmers and forest dwellers have been displaced by rapid agrarian change, with land and forests once used for shifting cultivation and customary uses transformed into large-scale timber concessions, plantations, and mining concessions. Many communities, including *Adat* communities, have lost their lands to private concessions or demographic shifts due to in-migrants from other areas who arrive in search of work or to settle on newly cleared land.

66. The key social risks will mostly be associated with possible third party downstream impacts to communities living in Forest Areas, and with lack of community participation and willingness to participate. The communities' reluctance to join project activities could affect the legitimacy of parcel maps generated with project support on the basis of which land rights will be registered. This could result in incomplete registration and land disputes. In addition, the project could exacerbate dormant tension and conflicts related to land rights in the event of lack of access to accurate information, and absence of community-level mediation. The project could also raise community and civil society expectations to address land tenure regularization issues in Forest Areas and areas under territorial land disputes, which fall outside the project scope of non-Forest Areas and Forest Area's outer boundary.

67. Since the project will provide clarity of land claims, land parcel boundaries in non-Forest Areas, as well as demarcation of Forest Area outer boundary, which is often contested, the project could have the downstream access restriction and eviction risks by triggering third party actions (e.g. MoEF) to regularize forest tenure settlements as well as concerning informal settlements on State Lands including State Land under concessions. The fact that MoEF is not an implementing agency and that third party actions are the result of decisions of other government agencies and mostly land owners in the Forest Areas that are outside the scope of the project, there are reputational risks that have informed the project's risk categorization.

68. The project triggers OP/BP 4.12 safeguards policy on Involuntary Resettlement and the ESMF includes a Resettlement Policy Framework (RPF) and Process Framework (PF). While the project will not require land acquisition, which would result in direct involuntary resettlement, there could be indirect impacts, downstream, as a result of third party actions, that could possibly lead to evictions and/or access restrictions. These would materialize, if MoEF and/or State Land concession holders used the new affirmed forest areas and/or state land boundaries to regularize informal tenure settlements. This could happen in State Forests in Forest Areas or in State Lands in non-Forest Areas, if the custodian of the State Land chose to evict people from these settlements based on the project affirmed (outer) Forest Area boundaries of, for example Conservation or Protection Forests. In the events that resettlement and/or evictions risk occurring, the GoI will need to prepare a Resettlement Action Plan (RAP) according to the arrangements under Component 3. The RPF and PF also serve as instruments to guide the project implementing agency ATR/BPN to avoid and/or minimize potential resettlement risks considered under the project. The PMU will need to ensure that institutional commitments and capacity to handle risks associated with Forest Area boundary demarcation were in place before the Forest Area boundary demarcation activities commenced. Under the ESMF, an erroneous land claim registration, which could lead to a contested registration and land disputes is considered a project governance risk to be addressed through strengthened community participation, transparency and community verification of results, and institutional oversight.

69. The Project triggers the World Bank Policy (OP/BP 4.10) since there is a likelihood that mapping activities will take place in areas claimed by *Adat* communities and/or other community groups that meet the World

Bank's Indigenous Peoples (IP) criteria in non-Forest Areas or in areas where these *Adat* communities reside such as areas close to Forest Area Boundary under demarcation and/or other community groups that meet the World Bank's IP criteria. By far most *Adat* land rights claims are likely to be located within Forest Areas and in State Forests where there may have been on-going tensions and disputes over tenure rights, particularly with MoEF and land concession holders. However, some *Adat* communities could also claim land rights outside the Forest Areas. Such claims may be identified in non-Forest Areas entirely or in the unclear vicinity of non-demarcated Forest Area boundary. Since Forest Areas and thus State Forests are outside the project scope, and Forest Area dwellers will thus not take part directly in the project's activities. A process to ensure due diligence and key principles set out in the World Bank Policy (OP/BP 4.10) have been addressed through the preparation of an IPPF as part of the ESMF. Where the project area status is unclear or where the Forest Area boundary is being demarcated, the project applies measures in place for screening and arranges for meaningful engagement at various stages of the mapping process to ensure informed consultations and participation of IP and *Adat* communities including women.

70. The project is expected to benefit IP and *Adat* communities through increased awareness and participation, registry of customary claims in the ATR/BPN's database and tenure security for *Adat* customary claims in non-Forest Areas and uncontested areas. Once site-specific areas are identified, the PTSL Taskforces will screen for the presence of IP and *Adat* communities in the project areas. In cases where IP and *Adat* communities are present in the project areas, an additional scoping measure is required during the preliminary preparations phase. The results of the scoping will inform potential risks before their participation in the mapping processes is sought. An Indigenous Peoples Planning Framework (IPPF) has been prepared as part of the ESMF. Particular attention will be applied to consultation with leaders with regard to screening and identification of customary claims as part of IP and *Adat* communities, local bodies and community representatives screening. Such screening will aim to identify: a) presence of IP and their characteristics, including women and youth to document local traditions and practices in traditional governance of land allocation and use practices, b) level of acceptance to the project, c) potential risks and impacts, d) entry points for community engagement, and e) necessary measures to foster meaningful community-wide participation and engagement. The IPPF also outlines key measures of handling customary claims upon identification. The IPPF will require PTSL taskforces to consult *Adat* communities based on the principles of free, prior and informed consultations to identify risks and opportunities to obtain broad community support with regard to their tenure preferences (i.e. collective or individual titles), if their claims were located in non-Forest Areas and categorized as eligible for land rights registration. All *Adat* land mapping and registration of claims in target PTSL areas, including areas near or bordering Forest Area boundaries, will be identified and registered in the eLand system.

71. These risks and impacts have been assessed and mitigation established as part of the ESMF process. The project is designed to establish clarity on actual land rights and land use at the village level. By doing so, the project is expected to enhance sustainable landscape management, land governance, social stability, access to land and tenure security, inclusive growth, and conflict resolution. Also, the project has been designed to enable participatory community mapping process, including appeals, community-based dispute mediation, community engagement and facilitation, and registration of legitimate land rights, as well as application of a screening mechanism to treat disputed land parcels and those with litigation cases before legal processes to formalize land titles can be initiated.

72. The ESMF adopted a risk management hierarchy approach which, first and foremost, avoids adverse impacts, and the key measures in the ESMF have been incorporated into the project design. It will be mandatory to screen all land mapping and registration sites beforehand for environmental and social impacts to assess: social risks and need for environmental protection; vulnerable and disadvantaged groups; Indigenous Peoples; and governance. Where screening indicates that an environmental or social impact may occur, the level of risk must be assessed and followed-up with mitigation measures, including community consultations, preparation of grievance redress mechanisms, and facilitation support. These must be in place prior to project activity implementation in a location. If negative environmental or social impacts are imminent and considered significant, a proportional environmental and social impact assessment for each site must be completed by PTSL taskforces, including “no-go alternatives”. Following the completion of the PTSL, there will be a technical assistance activity (under Component 3) to carry out environmental and social monitoring in select areas/districts to understand impacts, which will inform future mitigation measures (and needed resources) and/or improvements in the current ESMF.

F. Environment (including Safeguards)

73. The project has been classified as a Category A (High Risk) project for Environmental Assessment primarily due to th associated high social risks, which has environmental implications. The direct environmental risk of the project is considered substantial. The high social risks are primarily third party and downstream risks associated with the project scope not covering the Forest Areas. The potential environmental and social risks of the project are mostly associated with Component 1 (Participatory Mapping for Agrarian Reform), 1.1 (Fit-for-Purpose Cadastral Mapping and Land Registration), 1.3 (Forest Boundary Demarcation) and 1.4 (Strengthening Local Land Offices). The issues related to the Forest Area impact risk include possible lack of participation, exclusion of groups including IP and women, tension and conflicts due to asymmetry of information and expectations, uninformed sales, and reputational risks and heightened political tension all primarily linked to possible unsuccessful sensitization. See Section E. for the corresponding mitigation measures to the latter.

74. The only direct potential environmental impacts from the project will be associated with minor renovation of land office facilities. Such renovation activities are expected to have low impacts. Potential risks will be improper disposal of construction waste (e.g. asbestos materials) and injuries resulting from not using proper personal protection equipment (PPE). Most of those impacts will be addressed by Codes of Practice for Health, Safety and Environment that will be formulated during project preparation and embedded in renovation contracts. If asbestos-containing materials were encountered during renovation work, handling and disposal will be in accordance with standard asbestos management measures that are included in the ESMF. Other potential risks will be improper recording of areas with high-biodiversity values (such as wetlands, mangroves, etc.). The ESMF seeks to strengthen the current PTSL protocols to include measures for environmental screening and potential findings of any physical cultural resources prior to the mapping activities by developing a Physical Cultural Resources Management Framework, as well as coordination with relevant agencies managing conservation and protection.

75. The project is expected to have substantial positive environmental impacts including: (a) documenting changing patterns of land use and deforestation; (b) providing demarcation of external boundaries of Forest Areas including State Forests (production, protection and/or conservation forests), thereby enhancing the GoI’s capacity to provide the necessary protection; (c) reducing the probability of issuance of conflicting or

inappropriate land use licenses; (d) providing incentives for improved land management; (e) improved community livelihoods based on sustainable natural resource management and (f) provision of up-to-date geospatial base datasets (i.e. ortho-rectified high resolution satellite images) for line ministries and agencies to enhance natural resources management and g) social impacts of registration (security of tenure, inclusiveness, health and education, residential mobility).

76. The safeguards policy on Forests OP/BP 4.36 is triggered although the project will not finance commercial logging or activities that could lead to degradation and/or conversion of critical forest areas or other natural habitats. However, the policy is triggered in order to monitor that the project activities trigger positive improvements in management, protection and clarity over Forest Area boundaries. The mitigation measures associated with this policy have been incorporated into the ESMF.

77. Physical Cultural Resources (PCR) OP/BP 4.11 is triggered although primarily the activities supported by the project will have potential positive impact on PCRs during the land registration exercise. If applicable, a PCR Management Plan is a requirement under the ESMF in case PCRs are expected to be encountered in the target areas of the Component 1.

78. The development of the ESMF tapped into the wealth of previous experiences and literature under this sector in Indonesia. Prior to implementation, the respective parts of POM will be developed to further translate key measures outlined in the ESMF and institutional arrangements across PIUs and PMU. Following the completion of PTSL processes, periodic social and environmental monitoring will be coordinated by the ATR/BPN's research department and BPN District Offices[49] in the target areas. The ESMF, which includes the IPPF, RPF and PF, and PCR Management Framework was disclosed in-country on May 19, 2018, and on the Bank's website on May 30, 2018.

G. Gender

79. Land administration and customs in Indonesia do not provide equal protection and opportunities for all women and men. Tenure uncertainty and unequal recognition of land rights is particularly acute for women. Discriminatory customs on women's land rights increase the negative impact on women. Female heads of households (except those not legally identified as such) have legal protection in securing land tenure and inheritance for their children. Nevertheless, land and asset distributions remain unequal in practice.

80. Married (Marriage Law) and unmarried (Civil Code) women have equal rights and by law equal inheritance and division of property (in the event of a divorce) are a women's right, but practice is likely to differ. In 1963, the Supreme Court revoked certain provisions (Articles 108 and 110) of the Indonesian Civil Code which required a wife to obtain prior written consent from the husband for managing her own assets and for appearing before the court of law. Islamic laws on family and inheritance (which apply to the Islamic marriages in Indonesia) regulate specific portion of inherited estates for the wife(s) and which differs from the portion of other heirs. Book Two on Inheritance Law from the Islamic Law Compilation prescribes the division of assets between male and female beneficiaries at a 2:1 ratio, and Article 183 allows the inherited parties (men and women) to agree on the distribution of property. Also, Book Two of the Indonesian Civil Code on Inheritance governs the equal division of inheritances (movable and immovable assets) for both

[49] *Kantor Pertanahan*.

Muslims (who are allowed to choose to subject themselves to the Civil Code provisions instead of the Islamic Law) and Non-Muslims. Certain customary laws, including Adat laws, may treat legal rights of women differently as compared to men.

81. There is a common lack of awareness about the benefits of registering family land holdings to the names of both spouses resulting in male dominant ownership of land. According to a Demographic and Health Survey (DHS, 2012) 58 percent of men own land, with about half under a joint ownership. In comparison, and Asian Development Bank study (ADB, 2016) finds only 36 percent of married women (aged 15 to 49 years) own land individually or jointly. This disadvantages woman in the event of a divorce as spouses are legally required to divide joint assets equally and retain whatever property they owned prior to marriage. Despite the provisions of equality as specified in the Indonesian Constitution and Book Two of the Indonesian Civil Code on inheritance, the DHS (2012) found that women were in danger of losing their land rights upon widowhood, divorce, or desertion with some ending up landless and destitute.

82. The likelihood that a woman owns a house or land (alone or through a joint ownership) is associated with her age, with women aged 45 to 49 most likely to hold such assets. Rural women are also somewhat more likely than urban women to own both a house and land, either alone or jointly. The percentage owning both assets is highest among women with no or only some primary education - likely correlated with the higher percentage of ownership in rural areas. Women's ownership of land and house assets does not vary consistently with wealth quintile.

83. Indonesia is a largely patriarchal society, even among matrilineal groups. Women are discouraged from exercising land title and inheritance rights. Even in matrilineal societies, where property rights and land titles remain with women, brothers and husbands tend to make the land-use decisions. Gender norms (and the expectations and stereotypes these create) will likely reinforce inequalities in access to land and assets or resources unless joint-ownership and individual ownership registration in women's names for female-headed households are part of consultations and operationally embedded with targets and tracked through monitoring and reporting.

84. Participation in decision-making and access to and control over land and natural resources can be sub-optimal because of gender issues, stigmatization, and the under-representation of women in consultations. Projects which consult women and succeed in creating "safe spaces" for them to voice their opinions and assume positions of leadership have better outcomes and sustainability of results. Women use their detailed knowledge of landscapes to selectively nurture important species or build assets, collect non-timber forest products (NTFPs), and protect "high value" areas or resources. These areas are part of traditional usufruct patterns that may be lost if women are not consulted.

85. Constraints to participation include: the lack of self-confidence and representation of women; limited knowledge about legal rights and a shortage of dispute resolution institutions or knowledge of grievance redress mechanism; conditions of poverty and scarcity that result in short-term thinking and environmental degradation; and, stereotyping of women's roles and contributions to domestic domains. These have implications for participatory processes, conflict and dispute resolution, resource management, and the access to and participation in consultative processes by women.

86. The project will engage with women directly through tailored engagement as part of risk screening and in the awareness raising stage, during PTSL implementation and in social monitoring activities that follow. In

addition, particularly to increase women's involvement, the project implemented consultations will reflect gender-aware sensitivities in terms of timing/scheduling, widespread information-sharing and advanced notice, location of meetings and provision of transportation, language and translation, and facilitation. Women will also benefit from increased awareness on legal land rights, improved access to gender disaggregated information on land rights, the PTSL as an avenue for claiming permanent land rights, and increased tenure security and transparency over the actual land use compared to current informality and lack of clarity.

Figure 2. Project approach for addressing gender inequalities.

Inequalities	Actions	Outcomes
Lack of awareness about the benefits of registering family land holdings to the names of both spouses resulting in male dominant ownership of land.	Activities raising awareness of women's rights to title their property, how to title their property, and benefits of land registration for women and men. Regulatory review and capacity building within ATR/BPN.	Awareness of women's rights increased within the land registry, and broader public. Joint ownership identified under the project registered in the name of both spouses.
Inequalities in participation and decision-making especially in the context of land rights and natural resource management.	Targeted approach to consultation to address social exclusion and gender inequalities or discrimination.	Greater participation in community organizations and in decision-making processes
Discriminatory customs and practices resulting in inequalities for women and their land rights.	Mapping that records all land right claims, and facilitate land rights regularization and registration in the electronic land administration system (eLand), covering all legal rights including communal rights, and joint and individual ownership registration for women. (Component A) Legal assistance to women for claiming land rights in the project target areas. (Component C)	Women as project beneficiaries in the project target areas with land parcels mapped. Women's inheritance rights are better understood, respected and implemented Increase in share of registered land rights belonging to females either alone or through joint ownership in the project area.
Data and systems do not take into account gender.	Monitoring and reporting formats will require gender-disaggregated information.	Systems and procedures, including guidelines, address gender inequalities.

