

Environmental Assessment and Review Framework

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INO: Preparing the Eastern Indonesia Sustainable Energy Access Sector Project

Prepared by Fichtner for the Asian Development Bank.

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Environmental Assessment and Review Framework TA-9082 INO: Preparing the Eastern Indonesia Sustainable Energy Access Sector Project



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Acronyms and Abbreviations

ADB	Asian Development Bank
AH	Affected Household
AMDAL	Analisis Mengenai Dampak Lingkungan; Indonesian term for Environmental Impact Analysis
Aol	Area of Influence
AP	Affected Persons
APKT	Integrated Complaint Solving Application
AH	Affected Household
DLH	Provincial or District Environmental Agency (Dinas Lingkungan Hidup)
EA	Executing Agency (PLN)
EARF	Environmental Assessment and Review Framework
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMoP	Environmental Monitoring Plan
EMA	Environmental Management Agency
EPC	Engineering Procurement and Construction
FI	Financial Intermediary
GHG	Greenhouse Gas
GoI	Government of Indonesia
GRM	Grievance Redress Mechanism
HQ	Head Quarter
HSD	High Speed Diesel
IFC	International Finance Corporation
IEE	Initial Environmental Examination
IPP	Indigenous Peoples Plans
km	Kilometre
K3L	PLN Subdivision for Environmental and Social Safeguards
IPPF	Indigenous Peoples Planning Framework
LNG	Liquefied Natural Gas
MOEF	Ministry of Environment and Forestry
MoU	Memorandum of Understanding
MW	Megawatt
NTB	Nusa Tenggara Barat (province in Eastern Indonesia, covering mainly Lombok and Sumbawa)
NTT	Nusa Tenggara Timur (province in Eastern Indonesia, covering mainly West-Timor Island, Flores and Sumba)
PIC	Project Implementation Consultant
PLN	Perusahaan Listrik Negara (Indonesian State Electricity Company)
PMU	Project Management Unit
PPTA	Project Preparatory Technical Assistance

PV	Photovoltaic
REA	Rapid Environmental Assessment
RF	Resettlement Framework
RKO	PLN Corporate Strategic Planning Division
RP	Resettlement Plan
SNT	Sulawesi, NTT and NTB (one of PLN's regions in Eastern Indonesia)
SPIU	Subproject Implementation Unit
SPPL	Surat Pernyataan Kesanggupan Pengelolaan dan Pemantauan Lingkungan Hidup - Statement of Environmental Management and Monitoring; Indonesian term for an environmental implication review broadly equivalent to an environmental review corresponds to Category C projects as per the ADB SPS 2009
SPS	Safeguard Policy Statement
TA	Technical Advisor
TOR	Terms of Reference
UKL-UPL	Upaya Pengelolaan Lingkungan Hidup dan Upaya Pemantauan Lingkungan Hidup (Environmental Management Effort and Environmental Monitoring Effort); Indonesian term for a specific Environmental Impact Assessment broadly equivalent to IEE.
UIP	<i>Unit Induk Pembangunan</i> (Main Development Unit)
UPP	<i>Unit Pelaksana Proyek</i> (Project Implementation Unit)
WHO	World Health Organization

1. INTRODUCTION

1. The Indonesian state electricity company PT Perusahaan Listrik Negara (PLN) plans to build several power plants in Eastern Indonesia with dual fuel capabilities (gas / high speed diesel (HSD)). The principal fuel will be gas, mostly regasified Liquefied Natural Gas (LNG) and in a few cases, natural gas if available through a local pipeline. Gas is a clean burning fuel that has lower power generation costs and generates less pollutants and carbon dioxide emissions compared to HSD. Asian Development Bank (ADB) was requested to provide a sector loan to finance 10 to 15 of these plants (subprojects) and has subsequently prepared the Sustainable Energy Access in Eastern Indonesia - Power Generation Sector Project (the Project). The list of identified subprojects and a long list derived from PLN's 10 year planning document is included in the Memorandum of Understanding (MoU) dated April 12, 2017. The objective of the Project is to improve access to electricity services in Eastern Indonesia by supporting new small to mid-sized power plants (20 MW up to 200 MW) fuelled principally by gas.

2. For the approval of the sector project by ADB Board, two *sample subprojects* have been selected and presented as examples in the board approval documents: the 100 MW Kaltim 2 Peaker (East Kalimantan) and the 50 MW Kupang 2 Peaker (Timor Island). These are referred to as "core subprojects". The power plant type for the first subproject (Kaltim 2 Peaker) has been specified in the tender documents as gas turbines. The second subproject Kupang Peaker 2 will be specified as gas engines. Other subprojects (called non-core subprojects) funded by this sector loan may leave the technology choice (gas engines, gas turbine, or steam turbine in the case of conversion of simple cycle to combined cycle) open. Some of them may be located in the vicinity of environmentally sensitive areas and nearby other existing or planned projects and other facilities. Specific location and plant types are still open for the non-core subprojects. The subprojects may have HSD as a backup fuel and this option will be reflected in the respective EIA.

3. An added advantage of gas-fired generators is that they can respond very rapidly to fluctuating power demand. This characteristic is being considered to integrate intermittent renewable energy systems while reducing the need for expensive battery storage and thereby helping to make the use of solar resources more affordable and reliable to the local communities. In order to increase PLN's knowledge on photovoltaic (PV) integration, in at least two subprojects, PV hybrid pilot schemes with Energy Management Systems will be installed along with the gas-fired power plants being financed. These two pilot PV subprojects have not yet been identified. In addition, the project will also include advisory services in implementing PV hybrid pilot schemes and support for PLN's strategy to shift fuel mix in Eastern Indonesia gradually from diesel to gas through establishment of a sustainable LNG supply system.

4. The overall Project falls into Category A for environment according to ADB's SPS 2009. The subprojects will be classified individually, Category A, B or C are possible, but highly complex and sensitive subprojects¹ shall not be included in the scope of this sector loan.

5. The Environmental Impact Assessment (EIA) for the two core subprojects will set the example for the preparation of the safeguards documents of the following

¹ ADB SPS 2009 defines Highly Complex and Sensitive Projects as "highly risky or contentious or involve serious and multidimensional and generally interrelated potential social and/or environmental impacts".

subprojects. A preliminary list of non-core subprojects is available (see Appendix 9.11). These non-core subprojects are at various stages, some are in early planning stage, still missing basic documents for the assessment, some in design phase and preparation of procurement documents has already started. During the project implementation, a Project Implementation Consultant (PIC) will assist PLN with the preparation of further subprojects, including environmental and social safeguards documentation.

6. This environmental assessment and review framework (EARF) was prepared by the project preparatory technical assistance (PPTA) team on behalf of PLN as the executing and implementing agency under TA-9082 INO provided by ADB. The purpose of this document is to:

- guide the selection of non-core subprojects and to define environmental safeguard assessment requirements in accordance with the existing national regulations and applicable laws of Indonesia and with ADB Safeguard Policy Statement (ADB SPS 2009);
- give orientation for the screening, categorization, assessment and preparation of the respective subprojects and safeguard documents, including environmental compliance audits of existing facilities as per ADB SPS 2009;
- set up institutional arrangements in relation to environmental management and monitoring, addressing the impacts of the subproject, related and associated facilities.

7. This EARF is based on and supported by the EIA findings of the two representative core subprojects, Kaltim 2 Peaker and Kupang 2 Peaker.

8. Table 1 outlines the Environmental Safeguard Requirements for the Project according to ADB SPS 2009.

Table 1: Environmental Safeguard Requirements for the Project

SAFEGUARD REQUIREMENTS	TRIGGER	TIMING
1. EARF for entire Project	Sector Project with potential environmental impacts	Before Loan approval
2. EIA for core subprojects	Category A subprojects	Draft EIA report disclosure on the ADB website 120 days before Loan approval
3. Initial Environmental Examination (IEE) for core subprojects	Category B subprojects	Before Loan approval
4. EIA for non-core subprojects	Category A subprojects	Draft EIA report disclosure on the ADB website 120 days before subproject clearance
5. IEE for non-core subprojects	Category B subprojects	Before subproject clearance

9. The main objective of this EARF and consequential regulatory application of each subproject, is to ensure that all subprojects funded will comply with government environmental requirements and ADB SPS 2009.

10. The aim of this EARF is to:

- present the anticipated environmental impacts of the non-core subprojects and applicable mitigation for these impacts;

- specify the requirements that have to be followed in the project screening and categorization, in the process of assessment and planning, including arrangements for meaningful consultation with affected people and other stakeholders and information disclosure requirements and, where applicable, safeguard criteria that are to be used in selecting the non-core subprojects;
- specify the environmental safeguard documents that need to be endorsed and approved by the implementing agency, relevant Indonesian authorities, and cleared by ADB;
- specify monitoring and reporting requirements;
- describe the responsibilities of involved parties, including ADB in relation to the preparation, implementation, and progress review of safeguard documents of subprojects and its implementation;
- assess the adequacy of the PLNs capacity to implement national regulations and laws and ADB SPS 2009 requirements, and identify needs for capacity building;
- specify implementation procedures, including the budget, institutional arrangements, and capacity development requirements.

2. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

11. The environmental assessment of the subprojects under the sustainable Energy Access in Eastern Indonesia - Power Generation Sector Project will be undertaken in compliance with the ADB SPS 2009 and the national policies, legislation and requirements for environment, health and safety, as well as with international agreements which Indonesia is party to. The applicable International Finance Corporation (IFC) Guidelines will be used as standards of best international practice for the subprojects as well.

a. Legal and Administrative Framework

i. Indonesian AMDAL Procedure

12. According to Indonesia's environment regulations, all projects must comply with the review and clearance procedures (Figure 1, see also Appendix 9.a.) specified under Indonesia's environmental system and other related law and regulation, including:

- Law No. 26/2007 on Spatial Planning;
- Law No. 14/2008 on Public Information Disclosure;
- Law No. 32/2009 on Environmental Protection and Management;
- Government Regulation No. 27/2012 on Environmental Permit;
- Decree of Minister of Environment No. 05/2012 on Screening Criteria (type/scale/magnitude of activities requiring AMDAL);
- Regulation of Minister of Environment, Republic of Indonesia No. 16/2012 on Guideline on Preparation of Environmental Document;
- Decree of Ministry of Environment No. 17/2012 on Community Participation and Information Disclosure in Environmental Impact Assessment;
- Regulation of Minister of Public Works, Penmen PU No. 10/PRT/M/2008 on the Environmental Management Measure (UKL) and Environmental Monitoring Measure (UPL) Criteria; and
- Regulation of Ministry of Environment (Permen LH) No. 07/2010 on Competence Certification of AMDAL Preparation and Training Requirements for AMDAL Preparation.

13. The Indonesia AMDAL system generally conforms to the intent of ADB's environmental policy principles, requirements and management guidelines. According to the regulation, all projects should undergo environmental clearance before proceeding to implementation. Table 2 shows the relationship between the ADB environmental categorization and those under Indonesia's regulations/policies. Essentially, an AMDAL study corresponds to an EIA, and an UKL-UPL corresponds to an IEE. The Statement of Environmental Management and Monitoring undertaking (Surat Pernyataan Kesanggupan Pengelolaan dan Pemantauan Lingkungan Hidup - SPPL) generally corresponds to the environmental implication review of Category C projects as per the ADB SPS 2009.

14. The AMDAL and EIA are to a certain extent correspondent, though the criteria used for categorization under the Government of Indonesia's AMDAL procedure and

ADB SPS 2009 requirements differ slightly. Indonesia regulation provides quite rigid quantitative criteria, while ADB rely on qualitative criteria (significance). For example, Indonesia's AMDAL procedure classifies projects based on specific magnitude (length, depth, width, size, or other physical dimensions), whereas ADB's SPS 2009 categorizes projects based on the "significance of impacts".

Table 2: ADB and Indonesia Project Categorization Systems

ADB Project Categories	AMDAL Gol Project Categories
Category A: A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required.	AMDAL: Projects that according to law require an Environmental Impact Assessment (AMDAL). The detailed criteria that trigger an AMDAL defined in the Decree of Minister of Environment No. 05/2012 (see Section 4.a) ²
Category B: A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.	UKL-UPL: Projects that according to law requires Environmental Management Effort (UKL) and Environmental Monitoring Effort (UPL). However, special discretion and judgment of environmental agencies at local and national level (based on particular consideration) may override the category, and UKL-UPL Category may be "upgraded" to AMDAL Category.
Category C: A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed	SPPL: Projects that do not require AMDAL or UKL-UPL are obliged to submit a 'statement of management and environmental monitoring ability' or SPPL.

15. PLN is responsible for identifying, appraising, approving, and implementing sub projects. This includes to ensure that all environmental permits and documents are provided in time.

16. Because of the different environmental categorization criteria, subprojects classified as A and B according to ADB may require AMDAL study according to the Indonesian system and vice versa. For future subprojects, PLN (supported by the PIC) will draft ToRs for the AMDAL and UKL-UPL that will ensure that reports are consistent with ADB SPS 2009 requirements of EIA for category A subprojects or IEE for category B subprojects as specified in this EARF. In case that according to Indonesian regulation only an UKL-UPL is required for a subproject with environmental category A, based on the UKL-UPL the PIC (supported by PLN) will elaborate an EIA closing the gaps to ADB standard. The scope for the PIC will include capacity building measures to improve PLN ability to ensure the quality of EIA or IEE meets ADB SPS 2009 requirements.

ii. Permitting Requirements

17. List of necessary permits and related legislation to be prepared includes:

² In particular, an AMDAL is required for diesel or gas fired, or combined cycle power plans with 100 MW output (or higher) located in one place.

- Permission principle from the regent/mayor stating that the local government approved in principle the plan to build a power plant. Suitability of the location of the activity with the Indicative Map on Suspension of New License (Peta Indikatif Penundaan Izin Baru as stated in Presidential Decree No. 10 of 2011, or its revision (Moratorium to suspend new licenses / permits / concessions in primary natural forests and peatlands located both within and outside of forest areas that have not previously been given licenses/permits/concessions).
- A list of permits and environmental documents to be prepared, submitted to and approved by the local environment agency.
- Affidavit of Bappeda (Regional Development Planning Agency) that the power plant site plan does not conflict with the local regional spatial plan.
- Proof of registration of constituent EIA consultant from the Ministry of Environment and Forestry of the Republic of Indonesia.
- Official certificate confirming the accreditation of the EIA drafting team.

18. A key aspect of the legislation and regulations (Permen LH No. 07/2010) is that any AMDAL must be prepared by suitably trained and registered experts. The Team Leader (1) and at least two (2) experts from the AMDAL team should be certified by LSP (Professional Certification Agency) of AMDAL, which is approved by BNSP (Badan Nasional Sertifikasi Profesi – National Professional Certification Board). In addition to standard requirement of experts (i.e. physical / chemical specialist, biologist, social economic and culture specialist, and public health specialist), the composition may require other specific experts.