H. World Bank Grievance Redress

87. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

Project Development Objective(s)

The Project Development Objective is to establish clarity on actual land rights and land use at the village level in the target areas.

PDO Indicators by Objectives / Outcomes	DLI	CRI	Unit of Measure	Baseline	Intermediate Targets				End Target
					1	2	3	4	
Clarity on actual land rights									
Share of project target area land parcels mapped in a parcel map.			Percentage	19.20	19.38	20.65	26.96	32.54	34.78
Number of land parcels mapped in the project target areas.			Number (Thousand)	5,300.00	5,350.00	5,700.00	7,440.00	8,980.00	9,600.00
Direct project beneficiaries (landholders, concessionaires, government agencies, community members) in the project target areas with their land parcels mapped.			Number (Thousand)	0.00	100.00	300.00	600.00	800.00	1,200.00
Clarity on actual land use									
Area of country with publicly accessible ortho-rectified satellite imagery equivalent to map scale 1:5,000.			Percentage	10.00	20.00	30.00	30.00	30.00	30.00
Number of core government agencies using accessible ortho-rectified satellite imagery equivalent to map scale 1:5,000 for their activities.			Number	1.00	1.00	2.00	4.00	5.00	5.00

PDO Indicators by Objectives / Outcomes	DLI	CRI	Unit of Measure	Baseline	Intermediate Targets				End Target
					1	2	3	4	
Share of districts in the project areas with forest boundaries reconstructed from an MoEF enactment or demarcated for an enactment by MoEF.			Percentage	1.00	1.00	5.00	10.00	15.00	16.00

Intermediate Results Indicators by Components	DLI	CRI	Unit of Measure	Baseline	Intermediate Targets				End Target
					1	2	3	4	
Component 1; Participatory Mapping and Agrarian Reform									
Share of project target area land rights registered to the land register.			Percentage	19.20	19.37	20.51	26.18	31.20	33.22
Share of registered land rights belonging to female either alone or through joint ownership in the project target area.			Percentage	36.00	37.00	38.00	39.00	40.00	41.00
Number of land rights registered in the Land Register in the project target areas.			Number (Thousand)	5,300.00	5,345.00	5,660.00	7,226.00	8,612.00	9,170.00
Number of ATR/BPN offices in target areas with upgraded archives and technical infrastructure.			Number	0.00	0.00	20.00	50.00	70.00	74.00
Number of ATR/BPN offices operating eLand system.			Number	0.00	0.00	5.00	25.00	74.00	74.00
Availability of electronic land administration and geospatial services.			Number	12.00	12.00	15.00	18.00	21.00	24.00
Number of electronic requests processed annually by the ATR/BPN.			Number	10,000.00	10,000.00	50,000.00	75,000.00	100,000.00	100,000.00

Reduced emissions from deforestation in demarcated Forest Areas (tCO2e).			Number	0.00					0.00
Reduced emissions from deforestation in demarcated Forest Areas compared to areas without clarity on Forest Area boundaries (tCO2e).			Number	0.00					0.00
Component 2; Geospatial Data Infrastructure for Environmental and Natural Resource Management									
Share of target areas with available and accessible geospatial data (1:5000 map).			Percentage	56.47	70.00	80.00	100.00	100.00	100.00
CORS network coverage of project target provinces.			Percentage	15.00	15.00	62.00	62.00	62.00	62.00
Participatory parcel map publicly accessible via NSDI and INA-Geoportal.			Yes/No	N	N	Y	Y	Y	Y
NSDI Data Centre and INA-Geoportal solutions modernized.			Yes/No	N	N	N	Y	Y	Y
Coverage of project target provinces with adequate and accessible DEM/DSM and ground control points.			Percentage	46.75	80.00	100.00	100.00	100.00	100.00
Component 3; Project Management, Institutional Development and Monitoring									
Number of regencies targeted by public awareness campaign on land.			Number	0.00	20.00	40.00	74.00	74.00	74.00
Number of regencies targeted by environmental and social vulnerability mapping.			Number	0.00	20.00	50.00	74.00	74.00	74.00
Number of regencies with a completed social monitoring report.			Number	0.00	0.00	20.00	40.00	60.00	74.00
Number of analytical studies prepared by the project.			Number	0.00	4.00	6.00	8.00	10.00	10.00
Grievances responded and/or resolved within the stipulated service standards for response times.			Percentage	0.00	100.00	100.00	100.00	100.00	100.00
Regulations analyzed and adviced upon.			Number	0.00	1.00	3.00	5.00	5.00	5.00

Number of people trained by the project.			Number	0.00	500.00	1,000.00	1,500.00	2,000.00	2,000.00
Number of non-governmental beneficiaries received training.			Number	0.00	50.00	100.00	150.00	200.00	200.00

Monitoring & Evaluation Plan: PDO Indicators	
Indicator Name	Share of project target area land parcels mapped in a parcel map.
Definition/Description	The indicator measures number of land parcels mapped with the project support compared to the total number of land parcels in the non-Forest target area.
Frequency	The indicator is measured annually.
Data Source	ATR/BPN cadastral maps.
Methodology for Data Collection	Extraction from ATR/BPN ICT systems KKP/eLand.
Responsibility for Data Collection	PMU.

Indicator Name	Number of land parcels mapped in the project target areas.
Definition/Description	The indicator measures total number of parcels mapped with the project support.
Frequency	Annually.
Data Source	ATR/BPN cadastral map.
Methodology for Data Collection	ATR/BPN ICT system extraction.
Responsibility for Data Collection	PMU.
Indicator Name	Direct project beneficiaries (landholders, concessionaires, government agencies, community members) in the project target areas with their land parcels mapped.
Definition/Description	The indicator measures the number of land holders, whose land parcels have been mapped with the project support. The data will be gender disaggregated for progress reporting.
Frequency	Annually.
Data Source	ATR/BPN Cadastre records.
Methodology for Data Collection	ATR/BPN ICT system extracting.
Responsibility for Data Collection	PMU.

Indicator Name	Area of country with publicly accessible ortho-rectified satellite imagery equivalent to map scale 1:5,000.
Definition/Description	This indicator measures national coverage of high resolution orthorectified satellite imagery (equivalent or close to 1:5,000 map scale).
Frequency	Annually.
Data Source	BIG NSDI, Ina-Geoportal.
Methodology for Data Collection	PIU monitoring, contractor reporting.
Responsibility for Data Collection	PIU

Indicator Name	Number of core government agencies using accessible ortho-rectified satellite imagery equivalent to map scale 1:5,000 for their activities.
Definition/Description	The indicator measures the number of government agencies using the 1:5,000 orthorectified satellite imagery as their base map for operations.
Frequency	Annually.
Data Source	Data exchange agreements between BIG and government agencies.
Methodology for Data Collection	PIU monitoring and reporting.
Responsibility for Data Collection	PIU

Indicator Name	Share of districts in the project areas with forest boundaries reconstructed from an MoEF enactment or demarcated for an enactment by MoEF.
Definition/Description	This indicator measures the number of districts, which have 'substantially known Forest Area boundaries', which does not need to mean that all Forest Area boundaries are legally enacted, but rather 'mostly known or indicatively mapped', as the share of the total number of districts in the project target area.
Frequency	Annually.
Data Source	ATR/BPN Cadastral Maps, MoEF Forest Management Maps.
Methodology for Data Collection	PMU/PIU analysis based on combined information from both sources.
Responsibility for Data Collection	PMU/PIU

Monitoring & Evaluation Plan: Intermediate Results Indicators	
Indicator Name	Share of project target area land rights registered to the land register.
Definition/Description	The indicator measures the number of land rights registered in the target areas in comparison to the total number of land rights existing in the non-Forest target area.
Frequency	Annually.
Data Source	ATR/BPN land registry.
Methodology for Data Collection	ATR/BPN ICT system data extraction.
Responsibility for Data Collection	PMU.
Indicator Name	Share of registered land rights belonging to female either alone or through joint ownership in the project target area.
Definition/Description	The indicator compares the number of properties registered to female owners (individual and joint ownership) compared to total number of properties registered in the project target areas.
Frequency	Annual.
Data Source	ATR/BPN land registry gender disaggregated data.
Methodology for Data Collection	ATR/BPN land registry information query by Identification number key.
Responsibility for Data Collection	PMU.

Indicator Name	Number of land rights registered in the Land Register in the project target areas.
Definition/Description	The indicator measures land rights registered by the project support.
Frequency	Annually.
Data Source	ATR/BPN land registry.
Methodology for Data Collection	ATR/BPN ICT system data extraction.
Responsibility for Data Collection	PMU.

Indicator Name	Number of ATR/BPN offices in target areas with upgraded archives and technical infrastructure.
Definition/Description	The indicator measures the number of ATR/BPN offices with eLand and archives project investments completed. Some offices may not be targeted for archives investments, in which case they can be counted as completed.
Frequency	Annually.
Data Source	PMU progress reports.
Methodology for Data Collection	Project progress monitoring.
Responsibility for Data Collection	PMU.

Indicator Name	Number of ATR/BPN offices operating eLand system.
Definition/Description	The indicator measures the number of offices where the new eLand ICT system has been installed with the project support.
Frequency	Annually.
Data Source	PMU progress reporting.
Methodology for Data Collection	PMU progress monitoring.
Responsibility for Data Collection	PMU.

Indicator Name	Availability of electronic land administration and geospatial services.
Definition/Description	The indicator measures the number of electronic services provided by the ATR/BPN though the eLand system, and others, if applicable.
Frequency	Annual.
Data Source	PMU reports.
Methodology for Data Collection	PMU monitoring.
Responsibility for Data Collection	PMU.

Indicator Name	Number of electronic requests processed annually by the ATR/BPN.
Definition/Description	
Frequency	Annually.
Data Source	ATR/BPN ICT systems' and eventually eLand system databases and history logs.
Methodology for Data Collection	ATR/BPN ICT systems' and eventually eLand system reporting.
Responsibility for Data Collection	PMU.
Indicator Name	Reduced emissions from deforestation in demarcated Forest Areas (tCO2e).
Definition/Description	The baseline will be defined during the first project year. A sample based methodology will be developed to assess land use change related emissions inside the demarcated forest areas to calculate the changes in emissions.
Frequency	
Data Source	
Methodology for Data Collection	
Responsibility for Data Collection	

Indicator Name	Reduced emissions from deforestation in demarcated Forest Areas compared to areas without clarity on Forest Area boundaries (tCO2e).
Definition/Description	This will be a sample based assessment of land use change related emissions inside and outside the demarcated Forest Areas. The baseline will be developed during the first project year. The data will be then used to prepare a counterfactual analysis comparing the emissions inside the delineated forest areas and outside them to estimate the relative decrease in emissions caused by the delineation.
Frequency	
Data Source	
Methodology for Data Collection	
Responsibility for Data Collection	
Indicator Name	Share of target areas with available and accessible geospatial data (1:5000 map).
Definition/Description	The indicator measures geographical coverage of 1:5000 base maps as the share of total land area in the project areas.
Frequency	Annual.
Data Source	BIG NSDI.
Methodology for Data Collection	BIG's NSDI querying.
Responsibility for Data Collection	BIG.

Indicator Name	CORS network coverage of project target provinces.
Definition/Description	The indicator measures share of the geodetic reference first order points in project provinces with CORS station operational.
Frequency	Annual.
Data Source	BIG, PIU.
Methodology for Data Collection	PIU progress monitoring and reporting.
Responsibility for Data Collection	PIU.

Indicator Name	Participatory parcel map publicly accessible via NSDI and INA-Geoportal.
Definition/Description	The indicator measures the online access availability of the project prepared parcel maps via the NSDI portals of BIG.
Frequency	Annual.
Data Source	BIG.
Methodology for Data Collection	Verify NSDI data available at the INA-Geoportal.
Responsibility for Data Collection	PIU.

Indicator Name	NSDI Data Centre and INA-Geoportal solutions modernized.
Definition/Description	The indicator measures the completion of the project investment to modernize NSDI infrastructure of BIG.
Frequency	Annual.
Data Source	BIG.
Methodology for Data Collection	PIU progress reporting.
Responsibility for Data Collection	PIU.

Indicator Name	Coverage of project target provinces with adequate and accessible DEM/DSM and ground control points.
Definition/Description	The indicator measures the availability of DEM necessary for producing 1:5000 orthophotography.
Frequency	Annually.
Data Source	BIG.
Methodology for Data Collection	PIU progress reporting.
Responsibility for Data Collection	PIU.

Indicator Name	Number of regencies targeted by public awareness campaign on land.
Definition/Description	The indicator measures the number of regencies that have features project awareness campaigns.
Frequency	Annual.
Data Source	PMU progress reporting.
Methodology for Data Collection	Project contracts, contractor reporting.
Responsibility for Data Collection	PMU.

Indicator Name	Number of regencies targeted by environmental and social vulnerability mapping.
Definition/Description	The indicator measures number of regencies where the project's vulnerability mapping work has been completed.
Frequency	Annual.
Data Source	PMU contracts, contractor reporting.
Methodology for Data Collection	PMU progress monitoring, contract management.
Responsibility for Data Collection	PMU.

Indicator Name	Number of regencies with a completed social monitoring report.
Definition/Description	The indicator measures regencies where the post project activity social monitoring report has been completed.
Frequency	Annual.
Data Source	PMU contracts, contractor reporting.
Methodology for Data Collection	PMU progress monitoring.
Responsibility for Data Collection	PMU

Indicator Name	Number of analytical studies prepared by the project.
Definition/Description	The indicator is a revolving number that counts analytical assignments facilitated by the project.
Frequency	Annually.
Data Source	PMU progress reporting, consultancy reports.
Methodology for Data Collection	PMU contract management.
Responsibility for Data Collection	PMU

Indicator Name	Grievances responded and/or resolved within the stipulated service standards for response times.
Definition/Description	The indicator measures the share of grievance responded to within the defined standard response time.
Frequency	Annually.
Data Source	PMU records.
Methodology for Data Collection	PMU progress reporting.
Responsibility for Data Collection	PMU.

Indicator Name	Regulations analyzed and adviced upon.
Definition/Description	The indicator is a revolving number measuring the project's analytical work to improve regulatory framework. The number reflects the number of regulations that have been analyzed and recommended for improvement.
Frequency	Annual.
Data Source	PMU reporting.
Methodology for Data Collection	PMU contracts, contractor reporting.
Responsibility for Data Collection	PMU.

Indicator Name	Number of people trained by the project.
Definition/Description	This indicator measures revolving number of participants that have attended training provided by the project.
Frequency	Annually.
Data Source	Training reports.
Methodology for Data Collection	PMU/PIU/PIM book keeping and PMU reporting.
Responsibility for Data Collection	PMU, PIU, and PIM

Indicator Name	Number of non-governmental beneficiaries received training.
Definition/Description	The indicator measures non-governmental project beneficiaries that have participated in training provided by the project.
Frequency	Annually.
Data Source	Training reports.
Methodology for Data Collection	PMU, PIU and PIM book keeping.
Responsibility for Data Collection	PMU, PIU, and PIM.

ANNEX 1: DETAILED PROJECT DESCRIPTION

COUNTRY : Indonesia
Acceleration Program of Agrarian Reform and One Map Policy Implementation

1. The project development objective is to establish clarity on actual land rights and land use at the village level in the target areas. The increased clarity over land rights and land use will enhance agrarian reform, sustainable landscape management, land governance, social stability, access to land for investments, inclusive growth, conflict resolution, and environmental protection and conservation including positive co-benefits to climate change adaptation and mitigation, and women's awareness and access to legal land rights individually or through joint ownership.