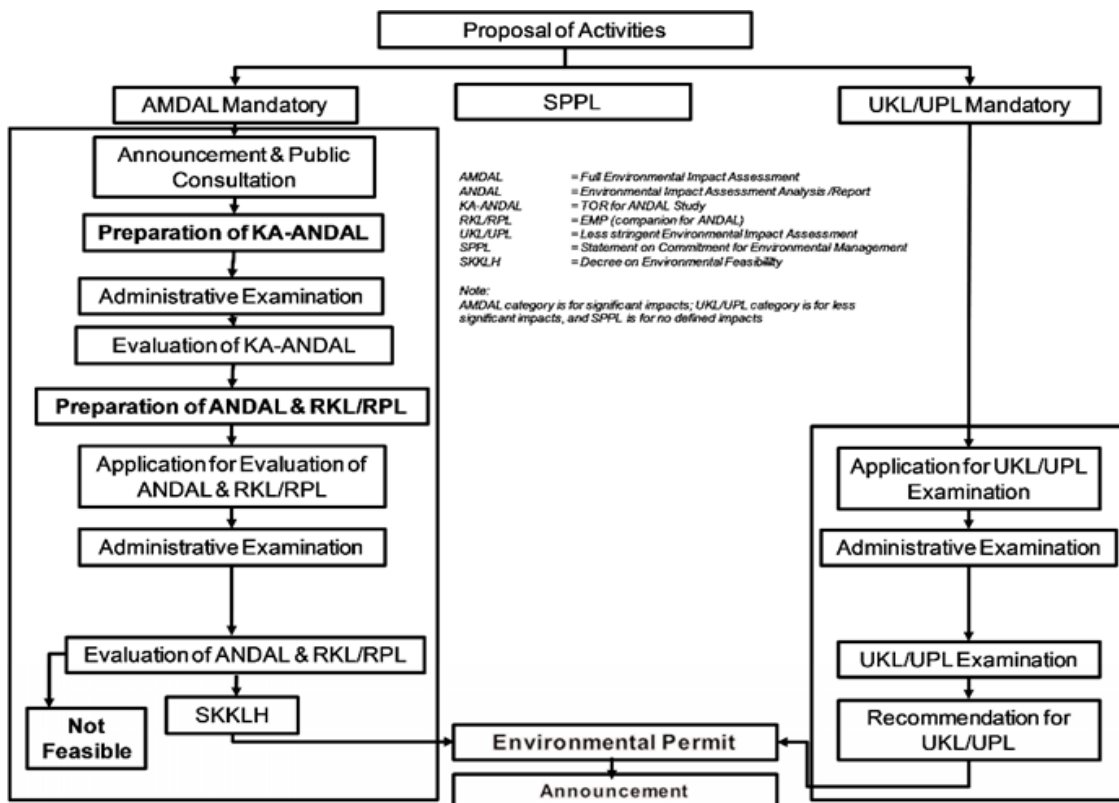
19. The UKL-UPL is required for certain business activities which have a lesser, or no significant, impact on the environment, but which still require environmental approval. There is no specific certification required for preparation of a UKL-UPL.

20. SPPL requires the proponent to monitor and manage the environmental impact of its business and/or activities which are exempted from the AMDAL or UKL-UPL.

21. Relevant requirements with respect to workers' health and safety include Law No.1 year 1970 on Workers' Safety and Ministry of Workforce Decree Kep-51/MEN/1999 on Reference Standard for Activities in Working Area.

22. In addition to Indonesia national regulations, this EARF also considers provincial/local regulations related to environmental management, spatial planning, forest conservation, wet land, peat land and others. Even customary law will also be respected, if any and applicable.

Figure 1: Flowchart of Indonesian Environmental Clearance³



iii. Pollution Prevention

23. The following regulations are related to thermal power generation:

- Regulation of the Minister of Environment No. 08 Year 2009 on Wastewater Quality Standard for Thermal Power Plant Businesses and/or Activities.
- Regulation of the Minister of Environment No. 21 Year 2008 on Quality Standard for Stationary Source Emissions for Thermal Power Plant Businesses and/or Activities.

24. A comparison of the Indonesian National standards for air emission, ambient air quality, and noise level with applicable IFC Guidelines provided in section d below.

iv. Biodiversity and Habitat Conservation

25. Indonesian legislation has several regulations related to biodiversity and habitat preservation, such as:

- The Law 5/1990, Conservation of Living Resources and Their Ecosystems;
- Presidential Decree 32/1990 On Management of Protected Areas;

³ AMDAL refers to environmental impact assessment at whole, while ANDAL is part of the assessment where environmental impact analysis (ANDAL) carried out for the significant issues. In addition to ANDAL report, the assessment will be supported with RKL/RPL (equivalent to EMP) for managing/mitigating the impacts and subsequently monitoring the effectiveness of the environmental impacts management/mitigation.

- Minister of Agriculture Decree No. 11 of 2015 On Principle and Criteria of Indonesian Sustainable Palm Oil Certification System;
- Law 32/2009, Environmental Protection and Management.

26. A comparison of the Indonesian biodiversity and habitat preservation with applicable ADB requirements provided in section e below. The detailed list of National environmental regulations is presented in Appendix 9.d.

b. International Agreements

27. Indonesia has ratified several international conventions, including, among others:

- Convention on Fishing and Conservation of Living Resources of the High Seas (Marine Life Conservation). Objectives: Solve the problem of preservation of biological resources in the high seas through international collaboration with the consideration that the use of modern technology for the exploitation of resources in excess will cause harm to these resources.
- Convention on Biological Diversity, for parties to require the environmental assessment of their proposed projects that are likely to have significant adverse impacts on biological diversity with a view of avoiding or minimizing such impacts. Indonesia is obliged to respect and protect traditional knowledge related to sustainable utilization of biodiversity, including promote fair benefit sharing of the use of traditional knowledge. Based on this convention, the Nagoya Protocol was established, which was also ratified by the Government of Indonesia;
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat (1972). Indonesia follows an international agreement to control the continuous encroachment of wetland in the present and future, to recognize the basic ecological functions of wetlands follows the economic, cultural, scientific, and recreation.
- Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter (1972). Indonesia follows an international agreement to control marine pollution due to accumulation of waste and other materials and to encourage regional agreements to complement the Convention; the London Convention came into effect in 1996.
- Vienna Convention for the Protection of the Ozone Layer, in 1998, and subsequent protocol and amendments, for parties to take appropriate measures to protect human health and the environment against adverse impacts likely to arise from human activities that will/likely modify the ozone layer.
- Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships, 1973 (MARPOL). Indonesia has ratified the international agreement to conserve the marine environment / marine pollution by banning oil and other hazardous substances and disposal of hazardous substances to suppress levels that do inadvertently (e.g. due to accidents).
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989). Indonesia has ratified the international agreement to reduce cross-country movement of waste in accordance with the minimum limit of the Convention in order to create an environmentally friendly

waste management and efficient; reducing toxicity of waste generated and to ensure that environmental management is the basis for resource development.

- United Nations Framework Convention on Climate Change (1992). Indonesia has ratified the international agreement to achieve stabilization of greenhouse gas concentrations in the atmosphere as low as possible in order to prevent dangerous anthropogenic interference with the climate.
- Kyoto Protocol to the United Nations Framework Convention on Climate Change. Indonesia has ratified the international agreement to reduce greenhouse gas emissions by promoting national programs in developed countries aimed at reducing greenhouse gas emissions and determine the percentage of reduction targets for developed countries.
- Indonesia has ratified the Paris Agreement within the United Nations Framework Convention on Climate Change (UNFCCC) dealing with greenhouse gases emissions mitigation, adaptation and finance in October 2016.

c. ADB Guidelines and Policies

28. The ADB SPS 2009 addresses three key safeguard areas: environment, indigenous peoples, and involuntary resettlement. This policy provides the scope, triggers, and principles to avoid, minimize, or mitigate adverse environmental and social impacts, including protecting the rights of those likely to be affected or marginalized by the development process.

29. The environmental requirements of SPS 2009 aim to ensure project environmental soundness and sustainability, integrate environmental considerations into the project decision-making process. The principal objective is to conduct an environmental assessment for each proposed project to identify potential negative impacts, which should be avoided, minimized, mitigated or compensated. The proposed mitigation measures, monitoring and reporting requirements, institutional arrangements, schedules, cost estimates, and performance indicators will be documented in the environmental management plan (EMP). Environmental assessment is a process rather than a one-time report, and includes necessary environmental analyses and environmental management planning which take place throughout the project cycle.

30. A project's category is determined by the category of its environmentally most sensitive component, including direct, indirect, cumulative, and induced impacts in the project's area of influence. Projects are assigned to one of the following four categories

- (i) Category A. A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works.
- (ii) Category B. A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects.
- (iii) Category C. A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.

- (iv) Category FI. A proposed project is classified as category FI if it involves investment of ADB funds to or through a Financial Intermediary (not applicable to this EARF).

31. A nonexclusive list of ADB SPS 2009 requirements for the various phases of the environmental assessment is presented below (see ADB SPS 2009, Safeguards Requirement 1 for the full details):

Screening and Categorization

32. Each of the subprojects will be individually categorized at the beginning of the environmental planning process, based on a Rapid Environmental Assessment (an example of REA checklist for power plants provided in Appendix 9.b) which comprises the available and collected information.

33. For category A and B subprojects, ADB SPS 2009 requires conducting an environmental assessment to identify potential direct, indirect, cumulative, and induced, transboundary and global impacts and risks (including climate change) to physical, biological, socioeconomic, and physical cultural resources in the context of the project's area of influence (Aol). The project Aol will be defined and will depend on the expected extent of the potential impacts in different environmental components (airshed, acoustic environment, surface and ground water, terrestrial and aquatic ecosystems, etc.). The Aol for airshed should be large enough to account for the cumulative impacts of air emission and would typically be in the range of several kilometres around the sources of emission⁴. The Aol for acoustic environment would typically be in the range of 1-2 km around the sources of noise emission⁵. The Aol for terrestrial ecosystems would typically be within the project footprint and a buffer zone to assess the potential impacts, as applicable.

Alternatives

34. As required by ADB SPS 2009, subprojects with potentially significant adverse impacts will be examined for alternatives to the project's location, design, technology, and components that would avoid, and, if avoidance is not possible, minimize adverse environmental impacts and risks. The rationale for selecting a subproject, its particular location, design, technology, and components will be properly documented. This includes a cost-benefit analysis taking environmental costs and benefits into account, and a least cost analysis of alternatives. The "no action" alternative will be also considered.

Impact Mitigation and Management

35. PLN will prepare an EMP that addresses the potential impacts and risks identified by the environmental assessment. The EMP will include the proposed mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Where impacts and risks cannot be avoided or prevented, mitigation measures and actions will be identified so that the project is designed, constructed, and operated in compliance with applicable laws and regulations and meets the requirements specified in this document. The level of detail and complexity of the environmental planning documents and the priority of the identified measures and actions will be commensurate with the project's impacts and

⁴ The Kaltim Peaker EIA used 10 km radius for assessment of the air emission impacts.

⁵ The Kaltim Peaker EIA used 2 km radius for assessment of the noise impacts.

risks. Key considerations include mitigation of potential adverse impacts to the level of “no significant harm to third parties”, the polluter pays principle, the precautionary approach, and adaptive management.

36. If some residual impacts are likely to remain significant after mitigation, the EMP may also include appropriate compensatory measures (offset) that aim to ensure that overall the project does not cause significant net degradation to the environment. Such measures may relate, for instance, to conservation of habitat and biodiversity, preservation of ambient conditions, and greenhouse gas emissions. Monetary compensation in lieu of physical offset is acceptable in exceptional circumstances, provided that the compensation is used for environmental benefits of the same nature and is commensurate with the project’s residual impact.

Disclosure Requirements⁶

37. A (draft) EIA Report needs to be published for each non-core subprojects with environmental category A 120 days before subproject clearance by PLN and ADB. IEE reports shall be disclosed on ADB website before project clearance. Compliance with the EMPs will be documented in semi-annual reports to ADB and disclosed on the ADB website.

Public Consultations

38. The requirement of the ADB SPS 2009 is to carry out meaningful consultation with affected people and to facilitate their informed participation. It is necessary to ensure women’s and other vulnerable groups’ participation in consultation, and involve stakeholders, including affected people and concerned non-government organizations early in the project preparation process and ensure that their views and concerns are made known to PLN and understood and taken into account. It is also required to establish a grievance redress mechanism at subproject level to receive and facilitate resolution of the affected people’s concerns and grievances regarding the subproject’s environmental performance.

Critical and Natural Habitat⁷

39. ADB SPS 2009 does not allow implementing the project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. A precautionary approach shall be applied to

⁶ The composition and structure of the EIA/IEE and EMP reports will follow the requirement presented in Appendix 1, Annex 1 of the ADB SPS 2009.

⁷ Critical Habitat is defined as a subset of both natural and modified habitat that deserves particular attention. Critical habitat includes areas with high biodiversity value, including habitat required for the survival of critically endangered or endangered species; areas having special significance for endemic or restricted-range species; sites that are critical for the survival of migratory species; areas supporting globally significant concentrations or numbers of individuals of congregator species; areas with unique assemblages of species or that are associated with key evolutionary processes or provide key ecosystem services; and areas having biodiversity of significant social, economic, or cultural importance to local communities.

the use, development, and management of renewable natural resources (see ADB SPS 2009, Safeguards Requirement 1 for the full details).

d. Applicable International Finance Corporation (IFC) Guidelines

40. ADB SPS 2009 requires⁸ the proponent to “*apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group’s Environmental, Health and Safety (EHS) Guidelines*”. It also requires the proponent to apply occupational health and safety preventive and protective measures consistent with international good practices and standards. These standards, also known as IFC EHS Guidelines, are technical reference documents with general and industry-specific guidance. For the Sector Loan projects, the following IFC Guidelines are relevant:

- General EHS Guidelines,
- Industry Sector Guidelines for Thermal Power Plants.

41. Depending on the scope of the subproject and definition of the project related and associated facilities, the following EHS Guidelines could also be applicable:

- Infrastructure: Ports, Harbours, and Terminals
- Infrastructure: Gas Distribution Systems
- Infrastructure: Crude Oil and Petroleum Product Terminals
- Power: Electric Power Transmission and Distribution
- Oil and Gas: Liquefied Natural Gas Facilities

42. The national emission standards⁹ and international best practices¹⁰ are provided in the tables below. Due to different measuring conditions, the emission values are not directly comparable. However, IFC guidelines are stricter than the national standards if converted to comparable values. ADB SPS 2009 requires that the more stringent limits are applicable.

43. A comparison of the national ambient air quality standards and World Health Organization (WHO) Guidelines (IFC adopts WHO air quality standards) is provided in the tables below. WHO guidelines are more strict compare to the national standards.

Table 3: Indonesian Emission Limits for Stationary Sources

Pollutant	Emission limit (mg/m ³) for new turbines*		Emission limit (mg/m ³) for new engines**	
	Oil	Gas	Oil	Gas
CO	NE	NE	540	500
SO ₂	650	150	600	150
NO ₂	450	320	1000	320
TSP	100	30	120	30

Measured at dry gas, excess O₂ content of 15% at 25°C flue gas temperature

⁸ See ADB SPS 2009, p.16, Environmental safeguards, Policy Principle #9.

⁹ Regulation of the Minister of Environment No. 21 Year 2008 on Quality Standard for Stationary Source Emissions for Thermal Power Plant Businesses and/or Activities.