2. The objective will be achieved by (i) participatory mapping including fit-for-purpose mapping of parcels, land use, indicative village administrative boundaries, and other land use occupation (Forest Area boundaries and mining concessions etc.); (ii) land rights regularization and registration in the electronic land administration system (eLand); (iii) enhancing the availability and access to up-to-date geospatial information; (iv) promoting access to and availability of electronic land administration services; (v) improving capacity, procedures and legal framework for accelerating implementation of Agrarian Reform, OMP and modern e-Land Administration; (vi) assessing, addressing and monitoring social and environmental vulnerabilities and monitoring project impact to vulnerabilities; and (vii) promoting gender disaggregated monitoring and reporting, awareness raising and regularization of indigenous peoples and women's land rights. The project will target Agrarian Reform and the GoI's priority fire-prone provinces in Sumatra (Riau, Jambi and South Sumatra) and Kalimantan (East, Central, West and South).

3. The project costs are estimated at US$240 million (US$200 million IBRD, US$40 million Counterpart financing from the National Budget). The project will include three components:

(a) Component 1; Participatory Mapping and Agrarian Reform, US$202 million (US$162 million from IBRD and US$40 million from parallel financing);
(b) Geospatial Data Infrastructure for Environmental and Natural Resource Management, US$10 million;
(c) Component 3; Project Management, Institutional Development and Monitoring, US$28 million.

Component 1 – Participatory Mapping and Agrarian Reform (US$ 202 million including US$ 162 million from IBRD and US$40 million from National Budget)

4. The objective of this component is to produce village level parcel boundary maps in the project target areas, record all land right claims, and facilitate land rights regularization and registration in the electronic land administration system (eLand), covering all legal rights including communal rights, and joint and individual ownership registration for women. The approach is participatory and inclusive with regular community consultations and engagement during the implementation. The component will (i) implement ATR/BPN's systematic and complete land registration process (PTSL) through an inclusive fit-for-purpose approach resulting in a comprehensive map of tenure rights (ownership, possession, occupancy, concessions, licenses, leases, etc.), land use, indicative Forest Area boundaries and eventual

affirmation (through a legal MoEF process), and other agreed boundaries, and significant features of the project target provinces. Also, areas of overlapping rights and interests, and areas or boundaries under dispute will be identified. Legal assistance will be made available to disadvantaged groups, and local dispute resolution and court appeal line facilitated. The component will strengthen the local land office infrastructure and services including by adopting the eLand system and digital archives. The component will finance: (i) preparatory data acquisition, collection and processing for PTSL; (ii) inclusive and participatory implementation of PTSL in project target provinces; (iii) development of eLand; and (iv) rolling out of eLand in target provinces; and (v) land rights regularization and registration in the eLand system, and (vi) land rights documents issuance[50]; and (vii) legal assistance, and support to dispute resolution and appeals.

1.1 Fit-for-Purpose Cadastral Mapping and Land Registration (US$ 114 million[51])

5. This sub-component will support ATR/BPN to implement an inclusive, participatory, streamlined, extended and consolidated PTSL process in the project target provinces for the acceleration of Agrarian Reform[52] and the OMP. The extended PTSL process will be based on the first project year pilots (under 3.2) aiming to maximize the process efficiency and resulting consistency and compatibility of geospatial data (digital maps). The map thus produced will be compatible for use in multiple legal processes including agrarian reform especially to accelerate systematic and complete land registration, indicative forest boundary delineation, and affirmation processes (through joint survey with MoEF in the area where the forest boundaries are less clear referring to Presidential Instruction No 2 of 2018), and village administrative boundary demarcation, peat and plantation lands delineation, communal and customary (*Adat*) tenure delineation and mapping, as well as energy and mining area identification. The project will contribute to ATR/BPN's systematic land registration target of 23 million parcels of the period of 2017 - 2019 and the annual production rate of 10 million parcels/year starting from 2019[53]. The conservative project target achievable without streamlining current processes will be set to 4.3 million parcels[54] mapped, certified and registered to eLand. The production pace will increase incrementally after the first year pilot phase to a full pace in years 2 to 5. Further, the registration of surveyed and legitimate land parcels, which comply with the technical and juridical requirements of ATR/BPN Ministerial regulations on land registration will be financed by the GoI through the National Budget.

PTSL Targets	2017	2018	2019 – 2024
Number of Parcels to Certify	5,000,000	7,000,000	10,000,000/yr
Estimated Number of Parcels Remaining Uncertified	54,200,000	47,200,000	0 (by 2024)
Percentage of Parcels Remaining	50 percent	44 percent	0 percent

[50] Activities v) and vi) are 100 percent GoI funded from the National Budget in the Indonesian Rupiah amount estimated at US$ 40 million using the exchange rate at the time of the Appraisal.
[51] The sub-component 2 budget includes a US$ 40 million National Budget constituting 100 percent of the land registration and documentation activity budget.
[52] In particular the asset legalization through the systematic land registration targets of ATR/BPN of 23 million parcels by 2019.
[53] The agrarian reform production of ATR/BPN was 4.5 million new land certificates in 2017.
[54] The project target of 4.3 million land parcels can be revised during implementation reviews based on technical improvements, economic conditions (inflation, deflation, and/or currency exchange rate), and changes of standard unit cost of ATR/BPN.

Uncertified			(by 2024)

6. The sub-component will initially prepare Base Maps (to map scale 1:5,000 or better) of project target areas and amend them to PTSL Working Maps using either recent high-resolution satellite imagery from existing archives or acquired imagery, or other fit-for-purpose base map layers. Modern methods of feature extraction will be applied to detect land use polygons (i.e. land parcel fabric) from the satellite imagery using software that complies with ATR/BPN's standards. Also, all available geospatial data will be obtained and analyzed to pre-identify existing land parcels, various concessions, mining licenses, customary (Adat) land alienation, and forest zone boundaries summoning all to a working map parcel layer of a digital Working Map. The Working Map will cover entire non-forest administrative areas. The acquired base map and a publishable version of the Working Map will be made available (eventually with the new parcel map layer) for public purposes through the NSDI Geoportal (under B.2). Eventually, the Base Map, Working Map and Parcel Map layer will become the universal maps for all public sector land use planning and management in Indonesia.

7. Before commencing participatory mapping, the target area will be subject to a community awareness and engagement campaigns and vulnerability mapping (under C.3) to ensure sensitivity to social and environmental concerns, and to educate the participating communities, authorities and other stakeholders on the applied process and expected inputs, outcome, roles, responsibilities and benefits accruing to all. These activities will aim to ensure full and wide ownership and buy-in to mapping and verification of the produced map.

8. The extended PTSL process will proceed village by village, parcel by parcel, and apply fit-for-purpose participatory mapping process and all-digital recording of locations and features. In accordance with the recent ATR/BPN ministerial regulations, the project will aim to a complete coverage of the target area in question i.e. to survey every parcel in the target village or other administrative area. The current approaches will be streamlined through the first-year pilots and be based on the long experience with participatory and inclusive mapping approaches in Indonesia. Also, ATR/BPN's several recent fit-for-purpose systematic registration pilots will inform the first-year pilots and help to design a new integrated and efficient approach for producing extended PTSL maps. Contrary to good international practice ATR/BPN currently implements the PTSL parcel mapping and land parcel registration as separate parallel processes. Thus, among the core ideas for the first-year project pilot, is to increase the integration of parcel mapping and adjudication (juridical) data collection activity to one single act (requiring changes to ATR/BPN's regulations and processes). All mapping under this sub-component will include a joint survey of enacted/unenacted forest boundaries with MoEF as mandated by the Presidential Instruction No 2. of 2018, and indicative village administrative boundaries, and land parcels in non-forest areas.

9. This sub-component 1 also will support land registration and issuance of land certificates[55] using a systematic approach and community driven verification and adjudication process. The registration will be supported evolve as an integral part of the extended PTSL and will be developed from the findings of the pilot to streamline the mapping and registration activities. Thus, the aim is that the project will eventually implement a fully integrated participatory parcel mapping process including public awareness and advisory services, land rights claim and juridical data collection, and land register database and parcel

[55] The cost for the processing and issuance of land certificates will be fully financed by the Government's national budget.

map pre-population. This compiled land use, land tenure and adjudication record will be made subject to community verification and adjudication through a village location public display. The resulted technical correction requests, and appeals will be facilitated through a dispute resolution. Initially the project will implement existing PTSL and land registration dispute resolution rules, but the pilot will aim for a joint technical and land registration legal dispute resolution process. Finally, Land Rights Certificates will be issued to undisputed landholdings and remaining appeals will be passed to the first instance court.

10. In summary, this subcomponent will include the following activities:

Section	FFP Cadastral Mapping	Registration
Financing	IBRD Loan	National Budget
Activities	• Provision of Base and Working Maps • Community Awareness Raising • Participatory Mapping • Data Processing for Parcel Map • Publication/Public Display • Dispute Resolution • Legal Assistance • Revision of Parcel Map • Data Entry to Land Activities Computerization (KKP) • Quality Control	• Public awareness[56] • Adjudication • • Land rights registration • Issuance of land rights certificates

11. The participatory mapping work will be led by ATR/BPN in collaboration with MoEF, MoHa, MoEMR, local government and communities. The activity will be conducted through a series of out-sourced contracts for implementation and quality control, and communications and social monitoring (see C.3). The first-year pilots will be followed by a comprehensive training and support program to build capacity in the 73 participating ATR/BPN offices (that cover 74 Regencies i.e. Kabupaten/Kota administrative areas) to provide data, community engagement, quality checks, approvals and management, and to safeguard equal treatment of landholders. The subcomponent will finance: (i) public awareness campaign; (ii) PTSL implementation contracts; (iii) quality control contracts; and (iv) public display and dispute resolution, and publication of parcel maps.

Pilot Areas (Year 1)

Province	District	No. of Villages (tentative)	No of Parcels
Jambi	Muaro Jambi	4	7,000
West Kalimantan	Sambas	4	7,000
South Kalimantan	Banjar	4	7,000
Central Kalimantan	Kota Palangkaraya	3	7,000
East Kalimantan	Kutain Kartanegara	4	7,000
Riau	Kampar	4	7,000
South Sumatra	Musi Banyuasin (Musi Rawas)	4	8,000
TOTAL		27	50,000

[56] The project's public awareness and social sensitization campaigns include both cadastral and land registration activities of the project, but at the project start mapping and registration will be separate activities and thus separate land registration/documentation awareness raising could be needed.

Years 2 – 5

Province	District	No of Parcels
Jambi	10	440,000
West Kalimantan	12	1,170,000
South Kalimantan	11	480,000
Central Kalimantan	13	500,000
East Kalimantan	7	460,000
Riau	7	330,000
South Sumatra	14	900,000
TOTAL	74	4,280,000

12. The production of cadastral maps will create geospatial data essential for climate change mitigation and adaptation planning. For mitigation, the cadastral data will (i) underpin the process to affirm and demarcate indicative Forest Area boundaries; and (ii) support the environmental protection and conservation efforts including peat land restoration and peat fire management prevention. For adaptation, the parcel maps and regularized rights will (iii) provide the basis for climate risk preparedness by identifying assets at risk to natural hazards; (iii) improve climate risk recovery in cases of temporary displacement, parcel boundary disappearance or disaster compensation, particularly from increasing risks of flooding and coastal inundation in Sumatra and Kalimantan ; and (iv) improve local level adaptation planning and develop the basis for vulnerable communities to adopt community-based adaptation, such as through participatory mapping of community assets at risk to sea-level rise and coastal flooding.

13. Issuance of land certificates will contribute to climate change adaptation by providing (i) tenure security in cases of temporal resettlement due to climate disasters, as well as basis for compensation and insurance in these situations; and (ii) incentives for long-term climate-resilient investments or tending, Land certificates will also contribute to climate change mitigation by improving access to carbon financing schemes, such as those currently supported through the FCPF Carbon Fund, the BioCF ISFL, and the FIP, as clear and recognized land rights are often the primary basis for performance-based payments.

1.2 Forest Boundary Demarcation (US$10 million)

14. Initially, this sub component will reconstruct forest boundaries in the project target areas, which have been enacted by the MoEF Ministerial Decree. The boundaries will be reconstructed in a 1:5,000 scale map according to the current ATR/BPN and MoEF regulations and modalities. Where no enacted boundaries exist, a Joint task force will be formed involving the appropriate ATR/BPN office, Forest Management Units (KPH) and provincial and regency local government for affirming state forest boundaries in project target areas. The affirmation by the joint task force will follow the Presidential Instruction No 2 of 2018, and MoEF's regulations (2012/P.44, 2013/P.62, and 2016/P.93). The joint task force will identify forest areas within their areas of jurisdiction, undertake joint survey and mapping (de facto adopting the PTSL mapping), and prepare the necessary documentation for forest boundary affirmation and publication. However, new streamlined and integrated processes for PTSL and forest boundary reconstruction and affirmation will be piloted during the first project year. Ideally, the forest boundary affirmation process will be integrated to the PTSL process during the project.

15. The sub-component will also facilitate experiment and dialogue in support of the integration of agrarian reform and parcel mapping initiatives carried out by ATR/BPN and MoEF. The Perpres 2017/88 (PPTKH) establishes an inter-agency process, leads by CMEA and involving ATR/BPN and MoEF, to consider tenurial claims by people living within forest areas. The details of the PPTKH process have yet to be finalized but it will involve community inventories of tenurial claims that will need to be participatory in nature and hence similar to the project's fit-for-purpose parcel mapping under the PTSL as stipulated in the Presidential Instruction No 2/2018. In addition, the MoEF will be encouraged to utilize project produced Working Maps in PPTKH implementation, and as the base map for MoEF's Forest Management Plans. ATR/BPN will coordinate with the MoEF to ascertain what project support could be provided for the inventory and verification process of land occupation in forest areas under the PPTKH. Ideally, land records of Forest and non-Forest Areas will be either interlinked or integrated at the project close. Subject to available funding and interest at MoEF, the World Bank could support PPTKH also via other investment programs (such as the Forestry Investment Program (FIP)) or by a parallel technical assistance support.

16. This sub-component will include the following activities: (i) inter-agency coordination and dialogues (ii) developing task force to conduct joint survey and mapping to capture the existing condition of forest boundaries that has been and/or will be established or enacted by a MoEF Ministerial Decree, (iii) preparation of maps and other documents for demarcation publishing.

17. Forest boundary demarcation will support climate change mitigation through (i) reduced emissions from deforestation and forest degradation, (ii) reduced incentives to land use conversion and (iii) increased incentives to invest in sustainable forest and land management with mid-term and long-term returns, as it will enhance the governance, enforcement and conservation of the forest areas.

1.3 Strengthening Local Land Offices (US$17.5 million)

18. This sub-component will provide equipment and technology to local ATR/BPN offices in target provinces to ensure improved capacity and service delivery, and implement archives digitalization. This sub-component will support (i) infrastructure upgrading of the 73 local ATR/BPN offices including improvement of communication lines; (ii) technologies to accelerate PTSL implementation; and (iii) digitalization of data for working maps, PTSL and digital archives.

19. A centralized digital archive will be established through scanning of relevant (to property transactions) paper records and maps in the land registration offices. The digital archives will be an integral part of the Electronic Land Administration System (eLand), developed under the Subcomponent 1.5. Initially, a digital archive strategy, technical specifications, scanning methodology and quality assurance plan will be prepared. This will be followed by an outsourced mass scanning, metadata entry and indexing contract, covering target offices in consolidated lots. The digitalization/scanning contractors will be provided with a tool or script developed for uploading the results to eLand. Estimated number of pages to be scanned in 73 target offices is 62 million, representing approximately 20 percent of the land book sheets reflecting the international practice of scanning only the legally relevant documents such as the land certificates, deed chain and survey plans.

20. The centralized digital archive implementation faces a challenge with the communication lines capacity to some local offices from the central system in Jakarta. Although many offices in Sumatra and

Kalimantan are already connected with fiber-optic cable, the current connection speeds are not enough for transmitting scanned documents and base map imagery. This issue will be highlighted and address in the eLand design under the sub-component 1.5. Most likely mid-term solution will be provided by an intermediary cache server, which will store digital documents and base maps locally in the land registration office. The maintenance requirements will be minimized by application of reliable small servers for cache implementation. The servers will be procured together with the eLand roll-out and installed in all 73 target offices. Also, subject to availability ATR/BPN will seek to improve the communication lines capacity to the offices with currently poor connectivity. Also, offices will be equipped to scan incoming documents and thus maintaining the digital archive fully up to date.

21. This sub-component will also upgrade the paper archives storage in target offices[57] where necessary as a mid-term solution until the paper documents will be moved to a provincial or regional depot of historical paper archives.

22. In summary, this sub-component will finance: (i) communication line upgrades (excluding maintenance) and local offices ICT infrastructure investments; (ii) scanning and digital archives production; (iii) document archives upgrading; and (iv) other local land office infrastructure, general office equipment and capacity upgrades.

1.4 Strengthening Land Information System (US$20.5 million)

23. The objective of this sub-component is to modernize BPN/ATR's existing Land Information System (LIS) to a next generation of digital land registry and cadastre system (Electronic Land Administration System i.e. eLand). The current LIS consists of multiple software and hardware solutions in ATR/BPN, and those will be extended, integrated, improved and unified bringing them onto a single platform with a holistic security approach, and joint operations and interface. Implementation of eLand will facilitate a fully digital land registration process applying the best practices and standards of modern Land Information Systems. Modernization of land information system (LIS) to eLand will improve access to land information through a public portal, mobile applications and Web-based e-Services.

24. LIS modernization is a lengthy process, which will progress in stages from the preparation of technical specifications, to the development contract, to testing and finally to the rollout of the new eLand as an upgrade of the current LIS. The technical specifications are being developed under an on-going Electronic Land Administration technical assistance project[58]. This will allow eLand development contract implementation during the first project year. The development and testing stages will take the second year in full and most of the third year as well. Therefore, a Component 2y component rollout of eLand could be expected at the end of the third project year subject to good progress with contracting and contract implementation. New functionalities to the existing systems to serve the accelerating parcel map and land certificate production will need to be introduced earlier aiming at the beginning of the second project year.

[57] The number of local offices with physical archives could change during the project duration due to digitalization and eLand implementation. Therefore, project targets related to paper archives will be defined during the project implementation after the eLand implementation plans have been finalized.
[58] Financed by the World Bank Indonesia Infrastructure Support (INIS) Trust Fund by the Government of Australia.

25. Existing centralized architecture of the LIS will be maintained, and hence eLand will be hosted in the ATR/BPN's Jakarta office (or in ATR/BPN's new data center in Cikeas province). The present LIS and eventual eLand operations will be similar at the core, but nevertheless ATR/BPN staff in Jakarta and countrywide will need to be trained to use new features and system. As per ATR/BPN's current ICT development/rollout approach, centralized training events will be organized bringing together all local office staff, operating LIS. Although the project will target only seven provinces, the introduction of eLand will affect all ATR/BPN offices across the country[59].

26. Among the most significant benefits from eLand implementation will be broadened access to the system's land rights, land use and geospatial information through a public portal and various new electronic services. Currently ATR/BPN provides 10 basic e-Services that open limited access to its databases to the public, government agencies and businesses. The project will introduce at least 12 new e-Services enhancing to better leverage the ATR/BPN's databank for growth, jobs, land use monitoring and revenues. It is anticipated that new interest and opportunities will emerge during the project and demand for e-Services could grow beyond 12 towards the end of project or immediately after. The major increase of implemented e-Services will be aligned with the development of a new land information portal, providing a unified way of delivering e-Services through a user-friendly interface. Considering that ATR/BPN (in the beginning of 2018) has 52 million registered land rights in the LIS with the target of 10 million new registrations annually starting 2019, it is estimated that eLand will have to be able to process around 500 million e-Service requests per year by the end of the project, representing a substantial increase from the LIS's current 10 million electronic requests per year.

27. Regarding the hardware, the project investments will mostly affect the central office of ATR/BPN and the data center in the Cikeas province. High performance servers and storage systems will be procured to support the explosive growth in the number of requests to eLand. Apart from strengthening ICT infrastructure, top end data security measures will be introduced to guarantee data protection and authenticity.

28. In summary, this subcomponent will finance; (i) Development of improvements and new features of the existing Land Information System components and their integration forming the new eLand; (ii) Development of the land information portal and e-Services for the public, businesses and the government; (iii) Development of the mobile eLand applications; (iv) Development and project target office implementation of the digital archives (either as standalone or as part of eLand); (v) Strengthening of ATR/BPN's data centers and ICT infrastructure; (vi) Acquiring standard software and licenses; and (vii) Strengthening digital security and introduction of digital signature and electronic transaction capability.

29. Strengthening LIS will support climate change adaptation by making geospatial cadastre and registry data accessible for adaptation planning, which could be then used in climate disaster risk management planning, climate-smart agricultural planning and integrating climate aspects to land use planning.

[59] Loan funds will cover the eLand rollout to the 73 BPN/ATR offices in the project target provinces, and the countrywide rollout of the eLand system to over 470 local offices is planned under direct state budget financing.

Component 2 – Geospatial Data Infrastructure for Environmental and Natural Resource Management (US$ 10 million)

30. The objective of this component is to improve access to and the availability of geospatial information for agrarian reform, land and tenure rights administration, and environmental and natural resource management in the target provinces. The project will support the densification of the CORS network, strengthen the NSDI technology infrastructure and support the geo-referencing of existing, recent, high resolution satellite imagery for the Working Map in project target areas.

31. This component will have three sub-components:
(a) Strengthening Geodetic Framework
(b) Strengthening NSDI Technology Infrastructure
(c) Preparing Satellite Imagery for Working Maps.

2.1 Strengthening Geodetic Framework (US$3 million)

32. This sub-component will densify the CORS network in the targeted provinces to facilitate the project's fit-for-purpose participatory mapping, including the consolidation of ATR/BPN's CORS with the BIG's CORS network. The project will ensure access to at least one CORS per project target regency or city and completion of basic CORS network coverage across the project target provinces. The CORS network provides the correction data required for the PTSL GNSS[60] surveys to produce homogeneous high accuracy positioning efficiently via Real-Time Kinematic (RTK) and post-processing methods. The project financed surveys will need to meet the surveying approach and accuracy of multiple legal instruments that stipulate requirements for parcel mapping, land registration, forest boundary affirmation, indicative village administrative boundary demarcation, concession management and others, and some of these requirements are known to be excessive compared to the international practice. With the densified CORS network coverage, all accuracy requirements should be achievable with a reasonable cost structure. However, old regulations' adherence to conventional surveying methodologies will be an issue that will be addressed under 3.2, based on the pilot findings.

33. This sub-component will finance the following activities: (i) procurement of 35 GNSS[61] CORS (including CORS pillar monumentation and site installation with appropriate power and communication equipment) with an extended warranty for at least the duration of the project;(ii) upgrading of CORS operational systems to integrate CORS network services between BIG and ATR/BPN; and (iii) Consultancy, technical design and management of CORS.

2.2 Strengthening NSDI Technology Infrastructure (US$5 million)

34. This sub-component will enhance accessibility and content provided by the BIG hosted NSDI. The project will facilitate policy discussion on the line ministry release of data through NSDI as currently it is common to provide only metadata for public access. Technical upgrades to ensure feasible operations and accessibility of the BIG Data Center and Centre for Geodetic Network and Geodynamics will be advised

[60] Global Positioning System (GPS), Globalnaya Navigazionnaya Sputnikovaya Sistema (GLONASS), The global navigation satellite system of the European Union (Galileo), BeiDou Navigation Satellite System (BDS),,, Quasi-Zenith Satellite System (QZSS), etc.
[61] Global Navigation Satellite System.

and implemented, and the project produced geospatial data will be made available to the public through the INA Geoportal of NSDI. The aim will be to increase the financial sustainability of the BIG Data Center via more feasible technical solutions such as applying commonly used open source software solutions to the Geoportal, and development of new services and cost sharing models and framework agreements[62].

35. This sub-component will finance the following activities: (i) upgrading the NSDI Data Center and INA-Geoportal hardware and software solutions; (ii) consultancies; and (iii) policy dialogue and capacity building.

36. Strengthening NSDI will support climate change adaptation by making geospatial cadastre and registry data accessible for adaptation planning, which could be then used in climate disaster risk management planning, climate-smart agricultural planning and integrating climate aspects to land use planning. Specifically will (i) support the environmental protection and conservation efforts including peat land restoration and peat fire management prevention, (ii) provide the basis for climate risk preparedness by identifying assets at risk to natural hazards; (iii) inform long-term spatial planning in climate-vulnerable locations (i.e. agricultural adaptation); and (iv) serve as the initial data infrastructure for the potential future development of insurance coverage for vulnerable assets and populations.

2.3 Preparing Satellite Imagery for Working Maps (US$2 million)

37. This sub-component will maximize the use of GoI owned high resolution satellite imagery in the project target provinces. This will be achieved by outsourced technical services for ground control point surveys, and/or enhancement of the Digital Elevation or Surface Model (DEM/DSM) data to improve the quality of ortho-rectification of the satellite images. Ground control point surveys will be facilitated for the geo-referencing and ortho-rectification of satellite imagery provided by LAPAN in the project target provinces. The sub-component will finance technical services for ground control point surveys and/or DEM/DSM enhancement and ortho-rectification process.

38. Provided orthorectified satellite imagery allow monitoring of GHG emissions from land use sector and support the environmental protection and conservation efforts including peat land restoration and peat fire management prevention,

Component 3 – Project Management, Institutional Development and Monitoring (US$ 28 million)

39. The objective of this component is to ensure efficient implementation of the Project; full inclusion and transparency in the project conduct, and compliance with the World Bank's safeguards policies; and improve the institutional capacity and operational framework to implement participatory mapping based on regular community consultations and practical experiences from piloting innovative approaches and technologies. The component will also finance legal assistance to indigenous peoples, small holders and identified disadvantaged groups including women for claiming land rights in the project target areas. Also local dispute resolution and court appeals during PTSL implementation will be facilitated. The component will support: (i) project management, monitoring and evaluation to meet the procurement, fiduciary and safeguards requirements; (ii) conducting studies and analysis to strengthen the policy, legal, regulatory

[62] In Norway, over 600 participating NSDI data providers contribute to NSDI's maintenance and operational costs.

and institutional frameworks; (iii) pilots to test new practical approaches, capacity development, regulatory and institutional arrangements and innovative technologies in support of participatory mapping; (iv) awareness raising, vulnerability mapping and social monitoring for PTSL; (v) legal assistance, and support to dispute resolution and appeals for PTSL; and (vi) policy dialogue to promote land and geospatial system integration in Indonesia.

3.1 Project Management and Monitoring and Evaluation (US$9 million)

40. This sub-component will ensure efficient implementation of the project. The project implementation agencies will be ATR/BPN (primary) and BIG (secondary), and under their direct operational management with the following supporting structure to ensure smooth operations of the high-volume project.

41. Firstly, a Project Coordination Committee (PCC) will be established at the national level, co-chaired by ATR/BPN and BIG with members from the various stakeholder agencies including but not limited to MoHA, MoEF, MoEMR, BAPPENAS, CMEA, MoPWH and MoVDRT, to facilitate inter-agency coordination and cooperation of project activities. Secondly, a Project Management Unit (PMU) will be established in the ATR/BPN headquarters and small Provincial Implementation and Monitoring (PIM) offices in target provinces of the project to provide overall management to the project and to implement project components A and B. A separate Project Implementation Unit (PIU) will be established in BIG to implement Component 2 activities. PMU/PIMs & PIU will be responsible for day-to-day implementation of project activities by ATR/BPN and by BIG, respectively, the project's fiduciary functions, social and environmental safeguards implementation, and monitoring and evaluation.

42. The PMU will be located in ATR/BPN and include: (i) Project Manager/Coordinator (consultant); (ii) Financial Management (FM) specialist (consultant); (iii) Procurement Specialist (consultant); (iv) Monitoring & Evaluation specialist (consultant); (v) Contract Management specialist(s) (consultant(s)); (vi) Survey and Mapping specialist (government appointee/consultant); (vii) Land Registration Specialist (government appointee/consultant); (viii) Information and Communication Technologies (ICT) specialist (consultant); (ix) Capacity Development, Outreach and Communications specialist (Consultant); (x) Community Development, IP and Gender Specialist Secretarial, Translation and Support staff (government appointees);).); (xi) safeguards specialist for social and environment (consultant).

43. The PIM offices will be located in the ATR/BPN offices in target provinces, and include: (i) Provincial Project Coordinator (government appointee); (ii) Provincial Monitoring and Evaluation specialist (consultant); (iii) Fiduciary assistant (consultant); and safeguards technical advisor (consultant) (iv) Support staff (government appointees).

44. The PIU will be located in BIG and will include: (i) Project Coordinator (government appointee); (ii) Geospatial specialist (consultant); and (iii) Secretarial, Translation and Support staff (government appointees). The fiduciary services to the PIU will be provided by the PMU staff. BPN/ATR and BIG may also decide to implement a joint PMU.

45. A single, joint BPN-BIG monitoring and evaluation system (M&E) will be designed and implemented to assess the performance and impacts of the project. The M&E will mostly focus on

performance indicators of each project subcomponent, but also include more global project development and land governance indicators. At least three beneficiary and public perception surveys funded by the loan will be conducted throughout the lifetime of the project measuring mainly the impact of expanding electronic services and land registry coverage of ATR/BPN. The baseline survey will be carried out early on in the first project year, and the follow-up surveys will be conducted towards midterm and the end of the Project.

46. The PMU will be responsible of submitting Interim Financial Reports (IFRs) every quarter. The PMU will also provide implementation progress reports biannually reporting: (i) progress with reaching project targets, (ii) environmental and social safeguards status, (iii) procurement and disbursement progress and (iv) general qualification of the project progress. The PMU will implement the project in accordance with the provisions of the Project Operations Manual (POM) that elaborates the planning and implementation arrangements, roles, responsibilities, reporting lines, communication procedures, procurement and financial management procedures, M&E and outreach programs, social monitoring and vulnerability mapping under the project ESMF, and oversight of the project in the targeted provinces. User-friendly formats, checklists and templates for monitoring and evaluation will be included in the POM.

3.2 Strengthen Policy, Legal and Institutional Framework (US$13 million)

47. The objective of this subcomponent is to ensure that critical policy, legal and institutional issues that arise during the project pilot and implementation are addressed promptly. The sub-component will support policy, technical and legal studies to analyze current issues and challenges, develop recommendations, present findings and pursue acceptance of recommendations within government. The sub-component will promote regulatory and process strengthening that improves forest boundary affirmation, security of tenure, reduction of land disputes and conflicts, cadastral mapping, land registration, and recognition of areas and rights under customary tenure.

48. The sub-component will also fund a pilot at the initial stage of implementation to introduce an integrated and streamlined process for: inter-agency coordination to conduct indicative forest estate delineation and affirmation (through joint survey with MoEF) and indicative administrative boundaries; village level, participatory cadastral mapping; data access and data sharing arrangements; and other critical processes. The pilot will identify where the policy and legal/regulatory frameworks, institutional arrangements, contract packaging and outsourcing strategy, Quality Assurance system, and other processes need to be improved prior to roll out to other project areas.

49. This subcomponent will finance: (i) establishment of an inter-agency policy and legal/regulatory formulation team; (ii) a pilot to integrate indicative administrative and forest estate delineation and affirmation (through joint survey with MoEF), and participatory cadastral mapping (iii) a program of international and regional comparative studies; (iv) consultations and workshops to discuss key policy issues; and (v) consultancy services to develop draft policies and procedures.

50. This sub-component will contribute to long term climate change mitigation objectives by strengthening the legal and regulatory basis for forest boundary affirmation and demarcation, which will reduce encroachments, deforestation and GHG emissions.