¹⁰ IFC Industrial Sector Guidelines for Thermal Power Plants.

NE: non-existent. * Attachment IIB; ** Attachment IVB

Table 4: IFC Emission Guidelines for Power Plans larger than 50 MW with Combustion Turbines and Engines¹¹

Pollutant	Emission limit (mg/m ³) for combustion turbines		Emission limit (mg/m ³) for combustion engines	
	Oil	Gas	Oil	Gas
CO	NE	NE	NE	NE
SO ₂	NDA: use 1% or less S fuel DA: use 0.5% or less S fuel	NE	NDA: 1170 or use 2% or less S fuel DA: use 0.5% or less S fuel	NE
NO ₂	152	51	NDA: 2000 (Dual fuel) DA: 400	400 (Dual fuel)
PM	NDA: 30; DA: 50	NE	NDA: 50 DA: 30	NE

Measured at dry gas, excess O₂ content of 15% at 0°C flue gas temperature

NE: non-existent; NDA – Non-degraded airshed; DA – degraded airshed¹²; S – sulphur content expressed as a percent by mass

Table 5: National Ambient Air Quality Standards and WHO Guidelines

Parameters	Averaging Period	Concentration in ambient air, µg/Nm ³	
		Indonesian Standards*	WHO**
Carbon monoxide (CO)	1 hour	30,000	
	24 hour	10,000	
Nitrogen Dioxide (NO ₂)	1 hour	400	200
	24 hour	150	
	1 year	100	40
Sulphur Dioxide (SO ₂)	10 minutes	-	500
	1 hour	900	
	24 hour	365	20
	1 year	60	
Total Suspended Particles (TSP)	24 hour	230	
	1 year	90	
Particulate matter less than 10 microns in diameter (PM ₁₀)	24 hour	150	50
	1 year	-	20
	24 hour	65	25

¹¹ Emission standards presented in the air quality EHS guidelines would be applied for power plants with thermal input less than 50 MW.

¹² An airshed is considered degraded if nationally legislated air quality standards or WHO Air Quality Guidelines are exceeded significantly.

Parameters	Averaging Period	Concentration in ambient air, $\mu\text{g}/\text{Nm}^3$	
		Indonesian Standards*	WHO**
Particulate matter less than 2.5 microns in diameter (PM _{2.5})	1 year	15	10
Source: *) Government Regulation No. 41/1999 concerning Air Pollution Control **) IFC EHS General Guidelines			

44. Facilities or projects located within poor quality (degraded) airsheds, and within or next to areas established as ecologically sensitive (e.g. national parks), should ensure that any increase in pollution levels is as small as feasible, and amounts to a fraction of the applicable short-term and annual average air quality guidelines or standards as established in the project-specific environmental assessment. Suitable mitigation measures may also include the relocation of significant sources of emissions outside the airshed in question, use of cleaner fuels or technologies, application of comprehensive pollution control measures, offset activities at installations controlled by the project sponsor or other facilities within the same airshed, and buy-down of emissions within the same airshed¹³.

45. As stated in the General EHS Guidelines, for a nondegraded airshed, emissions from a single project should not contribute more than 25% of the applicable ambient air quality standards to allow additional, future sustainable development in the same airshed.

46. ADB SPS 2009 (Safeguards Requirement 1, para 39) requires quantification and reporting the GHG emission and consideration of alternatives in case the annual CO₂ equivalent is exceeding 100,000 tons.

47. Benchmark for measuring the impact of noise level is the stricter regulation of either Decree Number KEP/48/MENLH/11/1996 or the respective IFC EHS guidelines. A comparison of the national standards and IFC guidelines for acoustic environment is provided in the table below. IFC Guidelines for noise limits in residential areas at night time (22:00 to 7:00) are stricter compared to the national standards.

Table 6: National Standards and IFC Guidelines for Noise

Parameter	Indonesian Standard*	IFC Standard**
Noise (dBA), workplace	85	85
Noise (dBA), industry, trading, services	70	70
Noise (dBA), government and public facilities, cultural reserves	60	
Noise (dBA), residential, day (7:00 – 22:00)	55	55
Noise (dBA), residential, night (22:00 – 7:00)	-	45

Source:

*) MoE Decree No. 481996 concerning on Noise Level Standard

**) IFC EHS General Guidelines – Table 1.7 Noise Level Guidelines and Table 2.3.1 Noise Limits for Various Working Environment.

¹³ The emission offsets and buy-down are recommended by the IFC General EHS Guidelines and are feasible if an emission trading scheme is implemented by the national regulatory body.

48. The scope of the Project does not include facilities discharging significant volumes of industrial waste water. Discharges of treated waste water will primarily be associated with water from the construction worker camp, sanitary facilities and workshops for operation of the power plants. As stated in the General EHS Guidelines, the parameters of treated sanitary sewage discharge should not exceed the indicative values provided in Table 7. To prevent non-core subprojects from discharging significant volumes of cooling or process water the open loop cooling system will be excluded. Any cooling or process water discharges must comply with thermal power EHS Guidelines Table 5 and applicable national regulation.

Table 7: Indicative Values for Treated Sanitary Sewage Discharges*

Pollutants	Units	IFC Guideline Value**	Indonesian Regulation***
Temperature	°C		40
pH	pH	6-9	6-9
BOD	mg/l	30	20 (BOD 5 at 20°C)
COD	mg/l	125	120
Total nitrogen	mg/l	10	10 (enclosed water body); 20 (river)
Total phosphorus	mg/l	2	5 (enclosed water body)
Oil and grease	mg/l	10	5
Total suspended solids	mg/l	50	50
Total coliform bacteria	MPN**** /10ml	400	
<p>* - not applicable to centralized, municipal, wastewater treatment systems which are included in EHS Guidelines for Water and Sanitation.</p> <p>*** Extracted from Environmental Quality (Sewage) Regulations 2009 (PU(A) 432). SECOND SCHEDULE (Regulation 7) ACCEPTABLE CONDITIONS OF SEWAGE DISCHARGE OF STANDARDS (New sewage treatment systems)</p> <p>**** - MPN = Most Probable Number</p> <p>EHS Guidelines require minimum level of waste water treatment such as pH neutralization, TSS and hydrocarbon removal</p>			

e. Adequacy of National Legislation on Environmental Assessment and Management

49. As presented in previous subchapters, the type and extent of the environmental assessment for the subprojects under the Sustainable Energy Access Sector Project depend on both, ADB's and national requirements, upon initial categorisation of each subproject.

50. In general, the ADB SPS 2009 requirements regarding environmental assessment and Indonesian national legal requirements address the same topics. However, ADB's SPS 2009 requirements regarding environmental assessment are sometimes more detailed than Indonesian national legal requirements, for example in the following areas:

- ADB SPS 2009 requires to identify gender impacts and impacts on vulnerable groups within the identification of socioeconomic impacts, while Indonesian legislation does not have a specific gender focus.

- ADB SPS 2009 explicitly ask to consider the no-project alternative while the analysis of alternatives in the Indonesia regulations require PLN to select the most suitable alternative with the lowest negative impacts. In addition, PLN also has to justify the project or power plant, among others in terms of costs, technical viability and system relevance.
- The Indonesian legal framework requires monitoring plans but does not specify reporting frequency,
- The Indonesian legal framework references the “environmental management institution” as a component of EMP but does not appear to require a description of institutional or organizational arrangements.
- The Indonesian legal framework does not require the EMP to assess needs for capacity development and training measures.
- The Indonesian legal framework does not require the EMP to specify cost estimates.
- The Indonesian legal framework does not explicitly require that additional to affected households, also NGOs be included in the consultation process.
- The Indonesian legal framework has no requirements regarding corrective actions or disclosure of monitoring reports.
- The Indonesian legal framework does not directly define the areas of “critical habitat” apart from various categories of protected areas. However, the prohibitions applicable to protected areas reference “environmental function” unless otherwise defined, can be presumed to include habitat protection. The biodiversity guidelines for effective implementation of legislation are vague with much left to discretion. This appears to be a gap in legislation and capacity, and the Project EIA/IEE will have to follow ADB SPS 2009 and IFC Policies and Guidelines to address this gap.
- The Indonesian legal framework does not generally prohibit significant conversion or degradation of natural habitat outside of formally designated protected areas, but makes this subject to alternatives assessment, cost-benefit analysis or mitigation requirements.
- The use of a precautionary approach to develop and manage natural resources is not explicitly mentioned in the Indonesian legal framework.

Table 8: Comparison of ADB Principles with National Legislation

ADB POLICY PRINCIPLE	GOI LEGAL EQUIVALENCE	DOES NOT COVER
Screening Process	Fully covered	--
Environmental Assessment	Fully covered	--
Alternatives	Fully covered	--
Offset Adverse Impacts	Partially covered	Capacity development and training, cost estimates
Consultation	Partially covered	Ensuring women's participation and grievance redress mechanism
Disclose EMP	Partially covered	Public disclosure of draft AMDAL and EMP
Implement EMP & Monitor	Partially covered	Public disclosure of EMP monitoring results

ADB POLICY PRINCIPLE	GOI LEGAL EQUIVALENCE	DOES NOT COVER
Critical Habitats	Partially covered	EMP for impact monitoring and Committee releasing recommendations to mitigate impacts
Pollution Prevention	Partially covered	IFC standards are stricter than national standards
Health & Safety	Fully covered	--
Cultural Resources	Partially covered	Provisions for 'change finds'

51. Legal provisions of Indonesia's safeguards country system are mostly in compliance with the requirements of ADB SPS 2009. It is fully or partially correspondent to the policy principles and key elements of ADB SPS 2009. The comparison of ADB SPS 2009 with GOI's regulation is presented in Appendix 9.f. The existing practice of implementation and enforcement of these provisions needs support and capacity development. Eventual gaps, as identified, are addressed in this EARF and the PAM. Also, the terms of reference for the PIC will contain provisions to ensure proper monitoring of compliance with ADB SPS 2009, especially in areas where ADB requirements are more specific.

f. Institutional Capacity

52. PLN and ADB have a long history of successful cooperation in energy sector resulted in completion and ongoing support of numerous projects and development programs of more sustainable and inclusive energy supply, renewable energy, regulatory framework, policy and technical capacity development. The Project will use implementation mechanisms that have been employed by PLN projects supported by ADB. The following statements are mostly based on the Program Safeguard Systems Assessment Perusahaan Listrik Negara Electricity Grid Strengthening—Sumatra Program (ADB, INO 49080, November 2015):

- PLN UIP conduct regular monitoring during construction and PLN Wilayah or Subsidiary company (the operator) conducts regular monitoring during operation. The measurements of electromagnetic fields conduct twice a year. An external monitor conducts annual validation of the internal monitoring results. PLN is required to regularly monitor emissions and ambient air quality for power generation plants. The quantity of hazardous waste generation is also monitored. Environmental monitoring reports are submitted to provincial and district environment agencies semi-annually. In addition, each PLN regional office and unit conducts public consultations twice a year on health and safety and other environmental and social safeguard issues related to its activities, and reports the results to PLN headquarters through quarterly performance reports on occupational health and safety and quarterly environmental performance reports, each of which includes the result of occupational health and safety management system implementation monitoring, and environmental and social monitoring.
- PLN has a very effective complaints management system through (i) call center 123, which can be accessed by anyone anywhere in Indonesia through the website, email, telephone, and social media; (ii) online by using integrated complaint solving application (APKT); and (iii) frontline, i.e., customer services. PLN regional offices and units immediately act on community complaints including

those related to construction impacts, environment, community health and safety, and resettlement issues, by deploying PLN technical service responders.

- Assessments undertaken confirm that the environment safeguard system currently in place through the government's environmental laws and regulations as well as PLN's internal guidelines (PLN decrees) are mostly sufficient to comply with the ADB Safeguard Policy Statement principles that are triggered.
- PLN is a decentralized organization, and therefore has dedicated safeguard staff at headquarters and in regional offices and units. Headquarters staff are responsible for policy matters while regional staff are responsible for the delivery. At PLN headquarters, the Division of Environmental and Security, Occupational Health and Safety under Directorate of Human Capital Management comprises 6 full time staff with a senior manager handling environmental and social safeguards. Each PLN regional office has a safeguard unit with two or three staff depending on the number and scale of projects allocated. It oversees the compliance of safeguard-related laws and regulations and PLN guidance. Each PLN development unit also has a safeguard team, comprising together about 10 staff members. It handles environment and land acquisition issues. In some cases, to accelerate the implementation of safeguard measures, PLN establishes a project implementation unit for specific projects.
- Since 1967, PLN has implemented many power subsector projects including power generation, transmission lines, substations, and distribution lines, some of which have been funded by multilateral agencies. PLN has accumulated adequate knowledge and experience in handling environmental and social safeguard issues. To enhance their capacity, PLN staff attend trainings (including training on environmental and resettlement safeguards) provided by the Education and Training Unit of PLN Corporate University. All staff are entitled to attend trainings twice a year. In addition, several PLN staff have been enhancing their understanding of social and environmental safeguards by participating in external training conducted by ADB. Some PLN staff also participate actively in discussions on the equivalence assessment of country safeguard systems for resettlement and environmental safeguards conducted under ADB technical assistance.

53. PLN's mission statement makes reference to PLN's active role in improving the quality of life of the community through availability of electric power and mentions PLN's responsibility in maintaining environmental sustainability. PLN is determined to align all three aspects of development, namely economic, social and environmental. To that end, PLN is developing a program of Corporate Social Responsibility.

54. PLN will be responsible for the overall implementation of the Project but will receive support from the consultant in specific areas. For PLN, a project management unit (PMU) headed by a project director with administrative support will oversee project implementation. This PMU is based on existing PLN structures and general responsibilities (see Section 6a). This PMU will be responsible for the management, coordination, and monitoring of project activities of the sector loan. The PMU will comprise staff from all relevant divisions, including subdivision for Environmental and Social Safeguards (K3L). PLN Corporate Strategic Planning Division (RKO) will oversee the formation of the PMU through a Board of Director decree. The PMU shall bundle oversight and liaison with all relevant PLN units, including K3L, with ADB and the PIC. The draft organogram for PMU is attached as Appendix g.

55. PLN has seven regional business directors at board level covering seven areas. Each area is divided in regions (Wilayah) where Unit Induk Pembangunan (UIP) are in charge of planning, organizing, and monitoring of development activities of transmission network and power plants, including implementing supervision of construction. Project supervision and implementation at preconstruction and construction sites will be conducted by the UIPs. Relevant are UIPs KalBagTim, KalBagTeng and KalBagBar for Kalimantan, UIPs NUSRA, SulBaGut and SulBagSel for SNT and UIPs Papua and Maluku for Maluku-Papua.

56. A planning sub-division within the UIP is responsible for general planning including preparation, implementation, and evaluation of environmental impact assessments, environmental clearance, as well as supervision of environmental management plan implementation.

57. Each location of the planned power plants will set up a subproject implementation unit (SPIU), also comprised of existing staff, and will facilitate the activities of the subproject. The SPIUs will liaison with PMU, especially on monitoring.