3.3 Capacity Development, Outreach and Social Monitoring (US$6 million)

51. This sub-component will provide for the capacity development, outreach and social inclusion activities required in support of project activities for both project beneficiaries and project implementer as well as technical assistance for project implementation not provided through other sub-components. The component will enhance equal treatment of all citizens regardless of their gender, ethnicity or social status by accompanying technical field work with raising public awareness in local languages, and legal advisory services. Project support for outreach and advisory services will target Adat and ethnic communities, women and other vulnerable groups.

52. Early in the project, a thorough training needs assessment will be conducted and a detailed long-term training plan prepared, with specific training plans prepared annually considering the specific needs for informed and inclusive project implementation. The sub-component will also fund study tours and conference attendance to raise awareness on international practices and to facilitate regional peer networking. Gender and other disaggregated statistics on participants and satisfaction levels will be kept throughout.

53. Importantly, this subcomponent will finance vulnerability mapping and environmental and social monitoring services. The project will implement the project's ESMF and carry out project target area vulnerability mapping prior to commencing or participatory mapping in the area. Prior to commencing the PTSL work, a vulnerability study will be prepared identifying vulnerabilities among the targeted communities, such as unequal opportunities to defend or claim rights on land, and suggest ways how to ensure inclusion of socially vulnerable groups in the PTSL and land registration procedures, public display, and community engagement and public awareness activities. The vulnerable groups could include ethnic minorities, internally displaced people, *Adat* communities without legal rights to land, absentee owners, the illiterate, the elderly, female headed households, land holding minors, people with disability, communities located in climate-vulnerable areas such as coastal zones, landslide areas and others. Legal and other assistance will be arranged on the needs-basis. Gender related issues will be identified, reviewed and mainstreamed. Prior project activity starts Environmental and Social Assessment (ESA) will advise the bigger picture approaches on how to ensure social monitoring sensitive to issues of socially vulnerable groups and gender.

54. This subcomponent will finance: (i) training needs assessments and programs, (ii) public awareness campaigns, (iii) legal advisory services, (iv) vulnerability mapping, (v) environmental and social monitoring, and (vi) study tours and conferences.

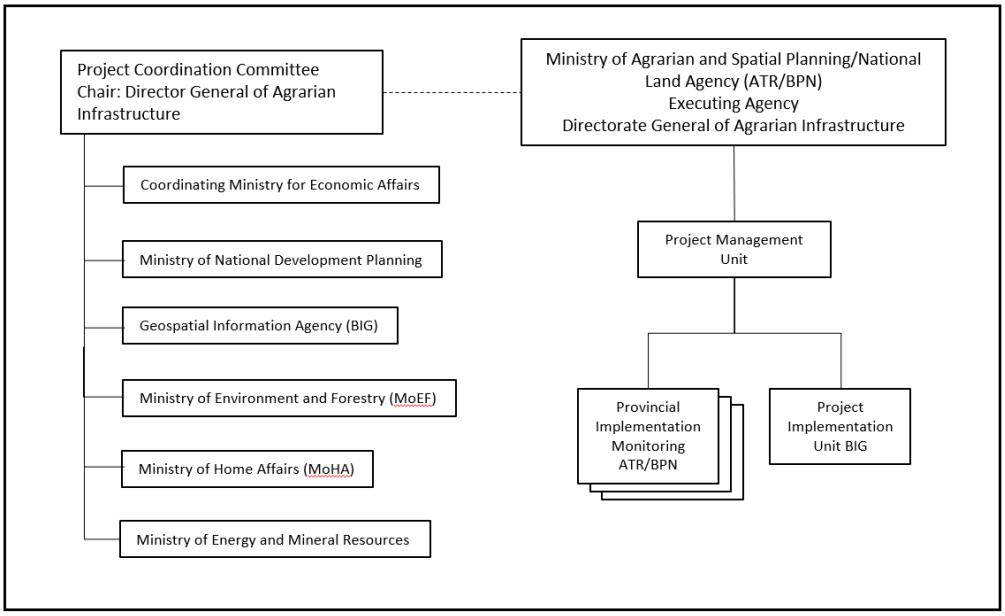
ANNEX 2: IMPLEMENTATION ARRANGEMENTS

COUNTRY : Indonesia
Acceleration Program of Agrarian Reform and One Map Policy Implementation

Project Institutional and Implementation Arrangements

1. ATR/BPN as the Executing Agency of the project will host the Project Management Unit (PMU), including at the provincial level, and take on the overall management and coordination responsibility for the project, as well as directly manage the implementation of the Project Components 1 and 3. The BIG will establish a Project Implementation Unit (PIU) for managing activities of the Component 2. MoEF, MoHA and MoEMR will participate in the project as equal partners funding their activities through national budget, or through project resources allocated to cover their operational expenses in supporting the project activities.

Figure 2.1. Administrative Structure of the project.



2. Project Coordination Committee (PCC) will be established at the national level, co-chaired by ATR/BPN and BIG with members from the various stakeholder agencies including CMEA, BAPPENAS , MoHA, MoEF, MoEMR, MoPWH and MoVDRT to facilitate inter-agency coordination and cooperation of project activities.[63] Secondly, a Project Management Unit (PMU) will be established in the ATR/BPN headquarters and small Provincial Implementation and Monitoring (PIM) offices in target provinces of the project to provide overall management to the project and to implement project components A and B. A separate Project Implementation Unit (PIU) will be established in BIG to implement Component 2 activities. PMU, PIM & PIUs will be responsible for day-to-day

[63] On February 13, 2018, the Presidential Instruction No 2 of 2018 was issued to coordinate Ministries' collaboration to implement PTSL.

implementation of project activities by ATR/BPN and by BIG, respectively, the project's fiduciary functions, social and environmental safeguards implementation, and monitoring and evaluation.

3. The PMU will be headed by a Senior ATR/BPN official as a Project Director who will report to the Head and the Director General of ATR/BPN and will oversee the work of the PMU and liaise with other participating institutions and stakeholders both at national and subnational levels. Project Implementation Unit (PIU) and Provincial Implementation and Monitoring Unit (PIM) will be headed by appointed officers who also serve as Project Officer/Commitment Making Officer (PPK) in the Government's APBN management arrangement.

4. The PMU will be located in ATR/BPN and include: (i) Project Director (government appointee); (ii) Project Manager/Coordinator (consultant); (iii) Financial Management specialist (consultant); (iv) Procurement Specialist (consultant); (v) Monitoring & Evaluation specialist (consultant); (vi) Contract Management specialist(s) (consultant(s)); (vi) Survey and Mapping specialist (government appointee/consultant); (vii) Land Registration Specialist (government appointee/consultant); (viii) Information and Communication Technologies (ICT) specialist (consultant); (ix) Capacity Development, Outreach and Communications specialist (Consultant); (x) Secretarial, Translation and Support staff ((government appointees),), and (xi) safeguards specialist: social and environment (consultant).).The PIM offices will be located in ATR/BPN Provincial Offices[64] in target provinces, and include: (i) Provincial Project Coordinator (government appointee); (ii) Provincial Monitoring and Evaluation specialist (consultant); (iii) Fiduciary assistant (consultant) and safeguards technical advisor (consultant); and (iv) Support staff (government appointees).

5. The PIU will be located in BIG and will include: (i) Project Coordinator (government appointee); (ii) Geospatial specialist (consultant); and (iii) Secretarial, Translation and Support staff (government appointees). The fiduciary services to the PIU will be provided by the PMU staff. BPN/ATR and BIG may also decide to implement a joint PMU.

6. A single, joint BPN-BIG monitoring and evaluation system (M&E) will be designed and implemented to assess the performance and impacts of the project. The M&E will mostly focus on performance indicators of each project subcomponent, but also include more global project development and land governance indicators. At least three beneficiary and public perception surveys funded by the loan will be conducted throughout the lifetime of the project measuring mainly the impact of expanding eServices and land registry coverage of ATR/BPN. The baseline survey will be carried out early on in the first project year, and the follow-up surveys will be conducted towards midterm and the end of the Project.

7. The PMU will be responsible for submitting Interim Financial Reports (IFRs) every quarter. The PMU will also provide implementation progress reports biannually reporting: (i) progress with reaching project targets, (ii) environmental and social safeguards status, (iii) procurement and disbursement progress and (iv) general qualification of the project progress. The PMU will implement the project in accordance with the provisions of the Project Operations Manual (POM) that elaborates the planning and implementation arrangements, roles, responsibilities, reporting lines, communication procedures, procurement and financial management procedures, M&E and outreach programs, environmental and social monitoring and vulnerability mapping under the project in the ESMF, and oversight of the project in the targeted provinces. User-friendly formats, checklists and templates for monitoring and evaluation will be included in the POM.

[64] *Kansil*

Financial Management

8. The project financial management arrangements will follow the government system as agreed by the Bank and to be reflected in the POM, including budgeting, internal control, accounting and reporting, flow of funds, and the auditing mechanism. The central ATR/BPN PMU will coordinate financial management aspects of the project such as financial report consolidation. The project will be implemented as central government budget including activities in the region which is to be executed by the ATR/BPN vertical organization. The financial management risk is related to the lack of ATR/BPN and BIG experience on managing World Bank funded operations and related to the dispersed locations of project activities that requires strong oversight. Based on experience on other Bank-financed operations financial management risk is also noted regarding timeliness of budget availability and weaknesses on payment verification process. The last two years audit report of ATR/BPN gave unqualified opinion to the financial statements, however, some findings related to weaknesses of payment verification that results in overpayment of works are noted in the report. Some mitigation measures are considered including: i) financial management specialists within the Technical Assistance to be placed in PMU and tasked with assisting PMU, PIM and PIU in ensuring timely availability of budget, financial reporting, and follow up of audit findings, ii) strengthening of oversight is also considered including involvement of Inspectorate General of ATR/BPN and BIG to include the project in the annual audit plan. iii) The annual audit of the project will be conducted by BPK as supreme audit institution of Indonesia, and iv) training on Financial Management aspect of Bank funded projects will be given to ATR/BPN and BIG staff. The detailed FM arrangement for the project will also be outlined in the POM agreed with the Bank.

9. **Budgeting**. The budgeting system follows the existing government procedures. The IBRD financing will be included in the annual government budget and line ministry budget document (DIPA). Budget preparation is well defined, but there are frequent delays in execution. Parallel budgeting will be made for contracts financed by loan and by counterpart funds. Counterpart funds will be utilized for Component 1 of the project to finance expenditure related to land registration and issuance of land certificates

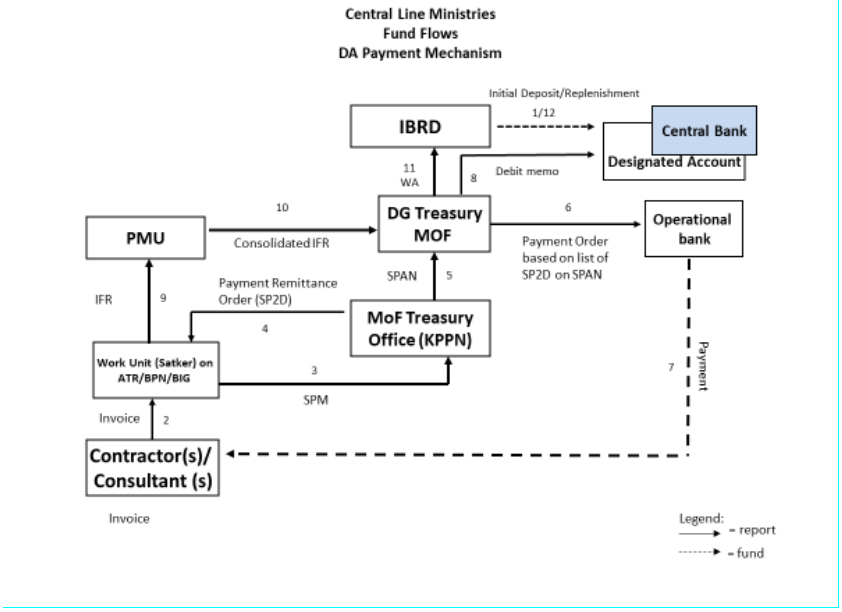
10. **Accounting and Reporting**. The PMU and PIUs offices maintain separate accounting records for all payment orders (SPM) and remittance orders (SP2D) on a cash basis in accordance with Ministry of Finance regulation 224/PMK.05/2016. All financial transactions are recorded in the government accounting system and included in government accountability reports. The original records are maintained in the file for auditing purposes. The PMU will prepare a set of consolidated financial reports (Interim Financial Reports - IFR) for project monitoring purpose and for requesting advance from the Bank. The PMU can obtain the financial information needed to prepare the IFR from the government treasury information system (SPAN). The PMU is responsible to submit the report to the Bank no later than 45 days after the end of each quarter.

11. **Internal Control**. The payment verification process will rely on government systems. Direct and independent documentary evidence will need to be furnished to the implementing agencies for them to verify completion before payments are released to third parties. For civil works and workshop/training activities, payment validation procedures will require attachment of direct original supporting evidence of completion of all these activities. in addition to the existing verification procedures, the PMU/PIM/PIU will assign staff within PMU/PIM/PIU to conduct detailed verification of the contractors and consultants' invoices prior to issuance of payment requests. This control measurement can be further improved through the provision of verification guidelines, and through improving the accountability of the verification team, such as official appointment of the team. Strengthening of oversight is necessary including involvement of Inspectorate General of ATR/BPN and BIG

to include the project in the annual audit plan.

12. **Fund Flow**. Designated Account (DA) denominated in US dollars will be opened by DG Treasury (MoF) in the Bank Indonesia (Central Bank) specifically for the project. Access to funds in the DA for payment to third parties will follow government's treasury system. Work unit in ATR/BPN or BIG will review request of payment from 3rd parties (consultants/contractors) and SPMs to treasury office (KPPN) for payment. The treasury office input the payment request to the treasury information system (SPAN) and the DG treasury of MoF will issue payment order to operational Bank to process the payment. The work unit in ATR/BPN or BIG submit to PMU information of all payments remittance (SP2Ds) charged to the projects to use as basis to develop consolidated withdrawal applications. PMU submit to WB through MoF the consolidated withdrawal application to record the expenditures and request additional fund. The fund flow of the project is described in Figure 2.2 below.

Figure 2.2. Administrative Structure of the project.



13. **Audit Arrangements**. The project will be subject to external audit by the BPK as Supreme Audit Institution of Indonesia. Each audit will cover a period of one fiscal year of the recipient. The audits will be conducted based on TOR agreed with the Bank. Audit reports and audited financial statements will be furnished to the Bank by not later than six months after the end of the fiscal year concerned and shall be made available to the public. The audit will go beyond merely providing an opinion on the financial statements, but will also include opinions on internal control frameworks and compliance with the loan covenants and related regulations.

Disbursements

14. The applicable disbursement methods are Advance and Reimbursement. A Designated Account (DA)

denominated in US dollars will be opened in Bank Indonesia (central bank) under the name of Ministry of Finance. The DA will be a segregated account solely used to finance eligible project expenditures. Payments from the DA will follow the government mechanism and authorized by MoF's treasury office. The ceiling of the advance to DA will be variable based on six months projected expenditures. Report of the use of the DA fund and request for additional advance will be based on the quarterly IFR which should be submitted to the Bank no later than 45 days after the end of each quarter and consist of: (i) list of payments for contracts under Bank's prior review and records evidencing such expenditures, or (ii) statement of expenditures (SOEs) for all other expenses; (iii) DA reconciliation statement; (iv) IFR; and (v) projected expenditures for the next six months. PMU will be responsible for reconciling the DA and preparing applications for withdrawal of advances and preparing reports on the use of the DA, duly approved by DG Treasury before submission to the Bank. All documentation for the expenditures as reported for disbursements will be retained at the implementing units and shall be made available to the auditors for the annual audit and to the Bank and its representative if requested. The proceeds of the loan will be disbursed against eligible expenditures as in the disbursement category table below:

Table 2.1. Eligible Expenditures.