58. Locally, the SPIU will monitor project progress and coordinate implementation. PLN will employ its own site supervision consultants to monitor the EPC contractors in the compliance with the EPC contracts, which includes respecting the EMPs and obligations resulting from social safeguards assessment. Where PLN has to ensure AMDAL compliance, PLN will employ a national environmental supervision consultant. Both will liaise intensively with the PMU and PIC to enable satisfactory functioning of all supervisory roles.

59. A PIC will support PLN in the implementation of the project, in administering the loan and in preparing documentation. The PIC will continue the work of the PPTA Consultant, which was engaged by ADB in June 2016 until completion of Services in 2017 with the purpose of elaborating documents and data associated with securing ADB board approval of the sector loan.

60. The scope of services will include among others assisting PLN in selecting the other non-core subprojects, conducting assessments, developing the appropriate documentation of remaining subprojects (Social and Environmental Safeguards) for ADB's no objection, general support in administering the sector loan and its disbursement, procurement support for remaining subprojects (specifications, bidding documents, bid evaluation), general monitoring including implementation of the individual EMPs and grievance mechanisms, and advisory services in implementing PV hybrid pilot schemes.

61. The scope for the PIC will also include some capacity building measures to improve PLN ability to ensure the quality of EIA or IEE meets ADB SPS 2009 requirements, to improve supervising engineers' understanding of EMP issues and environmental monitoring methods and on-the-job training of PLN staff in charge of monitoring compliance with the EMP. This shall ensure that environmental management and monitoring are being undertaken in the subprojects in accordance with this EARF and IEEs or EIAs.

3. ANTICIPATED ENVIRONMENTAL IMPACTS

62. The detailed description and characterization of anticipated environmental impacts of core sub projects is presented separately in the sample EIAs. This section presents a brief overview of the project components and facilities, various activities related to the construction and operation phases, and associated impacts that a typical project may cause.

63. The proposed power generation project may include the following components:

- Power generator buildings
- Substations
- Water intake
- Waste water treatment and discharge outfall
- Emission control
- Waste management area
- Parking and service areas
- Offices.

and the following project associated and/or project related facilities, which may be shared with other existing or planned power generation projects:

- LNG and/or diesel jetty
- LNG re-gasification unit
- LNG and/or diesel storage
- Gas pipeline and compressed natural gas receiving station
- Access roads
- Power evacuation lines.

64. Environmental impacts from PV relate to civil works for site preparation, fencing, transportation of the PV panels and other elements of the system, installation and construction of gathering cables, substations and power evacuation lines.

a. Impacts During Construction Phase

65. The construction activities will involve major civil works:

- Earth moving
- Concrete works
- Construction of the buildings, roads, powerlines, pipelines, etc.
- Equipment tests.

66. ADB funding will not be used for LNG or HSD receiving and storage facilities or for LNG regasification unit, however these facilities may be considered Associated Facilities according to ADB SPS 2009 depending on the specific situation of each project. Construction activities may affect fresh water resources if located inland. Activities related to jetties could have impacts on the marine area offshore to the project site, which could be a key biodiversity area, may have a high ecological value,

or could be sensitive to mechanical (dredging, blasting) or chemical impacts (diesel, waste water, cooling water).

67. Depending on the area an access road may be constructed. The type of land could be ecologically valuable (swamp, forest, scrubland, etc.). Negative impacts to the environment such as dust, noise, road safety deterioration, etc. are possible during construction.

68. If the shore adjacent to the power plant is a beach area it may potentially have high ecological value, e. g. sea turtles may lay their eggs there and may be disturbed.

69. Air quality may be affected by land improvement activities as well as equipment and material truck operation during the development of the project. Dispersion of dust generated by project vehicles and mobilization of materials such as cement, sand, gravel, lime and the like cause decrease in quality of air at the vicinity of project location. There will be an increase of pollutants from heavy-duty vehicles in the form of CO (Carbon Monoxide), NO₂ (Nitrogen Dioxide), and SO₂ (Sulphur Dioxide), HC (Hydro Carbon), and dust (particulate matter).

70. Impact through increased noise levels will be caused by heavy equipment activities and construction materials transportation, land improvement as well as physical construction.

71. Impact on seawater quality can be expected during construction of seaside facilities which even could include dredging or other undersea mechanical work. Such seawater quality decrease can then have impacts on seawater biota.

72. Land improvement activities including land clearing, earth moving works, land levelling even through blasting (depending on the existing geological conditions) and piling activities potentially involving heavy excavation equipment may impact on groundwater quality and potential soil erosion and runoffs could impact on aquatic biota.

73. Increased traffic in the vicinity of the project site might be caused by movement of equipment and material in the vicinity of the project location and the mobilization activities during the development of the project. The community living in the proximity of the power plants construction site may be impacted by increased road traffic, noise, influx of workers. In addition, domestic activities of construction workers may also cause impact in the form of domestic waste.

74. Typical for any major construction site, occupational safety risks exist like accidents with equipment or trucks or spills or leaks of temporary stored hazardous substances.

75. The potential impacts caused by all these activities are temporary in nature (during construction phase) and must be mitigated. In case jetties or access roads are considered Associated Facilities impacts will be assessed and mitigation will be addressed in the EMPs. Impacts on aquatic and terrestrial ecosystems, high biodiversity areas like swamps or critical habitat shall be avoided by selection of alternative location or routing of access roads where possible, mitigated as much as possible and if applicable suitable co-existence strategies shall be established. Impacts on ground water level and quality of sea water must be minimized and in case of potential impacts been considered in the EMPs. Occupational safety risks should be minimized as much as possible and safety measures and compliance with high safety standards shall apply.

76. Mitigation measures that are proposed to address anticipated impacts during construction stage will include but not be limited to:¹⁴

- water (wet) spraying to control dust; limiting working hours to minimize disturbance; regular maintenance of vehicles;
- construction of noise barriers near sensitive receptors where necessary;
- reuse or proper disposal of construction debris; observing of proper hygiene and safety standards in facilities, camps and working areas;
- development and implementation of an erosion control and silt management measures;
- compensatory plantation of vegetation if required.

b. Impacts During Operation Phase

77. Environmental issues in thermal power plant projects primarily include the following:

- Noise
- Air emissions
- Energy efficiency and Greenhouse Gas emissions
- Water consumption and aquatic habitat alteration
- Effluents
- Solid wastes
- Hazardous materials and oil.

78. Increase in ambient noise can be expected during operation of machineries and from increased related traffic and may affect a limited surrounding area. The standard for measuring this impact is the noise level as provided in the EHS IFC Guidelines for residential areas. Ambient noise calculation is necessary to determine expected impacts during operation of the plant.

79. There is a potential impact of decreasing air quality as a result of the fuel combustion process such as SO₂, NO_x and other pollutants. The air quality needs to be assessed and monitored since it might impact the community health, terrestrial and marine ecosystems. Such impact assessment and monitoring of air quality of power plant operations in non-degraded and degraded airsheds shall be conducted according to the requirements of General EHS Guidelines for Thermal Power Plants.

80. The air and noise emissions must also consider the cumulative effects in combination with other eventual existing or planned, neighbouring projects. In case early assessments indicate the possibility that applicable limits are exceeded, further deepening studies must be undertaken eventually including specialized cumulative noise and emission studies to determine if cumulative level of noise and emissions will stay within the permitted levels.

81. The emission from the stacks shall comply with the more stringent of the following regulations, either Regulation of the Minister for Environment Number 21 of 2008 concerning Quality Standard of Emission from Immovable Sources for Thermal Power Plant Activities or the applicable EHS IFC guidelines. In case the power plant

¹⁴ General EHS IFC Guidelines for Thermal Power Plants

will be operated as a peaker, the impact is expected to be intermittent. The ambient air quality standard will refer to Government Regulation Number 41 of 1999 for ambient air quality and the applicable General EHS IFC guidelines. The more stringent regulation will apply.

82. Emission of CO₂ and greenhouse gases is expected during plant operation, as well as emission from movement of vehicles on the access road. GHG emission calculations will be performed and evaluated during the project implementation¹⁵.

83. Fishing activities may be impacted by the plant operation. Future ecotourism may be impacted by the plant operation due to noise and air emissions, as well as through visual impairment.

84. Impacts on marine and fresh water can be possible during operation of the plant through wastewater, sewage or contaminated water from oil or fuel storage or pumping stations. Discharge of wastewater from the operation of the plant and the use of jetty could have a potential impact on marine biota. This is especially relevant if the environmental assessment indicates high ecological value of the coastal area (mangrove, sea grass, coral reef, shallow hard bottom and sandy beaches where turtles laying their eggs). Any discharges must meet requirements of IFC EHS General Guidelines and Guidelines for Thermal Power Plants. The oily wastewater needs to be pre-treated by an oil separator and waste water needs to be treated applying suitable techniques before being discharged. Regulation of the Minister of Environment No. 08 Year 2009 on Wastewater Quality Standard for Thermal Power Plant Businesses and/or Activities will govern the operation of this waste water treatment plan.

85. Although power plants use water for various processes including pollutant scrubbing to control air emissions, sanitary systems, plant cleaning and fuel processing, the vast majority of water is for cooling of gas turbines while gas engines do not require significant quantity. The withdrawal of large quantities of water potentially compete with other important water uses such as agricultural irrigation or drinking water sources and could have impacts on the ground water level. Discharge of cooling water with elevated temperature and chemical contaminants may affect aquatic organisms and aquatic life. Aquatic organisms drawn into cooling water intake structures may be subjected to significant harm.

86. In order to avoid competing use of existing fresh water source, all power plants at the shore will be equipped with a seawater reverse osmosis plants to produce fresh water. Power plants more inland will look for suitable sources, like river water (as in the case of Kaltim). Water intakes and discharge structure must be designed to minimize impacts on marine life. PV plants will be designed to minimise water needs for panel cleaning. For gas turbines and combined cycle turbines recirculating cooling systems with cooling ponds will be used instead of once-through systems to mitigate impacts to water resources and aquatic habitats. Thermal discharge should be designed to ensure that discharge water temperature does not exceed recommended temperature limits.

87. Mitigation measures proposed to address impacts during operation stage are described in details in the Thermal Power Plant IFC Guidelines¹⁶:

¹⁵ 46. ADB SPS 2009 requires quantification and reporting the GHG emission and consideration of alternatives in case the annual CO₂ equivalent is exceeding 100,000 tons.

¹⁶ Technical Mitigations will be incorporated in Bid Document/contract document and reviewed by ADB.

Air: Sulphur Dioxide

- Use of fuels with a lower content of sulphur where economically feasible;
- Depending on the plant size, fuel quality, and potential for significant emissions of SO₂, use of flue gas desulfurization (FGD) for large reciprocating engines;

Air: Nitrogen Oxides

- Use of dry low-NO_x combustors for combustion turbines burning natural gas;
- Use of water injection or SCR for combustion turbines and reciprocating engines burning liquid fuels
- Use of lean-burn concept or selective catalytic reduction for new gas engines

Air: Particulate Matter

- Design and operate transport systems to minimize the generation and transport of dust on site;

Noise

- Siting new facilities with consideration of distances from the noise sources to the receptors (e.g., residential receptors, schools, hospitals, religious places) to the extent possible. If the local land use is not controlled through zoning or is not effectively enforced, examine whether residential receptors could move outside the acquired plant boundary. In some cases, it could be more cost effective to acquire additional land as buffer zone than relying on technical noise control measures, where possible;
- Use of noise control techniques such as: using acoustic machine enclosures; selecting structures according to their noise isolation effect to envelop the building; using mufflers or silencers in intake and exhaust channels; using sound absorptive materials in walls and ceilings; using vibration isolators and flexible connections (e.g., helical steel springs and rubber elements); applying a carefully detailed design to prevent possible noise leakage through openings or to minimize pressure variations in piping;
- Modification of the plant configuration or use of noise barriers such as berms and vegetation to limit ambient noise at plant property lines, especially where sensitive noise receptors may be present.
- Maintenance of road safety features in the project, implementation of emergency response system, maintenance of trees planted under the project and construction of noise barriers where found necessary.

88. The anticipated impacts will be addressed through mitigation measures provided in the EMP which will be made mandatory for the Engineering Procurement and Construction (EPC) contractor to implement during the construction phase and by PLN during the operation. The effectiveness of the EMP will be monitored through an Environmental Monitoring Plan (EMoP). A typical generic Environmental Management and Monitoring Plan is provided in Appendix 9.c. Outline of an environmental impact assessment report provided in Appendix 9.h. An outline of the EMoP provided in Appendix 9.f. Further institutional mechanisms will be established between PLN, PIC, contractors and other concerned agencies to ensure all unanticipated environmental impacts are appropriately addressed.

4. ENVIRONMENTAL ASSESSMENT FOR SUBPROJECTS

89. The whole sector loan project has been categorized as Category A for environment. Each subproject will also be categorized as environmental category A, B or C. All subprojects must comply with Indonesian regulation that requires certain environmental assessments and compliance with specific conditions. In addition, each subproject must comply with conditions (listed below). Any subproject not meeting these criteria will not be put forward for funding under the project. An environmental audit is required for all existing facilities including corrective action plan¹⁷.

a. Assessment Scope Following Indonesian Regulations

90. According to the Decree of Minister of Environment No. 05/2012 the following criteria will trigger that an AMDAL is required for construction and operation related to the scope of the sector loan:

- Diesel or gas fired, or combined cycle power plan with 100 MW output (or higher) located in one place;
- Onshore and offshore LNG regasification facility (more than 550 m³)
- Onshore and offshore oil and gas pipelines longer than 100 km (or with pressure more than 16 bar)
- High voltage powerline (more than 150 kV);
- Other power plants (solar, wind, biomass) with 10 MW output (or higher);
- Jetty (sheet pile or open pile) with a length of more than 200 m or size of more than 6,000 m²;
- Breakwater with a length of more than 200 m;
- Floating facility with a capacity of more than 10,000 DWT;
- Reclamation with a reclamation size of 25 hectares or more, disposed material of 500,000 m³ or more, or longer than 50 m.

91. According to the Government Regulation a AMDAL is mandatory for any business and/or activity of which boundary overlaps with a protected area and/or potential impacts of the business and/or activity are predicted to affect nearby protected areas.

92. Annex III of the Decree of the Minister of Environment No. 05/2012 on Type of Business and/or Activities Requiring Environmental Impact Assessment, identifies 20 classifications of protected areas under regulations of Ministry of Forestry, Ministry of Public Work and others as follows:

- 1) Protected forest area;
- 2) Peat area;
- 3) Watershed (catchment) area.
- 4) Coast demarcation (corridor);
- 5) River demarcation (corridor);
- 6) Area around lake or reservoir;

¹⁷ See the ADB SPS 2009 Safeguard Requirements 1

- 7) Flora sanctuary and marine sanctuary;
- 8) Natural reserve and marine reserve;
- 9) Mangrove forested coast area;
- 10) National park and national marine park;
- 11) Forest park;
- 12) Natural tourism park and marine tourism park;
- 13) Cultural and knowledge heritage area;
- 14) Natural geology reserve area;
- 15) Groundwater recharge area;
- 16) Spring demarcation;
- 17) Genetic protection area;
- 18) Fauna refugee area;
- 19) Coral reef; and
- 20) Corridor area for protected flora or marine biota.¹⁸

93. According to Decree of Minister of Environment No. 05/2012 use of these areas that is not in line with the purpose of the original protection should be avoided. These areas are normally identified in Spatial Planning documents. The Government Regulation PP No. 27/2012 (article 4) mentions that purpose and location of an activity should comply with official spatial plans. In case of non-compliance, the AMDAL application will be refused.