Disbursement Category	Amount of the Loan Allocated *(expressed in US$)*	Percentage of Expenditures to be Financed *(inclusive of taxes)*
(1) Goods, works, Incremental Operating Costs, Training, non-consulting services, and consulting services for the Project activities other than land registration which activity is 100 percent National Budget financed.	200,000,000	100
TOTAL AMOUNT	**200,000,000**	

Procurement

15. All Procurement under the IBRD-financed portion of the project shall be carried out under the World Bank's Procurement Framework in accordance with the Procurement Regulations for IPF Borrowers dated July 2016 revised and November 2017, and the provisions of the Loan Agreement. For procurement of goods, works and non-consultant services procured through National Competitive Bidding, the Government's procurement regulations may be used to the extent they do not conflict with the Bank's Procurement Regulations and subject to the eight requirements listed in para. 5.4 of the Bank's Procurement Regulations and which are incorporated model bidding documents acceptable for the World Bank and for national open competitive procurement. In such case of a conflict or difference in opinion arising during the procurement process, the Bank shall provide clarification in writing which shall be followed. The Government's SPSE65 e-procurement may only be used for procurement of Goods, Works and non-consultant services under the Request for Bids method through the national open competitive procedures and using the harmonized model bidding documents agreed between the Bank and LKPP (the national public procurement agency). Furthermore, the SPSE e-procurement system modified by MPWH may be used only for selection of consultant firms under the QCBS method and using the Bank's standard Request for Proposal document adjusted satisfactory to the Bank for electronic use. Procurement under

[65] Sistem Pengadaan Secara Elektronik.

all other methods shall be carried out through non-electronic process with manual issuance of invitation for bids and receipt of bids, until such time that the modifications of the SPSE e-procurement system has been completed by LKPP/MPWH acceptable to the Bank, which will be confirmed through the Bank's written no objection. During project implementation, the Bank's Systematic Tracking of Exchanges in Procurement (STEP) tool shall be used to record all procurement and contract implementation processing under the Project.

16. Based on the preliminary assessment at this stage, it is envisaged that there will be several consulting assignments requiring hiring of firms particularly under components 1, 2 and 3 of the Project, for which the Quality-and Cost Based Selection (QCBS) method is likely to be followed. Goods for survey and mapping equipment, CORS equipment and software are also expected to be procured under sub-components 1.4 and 2.1 respectively. Procurement of non-consulting services is expected to include hiring of firms for carrying out participatory mapping and community engagement and public awareness campaigns in seven pilot provinces. No procurement of major civil works is envisaged under the Project except minor civil works for renovation of BPN's provincial office. According to the Project Procurement Strategy for Development (PPSD) and Procurement Plan most of the goods and non-consultant services requirements of the Project will be consolidated into larger procurement packages and procured following Request for Bids method through Open international competitive market approach. Trainings and workshops are also expected under the project for improving institutional capacity and the operational framework but it has not yet been decided whether these will require hiring of service providers or PMU/PIU will conduct by themselves.

17. ATR/BPN will establish a PMU and BIG will have a PIU. Both Implementing Agencies have not decided yet whether the existing Pokja ULP (Procurement Service Unit) will be assigned to carry out all procurement activities under the project or new Pokja ULP will be established. However, it was informed by ATR/BPN that all procurement activities are expected to be carried out at central level by ATR/BPN and BIG except for procurement of participatory mapping with survey, renovation of BPN's provincial office and procurement of upgrade office equipment will be carried out by Pokja ULP under BPN's provincial level. PPSD includes the market analysis, procurement capacity and risk assessment to arrive at the Procurement Plan with the appropriate procurement packages, method of procurement, Bank's review requirements consistent with the Bank's standard thresholds based on the procurement risk. The PPSD and Procurement Plan for the first 18 months have been prepared. The Procurement Plan will be updated in agreement with the Bank at least annually, or as required to reflect the actual project implementation needs and improvements in institutional capacity within the project, and published in the Implementing Agency's website as well as in UNDB online.

18. ATR/BPN and BIG have some limited previous experience in carrying out procurement under the Bank's Procurement Guidelines (Land Management and Policy Development Project) and the other donor's financed project respectively, but does not have any experience in applying the Bank's Procurement Regulation under the Procurement Framework While the PPSD with detailed procurement assessment was completed by Appraisal, and the procurement risk was found substantial and the identified mitigation measures are listed below.

19. Procurement Risks:

a. Delays due to weak procurement capacity of ULP and with limited understanding of the Bank's procurement procedures;
b. Inadequate procurement planning and monitoring, and weak contract management by the PPK.
c. Procedural non-compliance due to implementing agencies' insistence to follow the Government's Procurement procedures instead of the Bank's Procurement Regulations, which govern

procurement under the Project;

d. Rejection of lower priced bids due to narrow interpretation of qualification criteria;
e. implementing agencies' insistence to use national use e-procurement systems for international competitive procurement and for consultant selection methods other than QCBS even though such e-procurement systems are not ready for use in Bank-financed contracts.

20. The risks will be mitigated by:

f. The Bank will deliver the training to PMU/PIU on the Procurement Regulations for IPF Borrowers
g. Required use of the Bank's online procurement planning and tracking tools (STEP);
h. Including an explicit provision in the Project Operations Manual to highlight that the Bank's Procurement Regulations shall govern all procurement under the Project and take precedence over Government procurement regulations;
i. Specifying qualification criteria in bidding documents in an explicit manner such that there is no rejection of lower priced-bids without seeking written clarifications from bidders on historical and factual qualification information if not provided in the bid.
j. Using manual bidding process for international competitive procurement and other than QCBS method for selection of consultants until such time that the e-procurement system is determined acceptable to the Bank for such procurement.
k. In addition to the Bank's prior review of strategically-important and large value or complex contracts based on the Bank's standard prior review thresholds linked to risk, the procurement supervision in the field will be conducted at least twice per year, including delivering training and carrying ex-post reviews of no less than 20 percent of the contracts subject to the Bank's post review.

Environmental and Social (including safeguards)

21. Implementation of environmental and social safeguards will be nested within the PMU at the central level and PIM at the provincial level. A safeguard teams will be established in the PMU and will lead day-to-day management, oversight and facilitate capacity building to program implementing entities (i.e. staff at district land offices and third-party licensed surveyors). At the provincial level, the PIM will be staffed with additional technical advisors who are responsible for the program's public relations (i.e. managing inquiries from the public and CSOs/NGOs), awareness raising, as well as oversee environmental and social risks as they emerge. These advisors will report to the PIM coordinator. Overall public relations and grievance redress management will be handled by the Public Relations Bureau of ATR/BPN which will be part of the PMU. Overall analytical work, including environmental and social vulnerability mapping and monitoring will be managed by the Research Department of ATR/BPN. The TORs for safeguards and technical specialists in PMU, PIM as well as the technical specifications for the TOR for environmental and social vulnerability mapping and monitoring will be consulted and reviewed by the Bank's Safeguards Specialists. The Bank will deliver training to PMU/PIM on Safeguards Policies and their application to the project after the loan effectiveness, and on a regular basis during the project implementation. The Bank's safeguards team will conduct implementation support missions approximately every 6 months.

Monitoring and Evaluation

22. The PMU of ATR/BPN will be responsible for project implementation monitoring with inputs from the PIU in BIG. Monitoring and Evaluation (M&E) will be essential in tracking the effectiveness of the project, and it will

focus on progress under the components, along with financial management, procurement, safeguards and progress on achievement of results indicators. A project performance and evaluation system will be established in the first few months of project implementation. Baseline will be confirmed during the first year of the project implementation. A Grievance Redress Mechanism set up in ATR/BPN will monitor feedback received from beneficiaries of the project. ATR/BPN will respond to all feedback, and the information gathered will also be used to improve services provided and to mitigate against negative social impacts on individuals and vulnerable groups, including female-headed households, women, adat groups, and IPs.

23. A dedicated officer in the PMU will be assigned with the M&E function to provide not only statistical reports but also analysis for the quarterly progress reports, which will be provided to ATR/BPN, BIGBIG, the Bank team and the PC. The PMU will ensure the direction of the project implementation in achieving its development objective. The monitoring and evaluation arrangements will be detailed in the POM.

24. The Project's Results Framework provides the basis for measuring progress towards the PDO. It includes the PDO-level outcome indicators related to parcel mapping and land registration progress in the target areas, and broader intermediate results indicators with baselines and targets for main project activities. The monitoring and reporting formats will require gender-disaggregated information, to better understand changes in gender relations and improvements in gender equality, particularly in terms of decision-making, joint landholding and economic empowerment. This will be evaluated in terms of control overs assets and access to services, agency and meaningful participation, informal and formal policies, and gender-responsive budget allocations. In Indonesia data on shared decision-making is mixed, depending on context and social groups. Decentralization has resulted in the erosion of women's rights in some regions. Also, while women's rights are well respected in some communities in Indonesia, in others practices inhibit women's agency and voice (even matrilineal societies) thereby reinforcing and perpetuating gender inequalities.

Role of Partners (if applicable)

25. The World Bank Group partnerships with bilateral donors will be leveraged for complimentary technical assistance support to the project non-exclusively including from the World Bank's Natural Resources for Development (NR4D) Trust Fund supported by the Government of Canada, the Indonesia Infrastructure Support (INIS) trust fund by the Government of Australia, and the World Bank's Multi-Donor Trust Fund for Sustainable Landscapes Management (MDTF-SLM).

ANNEX 3: IMPLEMENTATION SUPPORT PLAN

COUNTRY : Indonesia
Acceleration Program of Agrarian Reform and One Map Policy Implementation

Strategy and Approach for Implementation Support

1. The Implementation Support Plan (ISP) describes how the World Bank will support the implementation of the risk mitigation and provide the technical advice necessary to facilitate the implementation of project activities for achieving the project development objective. The main objective of the ISP is to ensure timely award of contracts, quality of consultants' outputs including timely review and decision-making on outputs by ATR/BPN and BIG, effective knowledge transfer, and adherence to the implementation schedule.

2. The ISP also identifies the minimum requirements to meet the World Bank's fiduciary obligations. Emphasis will be placed on upstream reporting, auditing and accountability, and technical compliance measures to ensure early detection and remedy of problems.

3. The PMU will prepare and submit to the Bank a detailed project implementation progress report on a bi-annual basis, which will provide the status of project activities and identify implementation issues. These reports combined with site visits will be used as the basis for undertaking substantive reviews of implementation progress and reaching agreement with the client on: (i) the outcome of the reviews, (ii) project areas requiring strengthening and more targeted capacity building, (iii) approaches for the resolution of implementation issues, and (iv) revision of the implementation schedule and verification of consistency between the project activities as planned and the financing plan, if needed. The PMU will also submit an annual work plan, updated budget, training and procurement plan at the end of the calendar year for World Bank non-objection for the following year.

4. The Bank's project team will provide timely and effective implementation support through a combination of regular supervision and liaison with the client from headquarters (via audio/video) and semiannual implementation support missions in-country. An effort will be made to have a project focal person in the country office in Jakarta to provide more effective supervision and timely implementation support to ATR/BPN. Key members of the Bank's team, including the procurement and financial management are based in the country office and will also provide timely support and guidance.

Implementation Support Plan and Resource Requirements

5. **Technical inputs**. Technical knowledge of land registration and cadastre, information technology, property valuation, geographic technical standards and engineering works and site supervision are required for reviewing bid documents to ensure fair competition through proper technical specifications and fair assessment of the technical aspects of bids/contracts. During project implementation, technical supervision is required to ensure contractual obligations are met. The Bank's Project team and PMU staff will conduct site visits to regional and local offices and other government agencies on a regular basis throughout the duration of the Project to review ICT roll-out progress and other project activities.

6. **Fiduciary requirements and inputs**. Training will be provided by the Bank's financial management specialist and the procurement specialist during project implementation. The team will support the PMU in their financial management capacity and to improve procurement management efficiency. The financial management and procurement specialists will be based in the field and thus be able to provide timely support. Supervision of financial management arrangements will be carried out semi-annually as part of the project supervision plan and support will be provided on a timely basis to respond to client needs. Procurement supervision will be carried out on a timely basis as required by the client. Concerning financial management, the World Bank will conduct risk-based financial management implementation support and supervision within six months from the project effectiveness date, and then at appropriate intervals, as part of its project implementation and supervision missions. During project implementation, the World Bank will supervise the project's financial management arrangements in the following ways: (i) review the project's quarterly IFRs as well as the project's annual financial statements and the auditor's management letters and remedial actions recommended in the auditor's management letters; and (ii) during the World Bank's on-site missions, review the following key areas: (a) project accounting and internal control systems; (b) budgeting and financial planning arrangements; (c) disbursement arrangements and financial flows, including counterpart funds, as applicable; and (d) any incidences of corrupt practices involving project resources. As required, a World Bank-accredited financial management specialist will participate in the implementation support and supervision process.

7. **Environmental and Social Safeguards**: The Bank's environmental and social safeguards specialists will provide regular support in strengthening the safeguards management capacity of ATR/BPN. In particular, during the implementation the environmental and social safeguards specialists will conduct an assessment of a) project's adherence to the ESMF; b) ATR/BPN capacity in the handling of risks and impacts with regards to personnel, resourcing, and procedures for risk management. Such an assessment will be conducted on a regular basis (bi-annually). Technical safeguards missions will be conducted based on needs and if there are risks emerging and not identified/covered under ATR/BPN's risk management strategy. In addition, the World Bank safeguards specialists will also assist ATR/BPN in a) conducting risk screening and environmental and social mapping prior to the implementation of PTSL activities, b) assessments of projects' impacts on the vulnerable groups and Indigenous Peoples and their perceptions of the project (beneficiaries' satisfaction assessments), c) risk assessments with regards to access restrictions and resettlement associated with forest tenure settlements and the capacity and commitments of responsible entities (i.e. MoEF) to fully comply with an agreed resettlement plan in line with OP/BP 4.12. A workplan for these assessments will be agreed between ATR/BPN and the World Bank once the relevant specialists in the PMU have been recruited. Thematic joint-missions to oversee the implementation of these assessments will be conducted based on needs, d) training delivery to PMU/PIM on Safeguards Policies and its application and conducting regular implementation support mission

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First twelve months	Start-up of large consultant support contracts, and review of bidding documents; M&E arrangements/ defining baselines;	Project Management/Operations/M&E Cadastre and Geodesy ICT Legal FM	$1,000,000	Trust Fund support need estimate: 750,000

	Support with implementation of institutional capacity building	Procurement Social Environmental		
12-48 months	Supervision and M&E	Technical, Social	$500,000/y	Trust Fund support
Other				

Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Project management	10/year	2/year	
Operations	4/year	2/year	
Land Administration/Legal	5/year	2/year	
Cadastre Specialist	5/year	2/year	To be adjusted annually based on actual budgets provided
IT expertise	6/year	3/year	
Social	2/year	1/year	
Environmental	2/year	1/year	
Procurement	2/year		
Financial Public	1/year		
Communications	1/year		

Partners

Name	Institution/Country	Role

ANNEX 4: ECONOMIC ANALYSIS

COU **COUNTRY : Indonesia**
Acceleration Program of Agrarian Reform and One Map Policy Implementation

Introduction

1. The Indonesian economy is based mainly on extraction of non-renewable resources (16 percent of GDP, 40 percent of exports), as well as agriculture and forestry (together 34 percent of GDP), which employs more than a third of its labor force. On the other hand, Indonesia also holds the world's third-largest tropical forest, which is globally significant due to its extent, biodiversity, and carbon storage capacity. These conflicting socio-economic and environmental forces are evident on the pressures to land and natural resources. Agriculture, timber production, mineral extraction and rapid urbanization, together with weak land/natural resources governance and administration, have increased speculative encroachment and land conversion, diminishing and degrading forests and the environmental services they provide which consequently disrupts traditional forest/rural livelihoods and settlements, further promoting poverty.

2. The Project's economic benefits are driven by clarity over land use and land rights, thus improving tenure rights, sustainable landscape management, land governance, social stability, access to land for investments, inclusive growth, and environmental protection and conservation. The main activity of the project is the participatory mapping and registration of non-Forest Areas which will have great impacts on enhancing tenure security of 4.3 million parcels, providing land rights' recognition to indigenous communities and adat groups, minimize land conflicts, improving access to finance to landowners by using their land as collateral, and strengthening the fiscal capacity of local governments through the increase in taxes and levies collection such as Land and Building Tax .The project is also expected to provide more accurate geospatial data and will support the delineation of indicative Forest Area boundaries and eventual affirmation (through a legal MoEF process) which will have substantial impacts for forest management and biodiversity conservation. For example, the project areas overlap or are close to Key Biodiversity Areas (KBA) which are sites contributing significantly to the global persistence of biodiversity, representing the most important sites for biodiversity conservation worldwide, and providing direct economic benefits. The project is also expected to improve existing policy and regulatory framework which will help to sustainably manage lowlands, restore and sustainably develop peatlands, and streamline access rights to natural resources by licenses and concessions. For example, peatlands are being drained and cleared across Indonesia to make way for palm oil plantations. This not only releases millions of tons of carbon into the atmosphere, but it also dries the land, making it susceptible to devastating fires. The World Bank has estimated that the reduction of economic and environmental costs from fires in 2015 was approximately US$ 16.1 billion[66].

3. Overall, there are many direct and indirect expected benefits from the project; however, the economic analysis of the project will only quantify: a) the benefits from mapping and registration of 4.3 million parcels, and b) the indicative demarcation of Forest/non-Forest Areas boundaries for 16 percent of the villages in the Project's

[66] Glauber, A. J., et al. "The cost of fire: an economic analysis of Indonesia's 2015 fire crisis." The World Bank http://pubdocs. worldbank. org/en/643781465442350600/Indonesia-forest-fire-notes. pdf.

target area.

Economic benefits from participatory mapping and registration

4. To estimate the economic benefits of mapping and registration, a similar approach and data inputs from a previous Land Administration project in Indonesia will be used. The Land Administration Project - P003984 (LAP) was a project implemented during the 90s and its main output was the sporadic and systematic land registration of over two million parcels in urban, peri-urban, and rural areas. After the completion of LAP, an impact evaluation[67] was carried out and estimated the benefits of the project under the premise that security of tenure increases as households perceive ownership or the possession of documents issued by the Government to be valid and old disputes are resolved, and consequently, this will have a positive effect on household strategies in the management of resources and investment, resulting in greater wellbeing and an increase in household income[68]. LAP calculated the increase in land values to project beneficiaries and used it as a proxy to measure enhanced security of tenure due to land registration. On average about 37 percent and 52 percent of the land price increase in urban and rural areas, respectively, could be attributed to land registration[69].

5. Typically, without data constraints, an econometric technique (hedonic pricing model) is utilized to isolate the many factors that affect land prices besides land registration (family characteristics, consumption per capita, education level, age, and gender of the household head, etc.). However, due to lack of reliable data, the economic analysis of OMP will utilize LAP's impact evaluation results (benefits transfer) and will re-calculate the benefits of registering 4.3 million parcels. Table 1 presents the expected benefits by regency, assuming a very conservative increase of 25 percent in land value due to land registration. As a result, the expected benefits from participatory mapping and registration will be approximately US$305 million, however, given that the registration of new rights will be implemented in several years, the present value of these land regularization benefits is equal to US$211 million.

Table 4.1 – Benefits from land registration by Districts (US$)

Province	District	Target Parcels Numbers	Avg Size of Parcel	Average Value per Ha	Total Benefits
JAMBI	SUNGAI PENUH	8030	0.06	553.08	$71,170
	BATANGHARI	9853	0.78	98.02	$189,408
	KERINCI	11790	0.14	553.08	$221,869
	TANJUNG JABUNG TIMUR	12527	1.10	553.08	$1,909,462
	MUARO JAMBI	24970	0.53	421.28	$1,398,025
	TANJUNG JABUNG BARAT	27918	0.78	776.37	$4,215,179
	TEBO	45415	1.20	553.08	$7,555,478
	SAROLANGUN	58125	0.88	553.08	$7,063,618

[67] Implementation Completion and Results Report CPL-37920; SCL-3792A; SCPD-3792S

[68] For more details see "Economic Analysis of Rural Land Administration Projects" by Stefano Pagiola - https://www.researchgate.net/profile/Stefano_Pagiola/publication/23748816_Economic_Analysis_of_Rural_Land_Administration_Projects/links/0c960519b6fc589f78000000.pdf.

[69] Other economic and social benefits from LAP included: 1) an average increase of 12.8 percent in the mortgaging of land with certificates as collateral, 2) an average net impact on investment in land improvements of 5.3 percent, and 3) an average 1.7 percent increase on the extent of land transactions in the project area. Sumarto, Sudarno, et al. "An Impact Evaluation of Systematic Land Titling under the Land Administration Project (LAP)." (2002).

	BUNGO	60245	0.92	569.31	$7,885,083
	MERANGIN	113644	0.94	900.41	$23,946,831
KALIMANTAN BARAT	KAYONG UTARA	12412	0.50	255.30	$397,120
	MELAWI	18612	0.66	191.75	$591,886
	SEKADAU	41928	0.90	51.62	$488,295
	BENGKAYANG	67799	0.77	191.75	$2,491,179
	SANGGAU	77542	0.87	28.47	$478,318
	SINTANG	86709	0.76	191.75	$3,149,839
	SAMBAS	91503	0.38	121.10	$1,054,955
	KAPUAS HULU	97957	0.68	191.75	$3,215,180
	PONTIANAK	100000	0.05	261.42	$303,895
	LANDAK	193142	0.72	191.75	$6,692,131
	KETAPANG	203811	0.70	295.45	$10,525,816
	KUBU RAYA	200000	0.44	328.87	$7,164,512
KALIMANTAN SELATAN	HULU SUNGAI UTARA	16970	0.15	355.07	$232,282
	TANAHBUMBU	21423	0.66	185.04	$653,084
	TABALONG	25187	0.36	707.12	$1,613,155
	BALANGAN	31819	0.20	355.07	$555,007
	HULU SUNGAI TENGAH	33978	0.15	355.07	$447,289
	HULU SUNGAI SELATAN	35200	0.16	355.07	$510,557
	KOTABARU	51963	0.53	329.02	$2,284,994
	TAPIN	57711	0.66	355.07	$3,370,296
	BANJAR	65862	0.08	732.38	$998,484
	BARITOKUALA	66571	0.56	107.94	$998,791
	TANAH LAUT	91977	0.55	68.91	$872,700
KALIMANTAN TENGAH	MURUNG RAYA	5925	0.81	728.22	$870,923
	LAMANDAU	7638	0.72	728.22	$999,100
	SUKAMARA	10198	0.58	728.22	$1,071,070
	KOTA PALANGKARAYA	10535	0.14	1215.65	$440,876
	KATINGAN	12521	0.45	240.79	$340,763
	BARITO UTARA	14730	0.94	728.22	$2,526,401
	KOTAWARINGIN BARAT	15880	0.59	728.22	$1,709,757
	BARITO SELATAN	20250	0.46	728.22	$1,708,008
	KOTAWARINGIN TIMUR	34184	0.56	728.22	$3,466,415
	BARITO TIMUR	44657	0.40	728.22	$3,274,775
	SERUYAN	47132	0.63	728.22	$5,426,380
	KAPUAS	67257	0.82	728.22	$9,998,834
	PULANGPISAU	144753	0.75	728.22	$19,762,115
KALIMANTAN TIMUR	KUTAI BARAT	18949	0.64	1156.85	$3,495,885
	PENAJAM PASER UTARA	21063	0.36	1156.85	$2,172,300

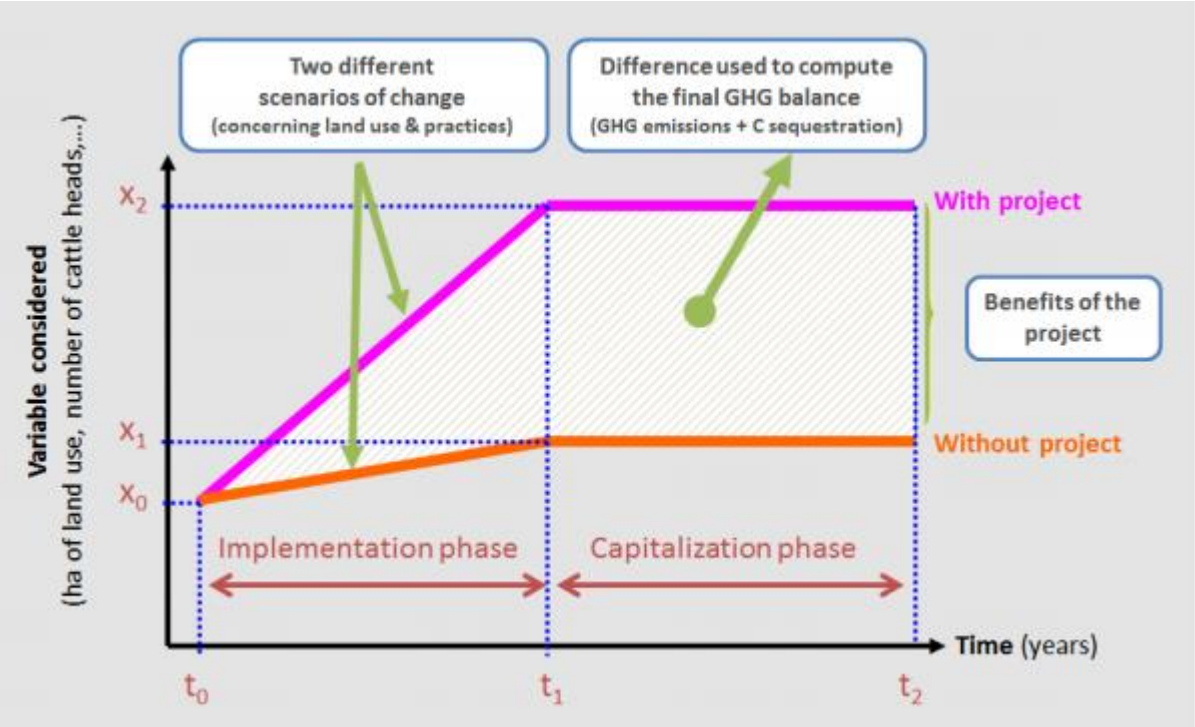
	MAHAKAM ULU	26836	0.60	1156.85	$4,630,150
	BERAU	50535	0.42	1156.85	$6,161,850
	PASER	71844	0.78	815.67	$11,372,941
	KUTAI KARTANEGARA	128416	0.57	1048.13	$19,210,361
	KUTAI TIMUR	200635	0.82	1606.76	$65,772,012
RIAU	PELALAWAN	8598	0.82	133.33	$236,328
	INDRAGIRI HILIR	9846	0.74	352.76	$638,903
	SIAK	10055	0.81	352.76	$715,866
	ROKAN HILIR	10239	0.61	352.76	$548,734
	KAMPAR	10242	0.57	216.20	$314,880
	BENGKALIS	10270	0.43	708.73	$785,736
	INDRAGIRI HULU	72607	0.89	352.76	$5,687,276
SUMATERA SELATAN	PAGAR ALAM	11038	0.19	95.31	$50,288
	PRABUMULIH	13999	0.13	162.28	$71,504
	EMPAT LAWANG	42904	0.13	198.83	$283,432
	LAHAT	47661	0.31	162.28	$603,095
	MUSI RAWAS	60308	0.61	162.28	$1,488,577
	OGAN ILIR	70457	0.51	41.47	$369,555
	OGAN KOMERING ULU SELATAN	71915	0.45	162.28	$1,303,249
	OGAN KOMERING ULU	76241	0.68	193.36	$2,512,344
	OGAN KOMERING ULU TIMUR	77480	0.45	162.28	$1,404,099
	MUSI BANYUASIN	116301	0.96	216.27	$6,043,482
	MUARA ENIM	155173	0.57	162.28	$3,592,154
	LUBUK LINGGAU	20000	0.10	299.24	$153,812
	OGAN KOMERING ILIR	203952	0.92	92.20	$4,314,720
	BANYUASIN	204845	0.70	161.56	$5,764,247
	Total	**4,320,662.00**	**0.57**	**460.05**	**$304,839,087**

Economic benefits from Forest Demarcation

6. Agriculture, Forestry and Land Use Change (AFOLU) are major sources of green-house gases (GHG), contributing 24 percent of global emissions, or about 10-12 Gt of CO_2 equivalents per year. One key technical option to lower GHG and also contribute to increased food security and reduced rural poverty is sequestering carbon through conservation farming practices, improved forest management practices, afforestation and reforestation, agro-forestry, improved grasslands management, and restoration of degraded land. To estimate the economic benefits of better access to geospatial data and demarcation/legal recognition of forest areas, the GHG emission reduction will be estimated using the Ex-Ante Carbon-balance Tool (EX-ACT) developed by FAO . The EX-ACT is an appraisal system which estimates the impact of agriculture and forestry development projects, programs and policies on the carbon-balance. The carbon-balance is defined as the net balance from all greenhouse gases (GHGs) expressed in CO_2 equivalent that were emitted or sequestered due to project implementation as compared to a business-as-usual scenario. EX-ACT's data requirements are similar to the usual

data required for ex-ante economic project analyses. Ex-ante project evaluation compares the impacts of a planned intervention to the business-as-usual scenario (See Figure 1).

Figure 4.1 – Environmental Economic Analysis framework



7. x_0 denotes the initial situation of land use and management practices in the project area, which in this project is estimated to be approximately 22 million hectares[70]. Intervention due to the project (With-Project scenario) will result in an increase in the area that benefits from improved management, to x_2. In the absence of project intervention (Without-Project scenario) this increase will likely be smaller – only x_1 hectares will benefit from improved management (see Baseline scenario building). Thus, EX-ACT differentiates between two time periods. The first is the implementation phase, which defines the time period in which active project activities are carried out. This phase runs from t_0 until t_1 (5 years). Thus, the period covered by the analysis does not necessarily end with the termination of the active project intervention. Once an equilibrium in land use and agricultural practices is reached at t_1, further changes may occur due to the prior intervention, for instance, in soil carbon content or in biomass. This period is defined as the capitalization phase and lasts from t_1 until t_2 (5 years). The difference in activity data between the With- and Without-Project scenarios serves as the input data for calculating the carbon-balance of the project.

8. During the OMP project, three types of impacts that will affect GHG balance are expected: 1) reduction in deforestation, 2) afforestation and 3) land use changes. For deforestation it was assumed that without-project Indonesia's 1990-2000 historical deforestation rate of 1.6 percent[71] will apply, and with the project this will be

[70] Estimated using geospatial analysis and MoEF and ATR/BPN data
[71] https://rainforests.mongabay.com/deforestation/archive/Indonesia.htm

improved by 20 percent to 1.3 percent. Therefore, the expected deforestation area saved by the project will be equivalent to 330.000 hectares in 5 years. From 2001 to 2012, Indonesia gained around 7 million hectares of trees[72], which is equivalent to around 700,000 hectares year. Therefore, for afforestation it was assumed that without-project the afforestation will be approximately 1 million hectares for the seven target provinces and with the project this will be improved also by 20 percent. Therefore, the additional afforested area by the project will be equivalent to 200.000 hectares. Finally, the land use changes assumptions are shown in the following table:

Initial land use		Final land use	Fire Use? (y/n)	Area transformed (ha)	
				Without	With
Annual Crop	→	Perennial/Tree Crop	YES	-	348,454
Perennial/Tree Crop (<5yrs)	→	Other (degraded)	YES	-	225,487
Flooded Rice	→	Perennial/Tree Crop	YES	-	17,287
Grassland	→	Perennial/Tree Crop	YES	-	3,014
Degraded Land	→	Perennial/Tree Crop	YES	-	691,847
Other Land	→	Perennial/Tree Crop	YES	-	371,790

9. Comparing the gross results of the with- and without-project scenarios demonstrates the difference that may be achieved through the project. This is referred to as the project's carbon-balance and is presented in Table 4.2. As a result, and using very conservative assumptions it is expected that the project will mitigate 630 million tons of CO_2.