94. Business activities which do not require explicitly an AMDAL and have no significant impact on the environment will required an UKL-UPL.

95. These criteria correspond with ADB SPS 2009, which also restricts projects in critical habitats.

b. Environmental Selection Criteria

96. To ensure compliance with ADB SPS 2009 PLN and ADB agree on the following criteria to be applied in the selection of subprojects:

- The subprojects selected must be listed in PLNs investment program (RUPTL) for Eastern Indonesia.
- Eligible are:
 - small- and mid-size gas power plants; these may have dual fuel capability to run also on diesel, but concrete procurement plans to secure gas supply must be in place at the time of subproject approval;
 - conversion of existing simple cycle plants to combined cycle plants through addition of steam cycle;
 - hybrid gas-solar plants, or add-on solar PV hybrid packages (PV, energy management systems, weather module, battery) to existing gas plants.
- Mobile power plants are not eligible as their mobility make the assessment of safeguard compliance difficult.

¹⁸ Any power plant potentially impacting protected area should ensure sufficient ADB and PLN time and resources available to supervise and monitor this project.

- Subprojects must be classified following ADB's Safeguard Policy Statement (SPS 2009) as category A or B for environment; and B or C for both involuntary resettlement and indigenous peoples;
- Subprojects should involve no or relatively straightforward land acquisitions (e.g. no complicated, pending forestry permits or unclear right of ways that may likely lead to significant delays).
- Selection criteria need to exclude highly complex & sensitive subprojects.
- Subprojects located inside a legally protected area which are not consistent with the management plan are not eligible.
- Subprojects located within or having significant negative impact on, the high biodiversity core zone of any protected areas such as national parks nature reserves, or wildlife sanctuaries or that would lead to significant conversion or degradation of primary forests, mangrove, coral reefs or other natural habitat are not eligible. .
- Subprojects with measurable adverse effects, or likelihood of such, on critical habitat areas or that could lead to a reduction in the population of any EN or CR species supported, or with significant negative impacts on cultural heritage sites of national and international significance are not eligible.
- Only subprojects with EIA/IEE and EMP that complies with SPS and EARF are eligible.
- Only subprojects that alone contribute <25% of NAAQS in a NDA and a fraction of the NAAQS and adopt offsets in a DA are eligible.
- Only subprojects that meet emission and discharge standards set out in the EHS Guidelines during all operational modes including temporary modes are eligible.
- Only subprojects that have intakes designed in accordance with EHS Guidelines and using closed loop cooling system are eligible.
- Subprojects selected shall only involve activities that follow the government's laws and regulations, and are not on ADB's list of prohibited activities.

c. Environmental Assessment Procedures

97. The Indonesian screening process is presented in the flowchart diagram of Appendix 9. e. The environmental assessment of the subprojects will be conducted by PLN in line with the requirements of this EARF and Safeguard Requirement of the ADB SPS 2009.

98. First, a preliminary evaluation of the proposed subproject should be conducted by PLN in consultation with the PIC. Each of the subprojects will be individually categorized at the beginning of the environmental planning process and a Rapid Environmental Assessment (REA) based on available information or collected during a site visit should be drafted. This will include a description of the likely area of influence (Aol)¹⁹ based on the ADB SPS 2009. The categorization needs to be

¹⁹ The Aol of a subproject encompasses (i) the primary project site(s) and related facilities that the PLN and/or the Contractors develop or control, (ii) associated facilities that are not funded as part of the project and whose viability and existence depend exclusively on the project and whose goods or services are essential for successful operation of the project, (iii) areas and communities potentially affected by (cumulative) impacts from further planned development of the project, other sources of similar impacts in the geographical area, any existing project or condition, and other project-related developments that are realistically defined at the time the assessment is

endorsed by ADB, but can be revised if the further assessment or the project development confirm a different category.

99. If the first screening is positive and ADB approves the categorization, the scope of the environmental assessment will be determined in the terms of reference for the EIA/AMDAL or IEE/UKL-UPL to be produced by PLN supported by the PIC. To avoid duplication of efforts, the terms of reference for the AMDAL or UKL-UPL reports - depending on categorization - of future subprojects will take into account the required compliance of these reports with this EARF and ADB SPS 2009. Involvement of PIC and ADB in the drafting of these terms of reference is encouraged.

100. PLN will select a qualified consultant to analyse the project impacts, prepare an AMDAL and address all issues as required in the this EARF and by ADB SPS 2009. The PIC will assist PLN in conducting assessments and developing the appropriate safeguards documents (EIA/IEE) to fulfil ADB's requirement.

101. Once the (draft) EIA/AMDAL or IEE/UKL-UPL that will include an EMP is available, ADB will review it. The PIC will support to close any remaining gaps between Indonesian requirements and ADB standard. Such support could include cumulative impact assessment of air emission and noise or specific biodiversity studies. Upon incorporation of ADB's comments to ensure that the AMDAL or UKL-UPL meet SPS 2009 requirements, the English version of final AMDAL or UKL-UPL will be submitted to ADB. Only after ADB's endorsement of the EIA or IEE, ADB's agreement to the funding under this sector loan can be assumed.

102. Within the scope of the PIC, such cumulative quantitative impact assessments of power generation on air quality and acoustic environment should eventually be conducted in case the subproject is in the vicinity of other power plants or associated facilities and their cumulative effects could potentially exceed the applicable thresholds (either national laws or if more stringent originating from IFC EHS guidelines). Similarly, additional expert studies like marine dispersion study, marine survey, critical habitat study (swamp area, etc.), eventually including a biodiversity management plan or bathymetric survey may be required and their enclosure in the scope of the PIC may be agreed upon.

d. Requirements for the Assessment of Potential Environmental Impacts

103. The impact evaluation will consider impacts on the physical, biological and socio-cultural environment. The project impacts and benefits will be described within the geographical, ecological and social context, considering short, medium and long term developments expected by the project.

104. Evaluation, prediction and assessment of the positive and negative impacts of the Project on the environment will be presented wherever possible in quantitative terms. Significance of a potential impact of a subproject is measured in terms of its extent in time and space, the vulnerability of the affected environments, the reversibility of the impact and the probability of its occurrence. The impact assessment will be done for the construction, operation and, if applicable, the decommissioning phase.

undertaken, and (iv) areas and communities potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a different location.

105. The assessment of impacts will include direct, indirect, cumulative and induced, potential transboundary and global impacts of the project, including climate change.

106. Within the preparation process of the proposed site, it will be documented how alternatives and other site locations have been analysed with respect of the environmental impacts and appropriateness of the selected site. Possible and feasible project alternatives will be discussed from the environmental point of view. This comprises alternative sites as well as alternative technologies as described in IFC guidelines for Thermal Plants.

107. In accordance with the requirements of ADB's SPS 2009²⁰ the EIA/IEE report must investigate the following list of issues provided below (but not limited to these):

- Potential impacts on air & acoustic environment;
- Potential impacts on surface and ground water;
- Potential impacts on biodiversity including modified, natural, critical habitat and protected areas and necessary measures to minimize, mitigate and offset impacts in accordance with SR 1 of the ADB SPS 2009;
- Soils contamination and erosion issues and necessary engineering and bioengineering measures to address them;
- Potential impacts on occupational health and whether they comply with the EHS IFC guidelines or the national standards (whichever is more stringent). Quantitative analysis on these potential impacts may be carried out to the extent possible. Special attention should be paid to health, safety and air quality concerns originating in the handling of liquefied natural gas and if needed a quantitative risk analysis shall be performed. Handling of diesel and community H&S risk from explosion or fire if local community in proximity to power plant should also be analysed and mitigated
- Calculations on greenhouse gas emissions from the project must be carried out using appropriate tools and recommendation on emission mitigation;
- Potential waste management issues including excavated spoil, hazardous materials and wastes and appropriate measures for their disposal, treatment and other forms of management in accordance with the IFC EHS guidelines;
- The report shall contain a statement if the sustainability of the investment might be affected by climate change impacts and risks and if adaptation measures might be recommended;
- Cumulative and induced impacts of the project in combination with other development and planned projects;
- Potential impacts on physical and cultural resources and measures to avoid, minimize or mitigate impacts;
- Documentation of analysis of alternatives.

e. Baseline Conditions in the Project Area

108. The relevant physical, socio economic, biological and ecological conditions at each subproject and its AoI need to be described using current baseline data. This

²⁰ See ADB SPS 2009, Appendix 1, Annex 1.

could be within feasibility studies, AMDAL or complementing documents. The extent of the investigation area will be defined considering the power plant site and its immediate vicinity, including all project relevant infrastructures (access roads, power supply, worker camps, excavation and deposit sites, etc.) as well as areas where significant impacts are expected, based on the REA performed at the screening phase. The baseline conditions may include the following issues, but should not be limited to them:

- Baseline air quality data;
- Baseline meteorological data;
- Evaluation of airshed quality, significant pollutant sources in the area and prospects for their mitigation;
- Baseline acoustic environment;
- Baseline hydrology and water quality of water bodies potentially receiving the discharges;
- Water supply sources from surface water, underground water, desalination;
- Physical environment: topography (drainage patterns around construction areas, view-sheds around facilities); soils (agricultural value, potential use for lining, potential contamination situation and disputes, or soil cover in residue disposal);
 - Biological environment: flora (e.g. types and diversity); fauna (e.g. resident and migratory); rare or endangered species within or in areas adjacent to project-related development sites; sensitive habitats, including wetlands, parks or reserves, significant protected areas within or in areas downstream/down gradient of project-related development areas; species of commercial importance in areas affected by the Project;
 - Socio-cultural environment (include both present and projected where appropriate): population (i.e., full time and seasonal); land use (i.e., year-round and seasonal); planned development activities; community structure; employment and labour market; agriculture; distribution of income, goods and services; recreation; public health; education; indigenous peoples and traditional tribal lands; customs, aspirations and attitudes. Specific care will be taken to identify cultural properties (e.g. archaeological and historically significant sites).

f. Environmental Management Plans and its Monitoring

109. The EIA/IEE for ADB and AMDALs or UKP-UPLs for PLN/Indonesian institution will contain EMPs, starting with the preconstruction phase and throughout the entire lifetime of the subproject. Each EMP will include mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. The EMP will identify parties which will be responsible for the implementation, the control and the follow-up of the EMP measures. If some residual impacts are likely to remain significant after mitigation, the EMP will also include appropriate compensatory measures (offset) to ensure that the project does not cause significant degradation of the environment. The EMP will define expected outcomes as measurable events to the extent possible and will include performance indicators or targets that can be tracked over defined periods.

110. Where PLN has to ensure AMDAL compliance, PLN will employ national environmental supervision consultants to monitor the implementation of the AMDALs and the EMPs. PLN will employ its own site supervision consultants to monitor the contractors' compliance with the EPC contracts which includes respecting social safeguards and execution of the Environmental Management Plan (EMP), as well as the mitigation of any unexpected adverse environmental impacts. Both will liaise intensively with the PMU and PIC to enable satisfactory functioning of all supervisory roles.

111. Overall the PMUs supported by the PIC (environmental specialist) will monitor compliance of the Project and coordinate with the SPIUs on environmental monitoring of the execution of the EMP as well as the mitigation of any unexpected adverse environmental impacts. The scope of the PIC consultancy will comprise inter alia general coordination of monitoring of the implementation of the EMPs and grievance mechanisms. If there is a significant change in project scope or an unanticipated environmental impact become apparent, the PMUs shall ensure that an update of environmental assessment is triggered and undertaken. SPIUs shall prepare and submit to the PMU monitoring reports, which describes EMP implementation and results in compliance with applicable national environmental legislation, loan covenants and ADB SPS 2009. The PMU shall summarize progress and environmental monitoring in semi-annual reports submitted to ADB. PLN shall ensure that the EMP is referenced and included in tender and contract documents of the EPC contractor.

5. PUBLIC CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM

a. Public Consultation with Stakeholders

112. ADB SPS 2009 requires to carry out a process of meaningful consultation which:

- begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle;
- provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people;
- is undertaken in an atmosphere free of intimidation or coercion;
- is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and
- enables the incorporation of all relevant views of affected people and other stakeholders into decision making, such as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues
- Category A subprojects will undergo at least 2-3 rounds of consultations.

113. The AMDAL Consultant in cooperation with PLN and the responsible local environmental authorities will inform the stakeholders about the planned project during public meetings, which will be conducted according to ADB SPS 2009. Public consultations during the preparation of the AMDAL/EIAs or UKL-UPL/IEEs for the subprojects could include public meetings, written consultation, on site surveys and focus group discussions.

114. The attendants as well as the relevant outcomes of these meetings will be documented in protocols, which will be attached as Annexes to the AMDAL/EIA or UKL-UPL/IEE reports.

115. Relevant environmental and social aspects identified during these meetings will be considered in the further assessment process. All raised issues and concerns will be documented and PLNs project team will respond to them. Public consultations process will follow the Indonesian regulation.: For EIA / AMDAL / IEE / UKL-UPL, public meeting will be conducted once at the beginning of the process. When draft of EIA / AMDAL is evaluated for approval, representative of community also participates in the AMDAL Committee work. ADB shall be given opportunity to participate as well.

116. The consultation meetings shall take into consideration the local characteristics (location, dates, form of invitation, etc.). After the public sessions, a reflection period shall be given for people to consult the documents and make the comments they find appropriate. In case no period is legally binding, a 30-day commenting period is advised. The consultation shall give the affected people the opportunity to state whether they agree or disagree with the subproject, which advantages and impacts are they expecting and which measures could be undertaken to enhance the benefits and minimizing the negative impacts of the subproject.

117. During the socio-economic surveys, it will be determined whether there are groups in the subproject areas which can be considered disfavoured and on which the negative impacts could fall disproportionately. For these groups, it may be advisable to

undertake focus group discussions instead of, or in addition to the public consultation meetings with measures to involve vulnerable groups including women.

b. Information Disclosure

118. Within the environmental assessment process, information disclosure shall include disclosure of the subprojects' plans and disclosure of the draft AMDAL/EIA and IEE/UKL-UPL documents and respective Executive Summaries.

119. The project initiator, PLN shall announce the subproject plans via printed media, specifically using local or national newspapers and physical notice boards in the areas of influence. The draft AMDAL/EIA or IEE/UPL-UKL documents and respective executive summaries shall be made available for public commenting. It is recommended to prepare, for each subproject, a Project Data Sheet which will include a mechanism for each person to register as interested or affected party (via telephone, internet, post or personally). Relevant environmental information will be provided in a timely manner, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods will be used.

120. In order to respond appropriately to comments made on the draft reports, PLN shall develop a mechanism for receiving, documenting and addressing the submitted comments. In general, communication and dissemination platforms could be brochures, targeted briefings, hard copies of reports and executive summaries, mail, SMS, newspapers, radio, TV, videos, website, random disclosure, direct contact with village officers, etc.

121. During the construction phase, for the communities living near to the working sites, the impacts of noise, dust, vibration, traffic, and lighting associated with construction can cause disturbances and mental stress, as well as pose a physical or health hazard. In addition, social conflicts with external workers might also arise. To avoid such situations, whether for large capital works or minor construction activities, it is advised to give the public notification of:

- the purpose and nature of the construction activities;
- the start date and duration of the overall construction works and of specific operations (blasting, terrain clearing, transport of heavy components, etc.);
- potential impacts and monitoring results;
- information whom to contact if there are concerns/complaints related to the contractor, workers or the works.

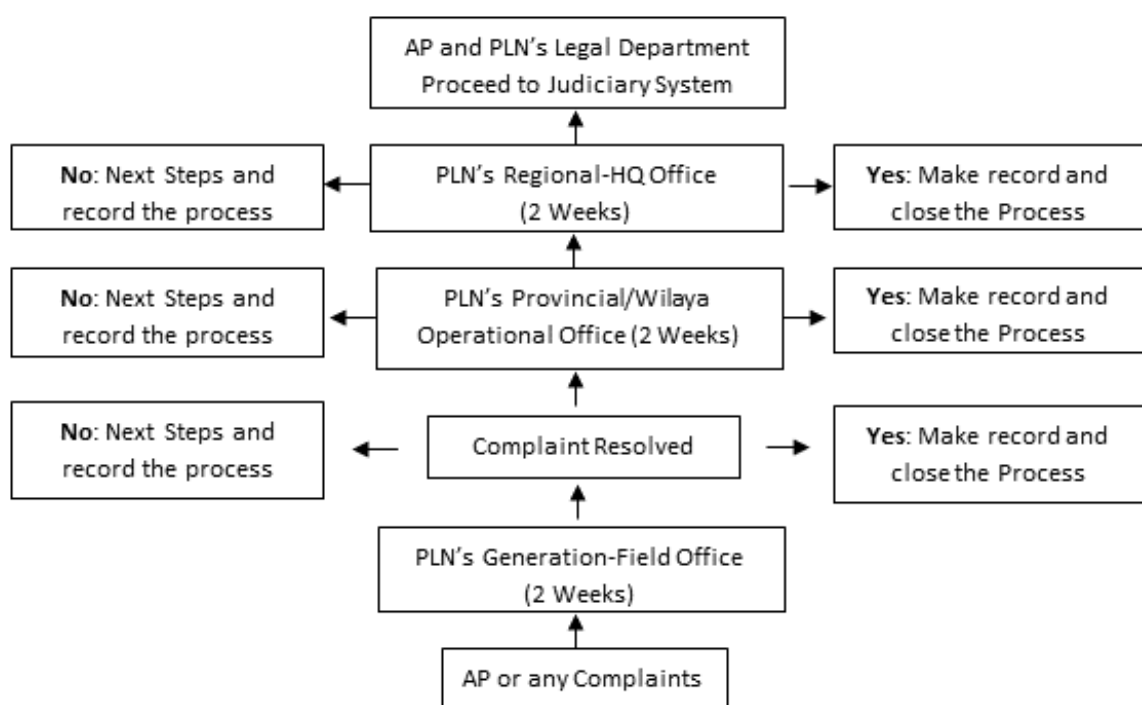
122. A regular disclosure of information related to the management of the environmental and social matters (application of measures, monitoring efforts and results) shall be done. This can be done by means of roadside signs, poster boards in public places, newsletters, door-to-door leaflets, mail, SMS, newspapers, radio, TV, website, direct contact with village officers, etc.

123. ADB SPS 2009 requires disclosure of the (draft) EIA of the core subprojects on ADB website 120 days before ADB board approval. Triggers and timing for the disclosure for the different documents is given in Table 1.

c. Grievance Redress Mechanism

124. A Grievance Redress Mechanism (GRM) is a systematic process to receive, evaluate, and address the project-related grievances of affected persons (AP) and/or Affected Households (AH). The Project GRM will be set up in consultation with relevant stakeholders and the contact information will be posted publicly on the project website with outreach for all project areas. An information disclosure mechanism in Bahasa will also be in place at the district level to ensure that the local communities are aware of the GRM and their potential involvement and responsibilities in the project activities. PLN will ensure a culturally and gender sensitive GRM to receive and address, in coordination with provincial authorities, project related concerns and to resolve the AP and AH related disputes that may arise during project implementation. It is anticipated that all grievances related to benefits and other assistance will be resolved at the PLN level. PLN will establish a GRM focal point responsible for working with all the different input points, to ensure that all complaints are recorded no matter where they are reported.

125. PLN has established call center-123, website, email, telephone, other media facilities, online by using integrated complaint solving application (APKT); and frontline, i.e., customer services. These facilities are available for the AP to report any incident and complaint about PLN operation including social and environmental issues any time. This call center is operating 24 hours and has offices in each region across the country. By receiving complaint through directly or social media or call-123 the complaint ticket will be established and if the complaint has not been addressed within the promising timeline identified during the establishment of the complaint ticket; there will be a strict follow up on it by the PLN's related region management. The complainers/AP can follow development about their complaint through their grievance ticket numbers; while they receive it during their first communication/contact with/to the PLN office. Meanwhile, people can approach PLN offices directly to raise their grievances. The flowchart presented below illustrates how the grievance will be processed at the operation level of the sector loan project.



126. Addressing the environmental and social issues/complaints is also regulated by Indonesian regulations and the AP can use the existing grievance redress mechanism carried out by the Ministry of Environment and Forestry (MOEF) or Regional Dinas Lingkungan (Environmental Management Agency, EMA). This mechanism prevails as MOEF or EMA has authority for environmental compliance and law enforcement. As the prevailing regulation, MOEF or regional Dinas Lingkungan Hidup authorized to validate the report and/or complaints. Permen LH 9 of 2010 requires the establishment of an Environmental Complaint Post (Pos Pengaduan LH or ECP) to receive and respond to complaints concerning pollution and/or environmental deterioration. It is then strengthened by issuance of KepmenLH: SK/Menhut-II/2015 on Team for Handling Complaints of Environmental and Forestry Cases.

127. Social and environmental complaints received by MOEF or EMA will be verified and/or responded by the authorized agency. In case of violation, MOEF or EMA may send warning or notification to the responsible proponent for corrective actions. Under such warning or notification, PLN regional offices/units will immediately act on community complaints related to construction impacts, environment, community health and safety, and resettlement issues.

128. Grievances related to any aspects of the Project will be handled through negotiation with the aim to achieve consensus. The procedures to be followed in resolving complaints on the affected assets, the level of compensation offered by the government will be defined. All administrative levels, will be employed in the effort to resolve any complaint. No cost shall be borne by the APs in relation with the grievance redress mechanism.

129. Grievance mechanism amongst customary communities shall follow their internal mechanism (if any) or any mechanism provided by local government based on community request. The APs may bring their complaints to the village leaders and/or customary leaders. The complaint may bring it to the officers in the subproject's field office or district office.

130. A record shall be made of all complaints, as well as of the answer given to those. The record should contain:

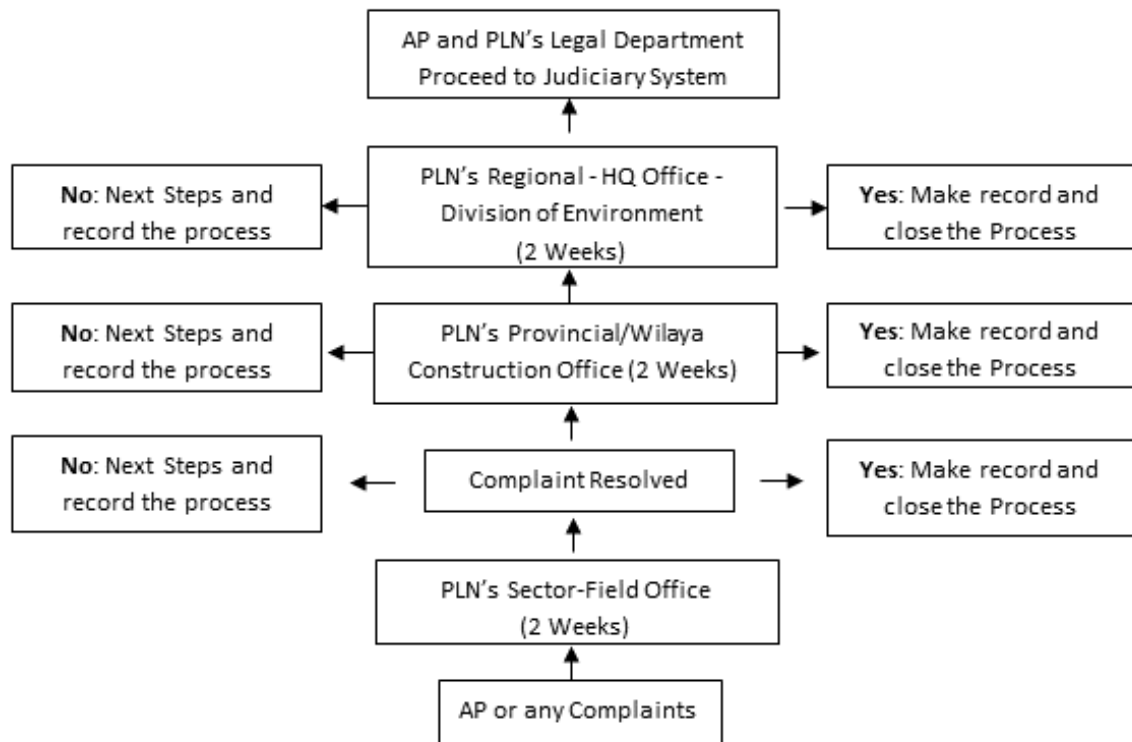
- the name of the individual or organization (if the grievance has not been made anonymously);
- the date and nature of the complaint;
- any follow-up actions taken;
- the final result; and
- how and when this decision was communicated to the complainant.

131. The GRM will include in addition a reporting procedure to the local authority to document that the complaint was identified, noted, managed and solved. The responsible authorities at the community level shall be identified prior to the start of the construction activities or prior to the mobilization to the site. The reporting procedure shall be discussed and agreed together with the administrative authority.

132. The PLN's GRM varies for construction phase, depending on the project's sensitivities and the source of funding. Usually during project preparation PLN and the PPTA team formulate the structure and agreements on how to address grievances

during the construction phase. Meanwhile, the PLN call center can be used if people think it helps them to address their complaints during the construction as well.

133. The below diagram shows PLN's general GRM mechanism practices during project construction period. The given 2 weeks' timeline is based on PLN's usual practices and it depends on case by case occasions.



6. INSTITUTIONAL ARRANGEMENTS AND RESPONSIBILITIES

a. Roles and Responsibilities

i. PLN

134. PT PLN (Persero) Head Quarter (PLN Pusat) regulated by the Ministry of Energy and Mineral Resources and the Ministry of State Owned Enterprises will act as the executing agency (EA) of this project and will be responsible for overall coordination, policy directions, and administration, including those related to environmental safeguards. The detailed information about PLN structure, safeguard staff, approach to the project management, environmental compliance and supervision is provided in Section 2f.

135. PLN will hire PIC (including the Environmental Safeguards Specialists) and External Monitor with the following roles and responsibilities (see Appendix 9.i):

- The Environmental Safeguards Specialists (under the PIC), will be responsible for assisting PLN in assessing the environmental situation of the subproject that do not yet have environmental documentation in place as required by ADB.
- Environmental Safeguards Specialists (under the PIC) will coordinate closely with environmental specialists in the project management unit (PMU) and the subproject implementation unit (SPIU) and with PLNs consultants in charge of monitoring the implementation of the applicable environmental safeguards as defined in the EMP for each subproject along with potential corrective action plans as well as addressing environmental safeguards concerns across the various implementation stages.
- For environment category A sub-projects PLN will engage qualified and experienced external environmental monitor, which will be approved by ADB. The external monitor will review and verify the monitoring reports regarding EMP implementation and to determine if EMP provisions are being conducted in an appropriate and timely manner and in accordance with the budget identified within the EMP. The External Monitor shall undertake such monitoring on a semi-annual basis and shall submit semi-annual monitoring report to PLN and ADB.

ii. Contractors

136. The construction of subprojects will be performed by EPC Contractors. The EPC contracts and the tender documents will stipulate that the contractor is required to comply with the EMP that forms part of the EIA or the IEE of the respective subproject. The obligation shall also include eventual corrective or preventive actions set out in safeguards monitoring reports that PLN will prepare from time to time to monitor implementation of the EMP.

137. The Contractor is required to allocate a budget for compliance with these measures. Commencement of civil works is permitted only after approval of the EIA/AMDAL or UKL-UPL of the respective subproject and completion of the compensation measures. If the bid submission or the EPC contract signature is prior to completion of the EMP, the contractor must be aware that the EMP as finalized later will apply. EPC Contractor must appoint their own environment, health and safety staff.

The contracts must not be awarded until EIA/IEE and EMP has been cleared nationally and by ADB and the EMP has been incorporated into the contract document.

iii. ADB

138. As stipulated in the Loan Agreement and in line with ADB SPS 2009, PLN is responsible to respect ADB's safeguard requirements in the selection, preparation and implementation of the subprojects. ADB will undertake due diligence; and review PLN's social and environmental assessments and plans. ADB will help PLN in building capacity in the fields relevant, especially for safeguards implementation and monitoring throughout the project cycle. ADB will disclose safeguard plans and frameworks, including EIAs, IEEs and monitoring reports, on its website. ADB will review and approve the categorization of the subprojects, EIA/IEE and review the environmental monitoring reports.

139. If PLN fails to comply with the legal agreements on safeguard requirements, including those described in the safeguard plans and frameworks, ADB will seek corrective measures and work with PLN to achieve compliance. If PLN fails to re-establish compliance, then ADB may exercise remedies, including suspension, cancellation, or acceleration of maturity that are available under ADB legal agreements. Before resorting to such measures, ADB will use other available means to rectify the situation satisfactory to all parties to the legal agreements, including initiating dialogue with the parties concerned to achieve compliance with legal agreements.

140. ADB will review project performance against PLN's commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the project's risks and impacts, and will be performed on an ongoing basis until a project completion report is issued.

iv. Government Agencies

141. The Indonesian Ministry of Environment and Forestry (MOEF) is mandated to formulate and implement policies concerning conservation and management of ecosystems and natural resources and control of pollution and climate change. MOEF regulates environmental regulation on strategic and central level, including AMDAL. MOEF at central level is the approving authority for environmental permits for projects crossing over more than one province, and/or crossing over to other countries. Environmental permits for projects laying within province are mandated by provincial environmental agencies (Dinas Lingkungan Hidup Propinsi (DLH)) and projects within one district are handled by district environmental agencies (Dinas Lingkungan Hidup Kabupaten/DLH - Local Environmental Agency).

142. The mandated agency will approve the type of document (AMDAL, UKL-UPL) required and review and approve the TOR of the EIA of the proposed project. After submission of the respective EIA, the AMDAL Review Committee and Technical Team of the mandated agency will carry out a review if administrative and technical requirements are met. The technical review is to be carried out by independent experts such as Biology, Chemist, Geology, Hydrology, etc. and could include staff of related agencies such as the Ministry of Mineral Resources and Energy, Ministry of Environment and Forestry, and the Ministry of Maritime Affairs and Fisheries.