Table 4.2 – ExAct results. Total GHG mitigated expressed in CO_2 tons

Components of the project	Gross fluxes		Balance
	Without	With	
	All GHG in tCO2eq		
	Positive = source / negative = sink		
Land use changes			
Deforestation	1,412,064,105	1,136,903,470	-275,160,634
Afforestation	-48,236,250	-57,883,500	-9,647,250
Other LUC	0	-59,243,122	-59,243,122
Agriculture			
Annual	0	0	0
Perennial	-450,983,746	-736,958,121	-285,974,375
Rice	0	0	0
Total	912,844,109	282,818,728	**-630,025,381**
Per hectare	37	11	-25
Per hectare per year	3.7	1.1	-2.5

[72] https://www.globalforestwatch.org/country/IDN

10. GHG emissions can be priced explicitly through carbon pricing (i.e. emissions trading system - ETS[73]) or implicitly through domestic policy instruments such as energy taxes, energy efficiency trading, and support for renewable energy. The range of carbon prices across existing initiatives continues to be broad. Observed carbon prices span from less than US$1/tCO$_2$e to US$131/tCO$_2$e with about three quarters of the covered emissions priced below US$10/tCO$_2$e[74]. For the purpose of this exercise, a very conservative stance was taken and it was assumed that the price of a ton of carbon dioxide equivalent is US$1.

Net present value and Economic Internal Rate of Return

11. Assuming a 5-year implementation and 5-year post-project period as well as a discount rate of 12 percent, the net present value (NPV) of the OMP is estimated at USD 270 million and the economic internal rate of return (EIRR) is estimated at 61 percent. Since the NPV is positive and the EIRR is greater than the discount rate, the Project is considered economically viable and beneficial.

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Registration Benefits	30.48	60.97	60.97	76.21	76.21	-	-	-	-	-
Environment Benefits	-	-	-	-	-	63.00	94.50	126.01	157.51	189.01
Project Cost	(72.00)	(72.00)	(36.00)	(36.00)	(24.00)	-	-	-	-	-
Net Benefits	(41.52)	(11.03)	24.97	40.21	52.21	63.00	94.50	126.01	157.51	189.01

	Net Present Value
Expected Benefits from mapping and registration	$211 million
Expected Benefits from forest demarcation	$243 million
Total Project Costs	($184) million
Net Benefits	$270 million
Economic Internal Rate of Return (EIRR)	61 percent

Scenario Analysis

12. The economic analysis adopted very conservative assumptions, including:

- *An increase of 25 percent in land value due to participatory mapping and registration* instead of the 37 percent-52 percent range estimated at the previous Land Administration Project's closing, which will be equivalent to US$312-US$439 million dollars of expected benefits. Any of these assumptions makes the project feasible even without benefits from forest demarcation. Only with an average land value increase

[73] Two main types of ETSs can be distinguished: a cap-and-trade system, which applies a cap or absolute limit on the emissions within the ETS and emissions allowances are distributed for emissions that will take place, and a baseline and credit system, where baseline emissions levels are defined for individual installations and credits are issued to installations that have reduced their emissions below this level that can be sold to other installations exceeding their baseline emission.
[74] World Bank, Ecofys and Vivid Economics. 2016. State and Trends of Carbon Pricing 2016 (October), by World Bank, Washington, DC.

of less than 21.8 percent the expected benefits will be equal or less than the present value of the project costs.

- *A decrease of 20 percent on the historical average deforestation rate* for Indonesia (1.6 percent to 1.3 percent) in the target areas. Even in the worst scenario where there is no deforestation impact, the benefits from improving land use and afforestation, will still account for more than US$170 million.

- *The reforestation of 200,000 hectares and land use change of 1.7 million hectares* in 10 years, which is equivalent to less than 0.4 percent and 3.8 percent of the forest areas in the target provinces, respectively. Even in the worst scenario where there are no reforestation nor land use changes, the benefits from deforestation will still account for more than US$183 million.

- *The price of a ton of carbon dioxide equivalent (tCO_2e) is US$1* instead of the US$40 to US$80 range for low and high estimate recommended by the World Bank in the "Guidance note on shadow price of carbon in economic analysis" from November 2017. If using these prices, the expected economic benefits from forest demarcation will be from US$9.7 to US$19.5 billion dollars.

  As a result, even in the presence of unlikely scenarios, the expected benefits from participatory mapping and registration plus the benefits from forest demarcation will exceed the project costs.

ANNEX 5: LEGAL ANNEX

COUNTRY : Indonesia
Acceleration Program of Agrarian Reform and One Map Policy Implementation
,

Dualism in land administration in Indonesia and Systematic Registration (PTSL)

1. All lands in Indonesia are constitutionally owned by the people of Indonesia and managed by the State for, and on behalf of, the people. This mandate provides the authority to the State to exercise control over land in Indonesia and to administer rights/titles through which state's control is defined. State Lands/Properties are lands, which are directly controlled by the State, and which are not encumbered by or otherwise subjected to any land rights/titles. On the other hand, Titled Lands[75] are defined as lands which are subject to, or otherwise encumbered by, land rights/titles. In the case of Titled Lands, as a matter of legal construction, the State exercises control through issuing the land rights/titles and through the terms governing the rights and obligations vested in land rights/titles. The Basic Agrarian Law (BAL) provides for various types or land rights to be used by government as well as by the private parties.

2. The tenure landscape in Indonesia is divided into non-Forest Area and Forest Area. The latter includes both State Forests and Titled Forests. By BAL, both State and Titled Forests are subject to registration under ATR/BPN's land registry, but by practice or competing interpretation of the laws (see below), State Forests are not being registered by ATR/BPN and rights on Forest Area are de facto administered by MoEF.

3. The Forestry Law provides for mandates MoEF to manage/administer State and Titled Forests. However, the Forestry Law or forest regulatory frameworks do not appear to endow authority to MoEF to administer the legal status/land rights of the land underlying the forest settlements. In reality, despite the laws, MoEF administers the Forest Area, and no registration of land rights by ATR/BPN takes place in the Forest Area. This is sealed by the fact that inter-agency conflicts, such as registration of agricultural lands by ATR/BPN in Forest Area, often leads to prosecution of the responsible ATR/BPN personnel. The situation perpetuates unclarity, inconclusion, and uncertainty on land rights in the Forest Area.

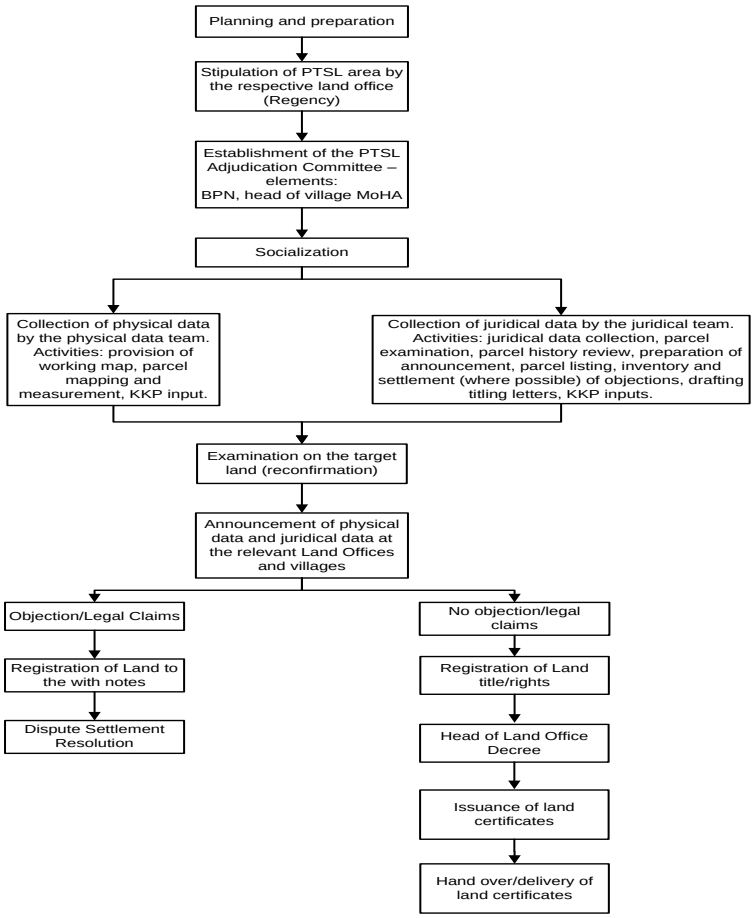
4. ATR/BPN's Systematic Registration process (PTSL) is intended to be a comprehensive exercise, leaving no land and no parcel unmapped and unregistered. Although the PTSL Regulations (as well as other rules and procedures on land registration) support the registration of all land, including state and private lands, forest and non-forest lands, the achievement of "complete" land registration has not been possible because of the factual existence of dualism in land administration. However, PTSL, eventually with a focus to Titled Forests could become a gateway to ending the Forest Area and non-Forest Area land administrative dichotomy and conflicts.

5. The lack of clarity and inconsistencies in implementing the institutional and legal mandates in managing Forest Area and non-Forest Areas have led to difficulties in establishing the Forest Area boundaries impacting all planning and investments. Properties close to assumed forest boundary are held with insecure tenure triggering land conflicts between government agencies as well as between government agencies, concessionaires and rural communities.

[75] Tanah Hak.

6. The basic regulatory framework for land registration includes the Government Regulation 24/1997 together with its implementing regulations (the ATR/BPN regulation 3 of 1997 as amended by the ATR/BPN Regulation 8 of 2012). Those provide for a sporadic and systematic land registration approaches in Indonesia. In 2016, the Government stipulated the PTSL76 to accelerate systematic land registration covering all lands across the country bolstering ATR/BPN as the Indonesian land administration agency providing nationwide legal certainty of tenure. PTSL contains no legal deviation from the procedures of land registration process from those regulated under Government Regulation 24/1997 and its implementing regulations, or from the basic principles of agrarian law, while certain capacity enhancements (budgeting, etc.) are extended to support the acceleration of land registration under the PTSL.

Figure 5.1 PTSL Business Process.



7. As the physical and juridical data collection and examination appear to be two separate activities, streamlining between physical and juridical data collection and examination activities into an integrated exercise may also be an area that PTSL may look to improve in establishing an integrated and cohesive process under the PTSL framework.

[76] The most recent regulatory framework for PTSL was enacted in 2017 – BPN/ATR Regulation No 12/2017.

8. The issue of lack of understanding on the importance of land registration is also identified during the implementation of PTSL in some areas and has manifested in some form of resistance or reluctance of the community to participate in the PTSL. Some of the resistance is customary driven or land tax driven. Improved sensitization and a communication approach may be required to address the first two driving resisting factors, while coordination with the Ministry of Finance may be required to address the tax driven concerns on land registration under the PTSL.

Participatory Mapping and Forest Area Boundary

9. The legal mandate to demarcate Forest Area boundaries is vested in the MoEF as part of the legal mandate to legally determine Forest Areas by virtue of a MoEF decree. The demarcation of Forest Area boundaries is undertaken by a joint task force involving ATR/BPN and MoHA officials as regulated under MoEF Regulation P.93/2016. Despite the issuance of the ministerial decree in affirming Forest Areas, the physical boundaries between Forest and non-Forest Areas is not always easy to identify. This has resulted in lack of clarity of the legal status of the land tenure surrounding the area of forest boundaries. In addition, there are parts of the forest areas that are factually no longer in the form of forest due to various legitimate (community livelihood) reasons. These circumstances are vulnerable to conflicts.

10. In 2017, Presidential Decree 88/2017 was enacted – providing settlement mechanisms for land occupancies in the forest areas – involving the establishment of joint task force consisting of ATR/BPN, MoEF, and MoHA officials under the coordination of CMEA and reconstruction of the forest boundaries resulting from the legally recognized occupancies in the forest areas under this Presidential Regulation. The technical details of the implementation of this Presidential Regulation have not been finalized and various technical regulations remain to be integrated or otherwise synchronized to implement this Presidential Regulation.

11. Further, the Presidential Instruction 2/2018 provided a step forward towards the legal certainty on the boundaries between Forest Areas and non-Forest Areas. It stipulates collaboration by ATR/BPN and MoEF in PTSL. It aims to reinstating the security of tenure and contemplates to serve as an introduction to a unified, and sustainable land administration in Indonesia.

Titled Forests

12. The concept of titled forest was originally introduced by the Forestry Law of 1999, which defines “titled forest” as a forest situated on the titled land. The concept of titled forest enables the issuance of land rights on lands with the forest establishments on such lands and maintains the forest functionality of such lands. Most importantly, this legal concept recognizes that the legal status of lands used as forests falls under the land administration legal regimes, i.e. the land rights under BAL that provide legal certainty on the legal status of such lands. It reaffirms that the notion of forest management and forest mandates fall under the auspice of land use management rather than managing land rights and titles. Titled forests may be owned by individuals, legal entities and Adat communities[77] (MoEF Regulation P32/2015). In 2016, the MoEF confirmed approval of nine Adat forests, but no registration or certification followed their legal status remains unclear. By Law (and ATR/BPN Regulation No 10/2016) ATR/BPN should register those lands.

13. The legal frameworks are not clear on what types of land rights may be issued for Titled Forests. ATR/BPN

[77] Hutan Adat.

has legal and institutional mandate to manage the terms of the necessary and appropriate land rights for Titled Forests. This convergence offered by Titled Forests could bridge the gaps between human settlements in the Forest Areas and the urgency of preservation of forests. The Titled Forest may be also regularized under the PPTKH.

Delineation of Village Administrative Boundaries

14. Since the inception of Law No 6 of 2014 regarding villages, village boundaries have become a critical element influencing various development aspects of a village as the smallest administrative unit in the overall state administration. Village boundaries will influence the coverage area of a village, which will eventually influence the amount of village subsidy funds to be allocated to support the development of the relevant village. Village boundaries are also used to identify the natural resources available within the respective village – which will also be used as the basis for the development and development budget of the relevant villages. Only a small fraction of all the villages in Indonesia have been legally delineated due to MoHA's limited resources related to the huge number of villages and wide coverage of the Indonesian territory with various geographical conditions. The project will pilot indicative village boundary demarcation under the PTSL process with aim of mainstreaming village boundary demarcation in PTSL. Coordination between ATR/BPN and MoHA (as well as with MoEF – for villages which areas include forests) in the form of inter-agencies memorandums of understanding, may be needed for the implementation of the joint exercise of parcel mapping/registration and administrative boundary mapping.

Mining Concessions and Licenses

15. A typical issue in mining operations occurs when the proposed mining areas are located (partially or entirely) in an Forest Area. An example of this is the non-integration of Regional (Province/Regency) Spatial Plan Maps and Agreed Forest Utilization Maps[78]. Not all types of forest may be used for mining operation. Poor coordination between the Head of Regency[79] and the Technical Implementation Team of MoEF (Unit Pelaksana Teknis) in the process of issuing the Mining Business License contributes to the overlapping mining and forest land uses.

16. Law No 4/2009 (Mining Law), which provides authority to the Head of Regency or Governor to issue the Mining Business License, does not specifically require coordination with the MoEF, although the proposed mining area may coincide with the Forest Area. The issue arises when the proposed mining area includes Forest Areas and the mining operation commences immediately upon the issuing of the Mining Business License while the Borrow to Use Permit (which is the permit to be issued by MoEF) has not been obtained. Furthermore, the issuance of a Business Mining Licenses by the Governor or Head of Regency, if not coordinated or consulted with the MoEF, may result in the status of the proposed mining area not being in line with the Agreed Forest Utilization Map. Unclear Forest Area boundaries contribute to the difficulties in determining suitable areas for mining.

[78] Peta Tata Guna Hutan Kesepakatan.
[79] Bupati.