143. The EMP, which is part of the AMDAL or UKL-UPL, will be discussed by the AMDAL Commission which consists of members of the Technical Team and includes government representative from district and village levels, as well as community leaders. The mandated agency is also in charge of monitoring the implementation of the EMPs, which could be done through (i) active monitoring by taking initiative to monitor or (ii) passive monitoring by receiving monitoring reports. The mandated agency has to react on community complaints of pollution, natural resources use conflict, or other environmental based issues.

b. Staffing Requirements

144. At PLN headquarters, the Occupational Health, Safety, Security and Environment Division under the Director of Human Capital Management, has six (6) full-time staff that handles environmental and social safeguards. Each PLN regional office has a safeguard unit with two or three staff depending on the number and scale of projects allocated. It oversees the compliance of safeguard-related laws and regulations and PLN guidance. Each PLN development unit also has a safeguard team, comprising together about 10 staff members. It handles environment and land acquisition issues. In some cases, to accelerate the implementation of safeguard measures, PLN establishes a project implementation unit for specific projects. Staffing and budget breakdown for EARF implementation and capacity building provided below.

Activity	Budget Purpose	Budget Source	Amount \$
Assistance with preparation of subprojects	PIC, consultant fees and cost of field surveys and investigations	PLN	TBD
Appointment of environment safeguards staff to PMU	Staff salary for PLN officer	PLN	TBD
Training on SPS and EARF requirements	Logistical costs, Resource person fees	PLN	TBD
Training on EHS Guidelines	Logistical costs, Resource person fees	PLN	TBD

c. Budgetary Requirements

145. PLN UIP has an annual budget from PLN Headquarters for environmental management and monitoring, that will be managed by UIP and reported to PLN Headquarters. All other management or monitoring measures, must be listed in PLN's budgets documents, under Planning Division of UIP.

146. For each planned subproject a cost estimation will be included in the Feasibility Study. This will be up-dated at latest prior to the tendering and will list measures related to environmental safeguards directly funded by PLN and part of the EPC contract scope. The estimated costs of the measurements that are expected to be the responsibility of the EPC contractor shall be mentioned in the bidding documents. Other budgets of PLN will be available to cover costs for screening and categorization and preparation of AMDAL/EIA and UKL-UPL/IEE reports including EMP for each subproject, and institutional and capacity building activities related to environmental safeguards.

7. MONITORING AND REPORTING

147. During the construction phase, each contractor will develop and implement environmental monitoring procedure on basis of the EMP for the respective subproject. Internal monitoring by the contractor's environmental expert will be performed with the frequency and reporting requirements as documented in the EMoP. UIP through site supervision consultants will monitor the contractors' compliance with the EPC contracts which includes respecting environmental safeguards and execution of the EMP, as well as the mitigation of any unexpected adverse environmental impacts. Records of the performed monitoring activities, including all deviations from EMP observed and corrective actions agreed will be registered on a previously developed form and will be shared with the PMU. The form shall have necessary details about the activity (date, time, person who observed, deviation, corrective action, person responsible to implement corrective action, due date for implementation, as well as the implementation status).

148. Environmental monitoring during operation shall be performed by PLN, in accordance to the legal requirements and approved EMoP. For all subprojects Category A for environment, PLN will engage the External Monitor, who's appointment and terms of reference will be approved by ADB. The monitoring will include operational quantitative emissions and discharge. Wilayah will be responsible for day to day operational implementation. Additional monitoring may be performed by an Environmental Expert engaged by the ADB.

149. The detailed description of arrangements to ensure proper monitoring of the EMP implementation during the construction and operation phases of the subprojects has been provided in Sections 2f and 4f.

8. REFERENCES

ADB 2017: Country Safeguards Review: Indonesia, Appendix 8: Acceptability Assessment for Environmental Safeguards

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IFC General EHS Guidelines

IFC Thermal Power Plants Guidelines

IFC EHS Guidelines for Ports, Harbours, and Terminals

IFC EHS Guidelines for Gas Distribution Systems

IFC EHS Guidelines for Crude Oil and Petroleum Product Terminals

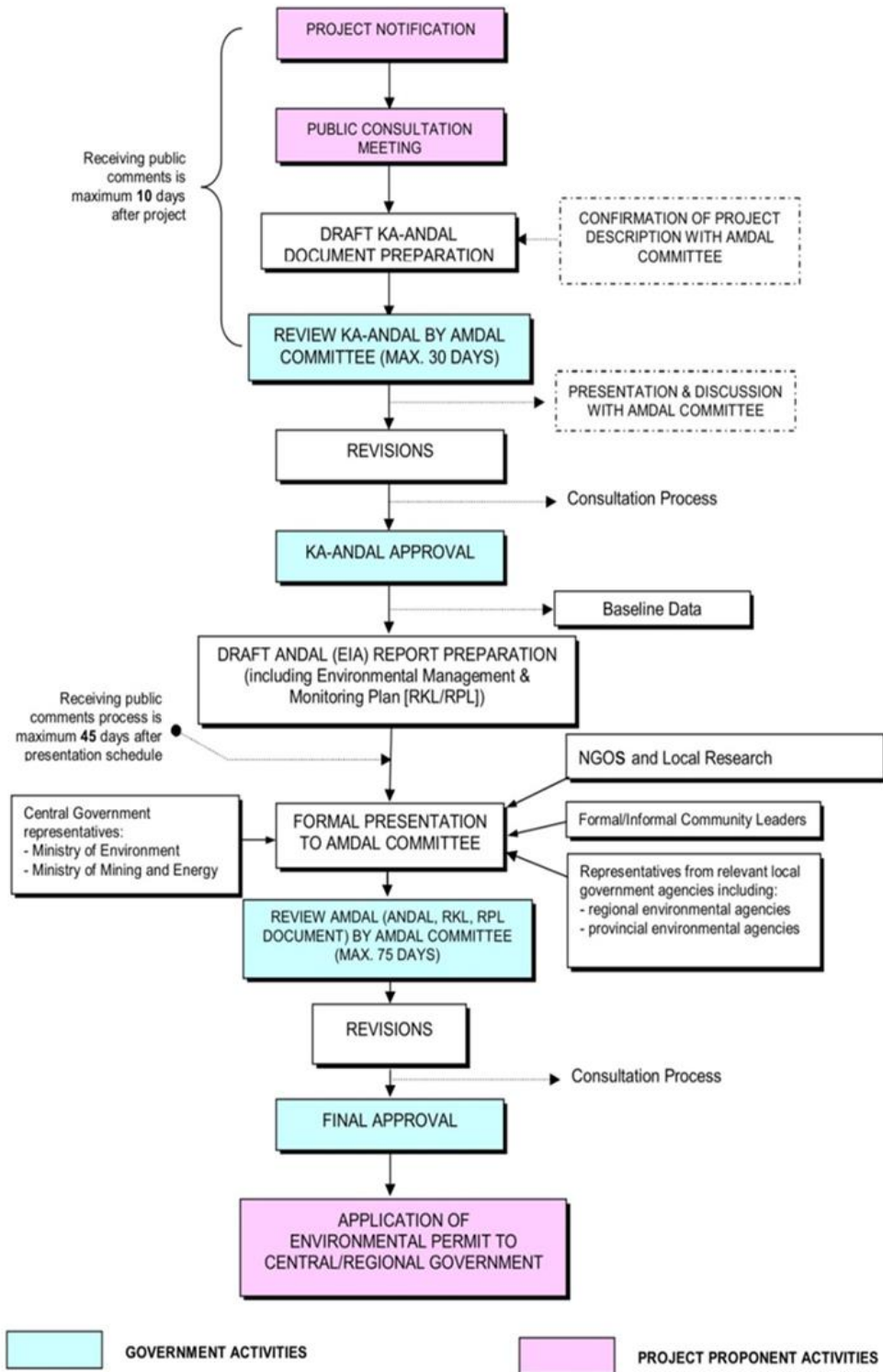
IFC EHS Guidelines for Electric Power Transmission and Distribution

IFC EHS Guidelines for Liquefied Natural Gas Facilities

9. APPENDICES

a. Process of Obtaining Environmental Clearance from the Environmental Authority

Main Steps of AMDAL Process as per Government Regulation 27/2012:



*) Refer to Government Regulation No.27 of 2012

b. ADB Rapid Environmental Assessment Checklists

RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST FOR TA-9082 INO: Preparing the Eastern Indonesia Sustainable Energy Access Sector Project

THERMAL POWER PLANTS

Instructions:

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (RSES) for endorsement by the Director, RSES and for approval by the Chief Compliance Officer.

(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

(iii) Answer the questions assuming the “without mitigation” case. The purpose is to identify potential impacts. Use the “remarks” section to discuss any anticipated mitigation measures.

Country/Project Title:

Sector Division:

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site			
▪ Protected Area			
▪ Wetland			
▪ Mangrove			
▪ Estuarine			
▪ Buffer zone of protected area			
▪ Special area for protecting biodiversity			
B. Potential Environmental Impacts Will the Project cause...			
▪ impairment of historical/cultural monuments and other areas, and loss/damage to these sites?			
▪ encroachment into precious ecosystem (e.g. sensitive habitats like protected forest areas or terrestrial wildlife habitats?			

SCREENING QUESTIONS	Yes	No	REMARKS
▪ dislocation or involuntary resettlement of people?			
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
▪ aesthetic degradation and property value loss due to establishment of plant and ancillary facilities?			
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?			
▪ noise and dust from construction activities?			
▪ short-term soil erosion and silt runoff due to construction?			
▪ fugitive dust during transportation, unloading, storage, and processing of coal, and polluted runoff from coal storage?			
▪ risk of oil spills, which could pollute surface and groundwater and soil?			
▪ hazards in gas pipeline operation and gas storage at power plant sites?			
▪ changes in flow regimes downstream of the water intake due to abstraction for cooling purposes?			
▪ pollution of water bodies and aquatic ecosystem from wastewater treatment plant for boiler feed, bleed-off from cooling towers, boiler blowdown and wash-water, and effluent from ash pond?			
▪ air pollution from fuel gas discharged into the atmosphere?			
▪ public health and safety hazards due to solid waste disposal in sanitary landfills (see Matrix of Impacts and Measures for Solid Waste Disposal)?			
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
▪ social conflicts if workers from other regions or countries are hired?			
▪ risks community safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?			
▪ community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project (e.g. ash pond) are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?			

A Checklist for Preliminary Climate Risk Screening

Country/Project Title:

Sector:

Subsector:

Division/Department:

Screening Questions		Score	Remarks ²¹
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?		
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc.)?		
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?		
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?		
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?		

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high risk project.

Result of Initial Screening (Low, Medium, High): _____

Other Comments: _____

Prepared by: _____

²¹ If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

c. Outline of Environmental Management Plan (EMP)²²

This section deals with the set of mitigation and management measures to be taken during project implementation to avoid, reduce, mitigate, or compensate for adverse environmental impacts (in that order of priority). It may include multiple management plans and actions. It includes the following key components (with the level of detail commensurate with the project's impacts and risks):

(i) Mitigation:

- a) identifies and summarizes anticipated significant adverse environmental impacts and risks;
- b) describes each mitigation measure with technical details, including the type of impact to which it relates and the conditions under which it is required (for instance, continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; and
- c) provides links to any other mitigation plans (for example, for involuntary resettlement, Indigenous Peoples, or emergency response) required for the project.

(ii) Monitoring:

- a) describes monitoring measures with technical details, including parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions; and
- b) describes monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and document the progress and results of mitigation.

(iii) Implementation arrangements:

- a) specifies the implementation schedule showing phasing and coordination with overall project implementation;
- b) describes institutional or organizational arrangements, namely, who is responsible for carrying out the mitigation and monitoring measures, which may include one or more of the following additional topics to strengthen environmental management capability: technical assistance programs, training programs, procurement of equipment and supplies related to environmental management and monitoring, and organizational changes; and
- c) estimates capital and recurrent costs and describes sources of funds for implementing the environmental management plan.

(iv) Performance indicators:

describes the desired outcomes as measurable events to the extent possible, such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods.

Contents of an EMP

1. Summary of Potential Impacts
2. Description of Planned Mitigation Measures
3. Description of Planned Environmental Monitoring
4. Description of Planned Public Consultation Process
5. Description of the Responsibilities and Authorities for Implementation of Mitigation Measures and Monitoring Requirements
6. Description of Responsibilities for Reporting and Review

²² ADB SPS 2009 Appendix 1, Annex 1.

7. Work Plan including staffing chart, proposed schedules of participation by various members of the project team, and activities and inputs of various government agencies
8. Environmental Responsible Procurement Plan
9. Detailed Cost Estimates
10. Mechanisms for feedback and adjustment

Template for Summarizing Mitigation and Management Measures:

Potential Impact	Mitigation Measure	Performance Standard	Implementation Responsibility	Supervision Responsibility
Design				
Physical Environment				
Biological Environment				
Human Environment				
Preparatory work				
Physical Environment				
Biological Environment				
Human Environment				
Construction				
Physical Environment				
Biological Environment				
Human Environment				
Operation				
Physical Environment				

Potential Impact	Mitigation Measure	Performance Standard	Implementation Responsibility	Supervision Responsibility
Biological Environment				
Human Environment				
Decommission				
Physical Environment				
Biological Environment				
Human Environment				

Template for Summarizing Monitoring Measures:

Potential Impact	Monitoring Parameters	Performance Standard	Monitoring Locations	Monitoring Frequency	Monitoring Method	Detection Limits	Implementation Responsibility	Supervision Responsibility
Design								
Physical Environment								
Biological Environment								
Human Environment								
Preparatory work								
Physical Environment								
Biological Environment								
Human Environment								

Potential Impact	Monitoring Parameters	Performance Standard	Monitoring Locations	Monitoring Frequency	Monitoring Method	Detection Limits	Implementation Responsibility	Supervision Responsibility
Construction								
Physical Environment								
Biological Environment								
Human Environment								
Operation								
Physical Environment								
Biological Environment								
Human Environment								

Potential Impact	Monitoring Parameters	Performance Standard	Monitoring Locations	Monitoring Frequency	Monitoring Method	Detection Limits	Implementation Responsibility	Supervision Responsibility
Decommission								
Physical Environment								
Biological Environment								
Human Environment								

d. Indonesian Environmental Regulation

Indonesia has a number of laws regarding environmental protection and management including:

- Law 2/2013: Acquisition of Land for Development in the Public Interest
- Law 32/2009: Environmental Protection and Management
- Law 22/2009: Traffic and Road – relevant reference for vehicle and road traffic management
- Law 18/2008: Waste Management – general legislation and regulation regarding waste management
- Law 26/2007: Spatial Planning Law
- Law 13/2003: Workforce – relevant for workforce issues
- Law 7/2004: Water Resources – hydrological impact assessment within the assessment area
- Law 5/1990: Conservation of Living Natural Resources and their Ecosystems.
- Law 41/1999: Forestry
- Law 19/ 2009: Ratification of Stockholm Convention on Persistence Organic Pollutants

These laws are accompanied by various minister and provincial decrees and regulations, including:

- Ministry of Land and Spatial Planning 6/2015: Technical Guidelines for Land Acquisition – Standard operating procedure to conduct land acquisition for public interest development.
- Ministry of Health 492/MENKES/PER/VIV/2010: Qualification of Drinking Water Quality – drinking water parameters and measures to manage environmental impact to drinking water sources.
- Ministry of Health Regulation 416/1990: Water Quality.
- Ministry of Health Decree 876 / MENKES / SK / VIII / 2001 technical guideline for analysis of environmental health impact
- Ministry of Public Works 14/PRT/M/2013: Standards and Guidelines for procurement Construction Work and Consulting Services.
- Ministry of Public Works 03/2013: Regarding Implementation of Infrastructure and Waste Facility in Household Waste Management and Household-like Waste Management.
- Ministry of Public Works 45/1990: Water Quality Control in Water Resources – relevant for water quality control and monitoring review.
- Environmental protection and management ministerial decrees include:

- State Minister for the Environment Decree Number 13, year 1995, on Standard Quality of Emission of Stationary Source.
- State Minister for Environment Decree Number 48, year 1996, on Noise Level Standard.
- State Minister for the Environment Decree Number 49, year 1996, on standard of Vibration Level.
- State Minister for the Environment Decree Number 45, year 1990, on standard Index of Air Pollutant.
- Ministry of Environment 15/2013: Measurement, Reporting and Verification of Climate Change Mitigation.
- Ministry of Environment 7/2010: Competence Certification of AMDAL Preparation and Training Requirements for AMDAL Preparation.
- Ministry of Environment 5/2008: AMDAL evaluator Working Guidelines – relevant reference for reviewing AMDAL document compliance.
- Ministry of Environment 21/2008, Emission Standard Quality of Stationary Sources – Thermal Power Plan.

Environmental protection and management government regulations include:

- Government Regulation 101/2013: Hazardous Waste Management
- Government Regulation 81/2012: Household Waste Management and Household-like Waste Management
- Government Regulation 43/2008: Groundwater – groundwater management and pollution control review
- Government Regulation 26/2008: National Spatial Plan
- Government Regulation 16/2004: Land Use – relevant for land use and land acquisition review
- Government Regulation 41/1999: Air Pollution Control – air quality
- Government Regulation 82/2001: Water Quality Management and Water Pollution Control – surface water quality
- Government Regulation 7/1999: Flora Fauna Conservation –biodiversity
- Government regulation 18/ 1999, in conjunction to government Regulation 85/1995: Management of Dangerous and Poisonous Materials.

Presidential Decrees include:

- Presidential Decree 71/2012: Implementation of Land Acquisition for Development of the Public Interest Facility. Amended through 40/2014, 99/2014 and 30/2015.
- Presidential Decree 15/2015: Establishment of Ministry of Public Works and Housing for 2014-19.
- Presidential Decree 185/2014: Acceleration of Water and Sanitation provision.
- Presidential Decree 71/2012: National Greenhouse Gases Inventory

- Presidential Decree 61/2011: Greenhouse Gas Emission Reduction National Action Plan

List of Regulations - Exclusively Valid for Electrical sector:

- Regulation of the Minister of Environment No. 08 Year 2009 on Wastewater Quality Standard for Thermal Power Plant Businesses and/or Activities.
- Regulation of the Minister of Environment No. 21 Year 2008 on Quality Standard for Stationary Source Emissions for Thermal Power Plant Businesses and/or Activities.

The following sections present more detailed information on relevant regulations.

Law No 32 /2009 Regarding Environmental Protection and Management

In the 1980's Indonesia developed and implemented a project-specific environmental impact assessment procedure, named AMDAL. The primary policy provision for AMDAL is Law 32 of 2009 on Environmental Protection and Management under the Ministry of Environment. It requires that every activity which has potential impacts is obliged to obtain an AMDAL. The operation of AMDAL is also supported by government institutions at the central, provincial, and district/municipality levels.

The purpose of this Law is to allow an environmentally sustainable development through means of an environmental planning policy and the rational exploitation, development, maintenance, restoration, supervision and control of the environment. Requirements and procedures for obtaining an environmental license are set out in the Law. Particular attention should be paid to the importance given by the Law to the community involvement in the environmental protection and management.

In Article 22 (1) it is stated that every business or activity having a substantial impact on the environment shall be mandatorily subject to an Environmental Impact Assessment (EIA) and Article 23 describes these activities. Article 34 explains that the activities which are not subject to a mandatory EIA shall prepare environmental management and monitoring efforts (UKL-UPL). Article 36 (1) states that EIA or UKL-UPL is a pre-requisite for an environmental license for all types of activities.

Indonesian Government Regulation No. 27/2012 regarding the Environmental License

An environmental license is defined as a license issued to a party engaged in any business activity which requires an AMDAL (environmental impact analysis) or UKL-UPL (environmental management efforts and environmental monitoring efforts) for protection and management of the environment. This is a prerequisite for a business license. In principle, AMDAL is a study of the potential substantial impact of the proposed business activity on the environment, while the UKL-UPL covers monitoring and management efforts undertaken for business activities which are not likely to have a significant impact on the environment.

The required AMDAL and UKL-UPL assessments must be completed before an environmental license can be issued. In other words, any business activities which require an AMDAL or UKL-UPL also require an environmental license. Certain stated business activities are exempt from the AMDAL requirement.

- The UKL-UPL is prepared at the planning stage of a business activity by completing the prescribed forms and submitting them to the relevant authority. Only one UKL-UPL is required for several different business activities if they are located in the same ecosystem. The application for an environmental license must be submitted along with its supporting documents, such as the AMDAL or UKL-UPL, to the Minister of Environmental Affairs, Governor, or Mayor/Regent in line with their respective authorities.

Having obtained an environmental license, the holder must:

- comply with the terms and conditions of the environmental license;
- submit a report on the compliance with the terms and conditions of the environmental license to the Minister, Governor, or Mayor/Regent every six months;
- provide guarantee funds for environmental recovery.

Sanctions for failure to comply with the Government Regulation no 27/2012 may include written warnings, government action, the suspension and eventually revocation of the environmental license.

Article 42 (1) states that the environmental license application should be submitted in written form by the person in charge of the business and/or activity as the Proponent. Article 43 (1) states that the application must be accompanied by: (i) the EIA document or the UKL-UPL; (ii) Article association, and (iii) Company Profile and/or activities. Article 45 refers to community involvement.

Indonesian Government Regulation No. 60/2012 Regarding Procedures for Modification of Land Use and Functions of Forest Areas.

PP 60/2012 is specifically for plantation companies operating in production forest areas, and is applied to other forest activities including logging and mining companies. This regulation is concerned with the provision of land replacement by a borrow-to-use permit.

Indonesian Government Regulation No. 61/2012 Regarding the Forest Area Usage

PP 61/2012 ensures that borrow-to-use permits remain valid until expiry even if spatial planning designations are changed. It requires mining license holders with pre-Spatial Planning Law licenses who operate in production forests to apply for a borrow-to-use permit before the end of the year.

Indonesian Government Regulation No. 44/2004 Regarding Forestry.

This regulation classifies the forestry zone by its function, as follows:

A. Conservation forest

Forest preservation, including nature preservation and animal sanctuary

Forest conservation, including national park, forest park, and natural park

Hunting park

B. Protection forest

C. Production forest

Limited production forest

Regular production forest

State Minister for the Environment Regulation No.05 of 2012 Minister Decree No.05/2012 regarding Activities for which an EIA is mandatory

This minister regulation provides guidance/direction of the preparation of the procedures for the environmental documentation. Article 4 explains that the business and/or activities undertaken: (i) within a protected area, and or (ii) directly adjacent to a protected area, have to prepare an EIA.

Attachment 1 from this regulation contains a list of the activities for which an EIA is mandatory.

State Minister for the Environment Regulation No.16 of 2012 regarding Environmental Document Guidelines

The State Minister for the Environment has issued a new regulation regarding how the Environmental Documents being the prerequisites for a company's environmental license shall be composed. This Regulation of the State Minister for the Environment No. 16 of 2012 on Guidelines for the Composition of Environmental Documents is the implementing regulation of Article 6 and Article 16 of Government Regulation No. 27 of 2012 on Environment Licenses.

The Environmental Documents consist of the following 3 documents:

- AMDAL, which is an assessment report on the significant impacts of the company's business and/or activities on the environment, and which is necessary for the process of decision making regarding the running of the business and/or activities.
- UKL-UPL Form, which pertains to the management and monitoring efforts by the company of its business and activities that have no significant impacts on the environment, and which is necessary for the process of decision making regarding the running of the business and/or business activities.
- Statement of Environmental Management and Monitoring Undertaking (Surat Pernyataan Kesanggupan Pengelolaan dan Pemantauan Lingkungan Hidup/SPPL), which is a statement regarding the company's activities to monitor and manage the environmental impact of its business and/or activities which are exempted from the AMDAL or UKL-UPL requirement.

The first two documents are required for the submission of the application for the environmental license. The SPPL is only for businesses and/or activities which are exempted from the AMDAL and UKL-UPL requirement.

The Terms of Reference is the initial assessment of the impacts of the business and/or activities on the environment, which is to be further elaborated in the AMDAL. The RKL-RPL sets forth the plans for the management of the environment and prevention of the negative impacts on the environment.

The Regulation No.16 of 2012 intensifies the environment assessment requirement, but simplifies the composition of the AMDAL documents.

Section 4 explains that the AMDAL document shall consist of: (i) Terms of Reference (ii) Environmental Impact Analysis and (iii) RKL – RPL (management and monitoring plan). For UKL-UPL, article 8 states that it must contain: a) the identity of the initiator; b) business plans and/or activities; c) environmental impacts that would occur, and

environmental management and monitoring program; d) the number and type of license protection and environmental management which is needed; e) statement of the initiator committing to implement the provisions of the UKL-UPL form; f) bibliography; and g) attachments.

With the enactment of the Regulation, the following older regulations are revoked:

- State Minister for the Environment Regulation No. 08 of 2006 on Guidelines for the Composition of AMDAL documents;
- State Minister for the Environment Regulation No. 13 of 2010 on UKL-UPL and SPPL.

State Minister for the Environment Regulation No.17 of 2012 regarding Guidelines for Community Involvement in The Process of Environmental Impact Assessment and Environmental License

The Ministry of Environment has issued guidelines for the involvement of the public in the AMDAL process and in the issuance process of environmental licenses.

The Regulation explains why the public is included in the processes:

- the public gets information on business plans or activities that may have a significant impact on the environment;
- the public can give suggestions, opinions or comments on the business plans or activities;
- the public can be involved in the process of decision making in relation to the worthiness or unworthiness of business plans or activities;
- the public can give suggestions, opinions and comments on the issuance process of environmental licenses.

The communities that are included in the AMDAL process are (i) the community which is suffering from the impact; (ii) the concerned community; and (iii) the community which is affected by any form of decision in the AMDAL process.

The affected community must be included in the assessment process of the AMDAL and RKL-RPL (Environmental Management Plan – Environmental Monitoring Plan) through its appointed representative who will be a member of the AMDAL Appraisal Committee.

The rules and procedures for the public's participation in the AMDAL process and for the involvement of the public in the issuance of environmental licenses are specified in Chapter II and Chapter III of the Regulation.

Head of Environmental Impact Management Agency (BAPEDAL) Decrees

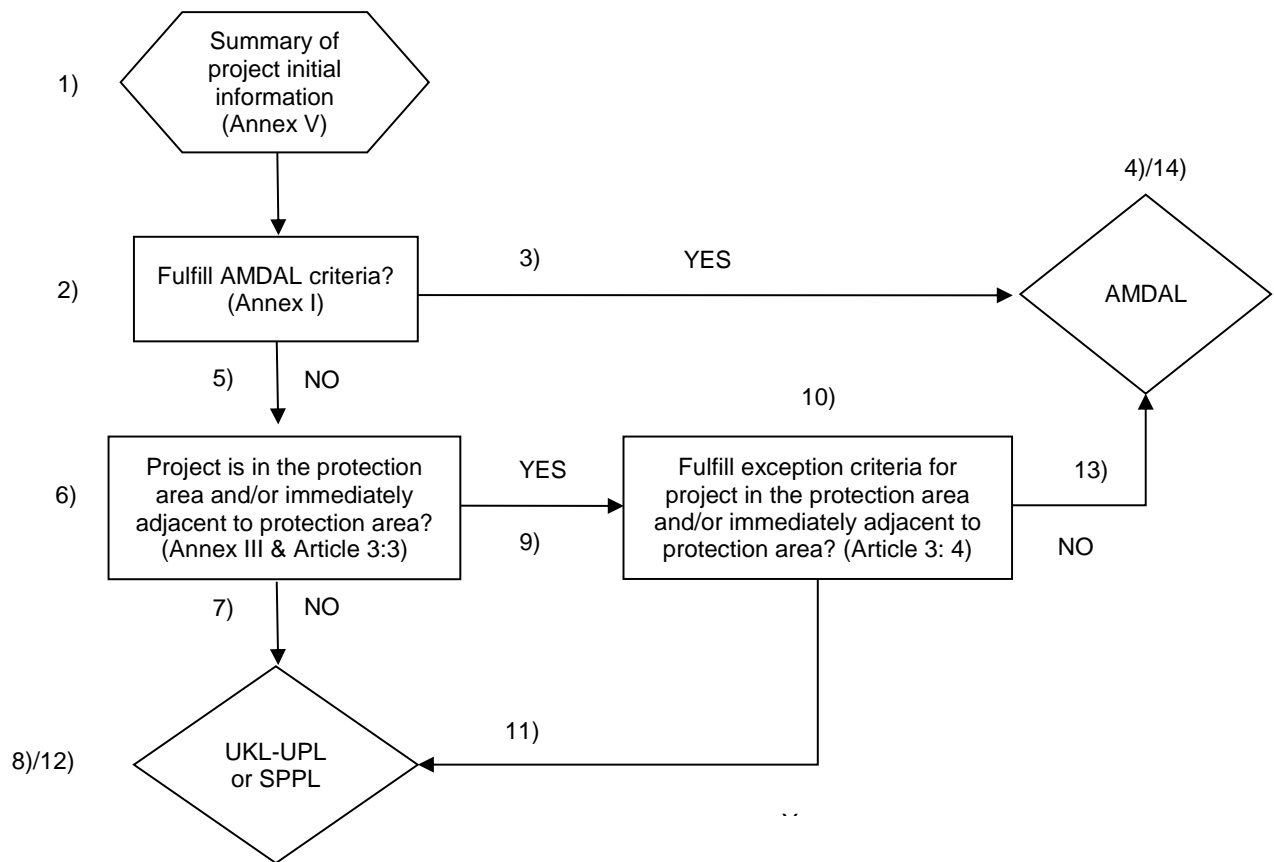
- Head of BAPEDAL Decree 9/2000: AMDAL Preparation Guidelines for the Components of Public Health
- State Minister for the Environment Regulation No.17 of 2012 regarding Guidelines for Community Involvement in The Process of Environmental Impact Assessment and Environmental License

- Head of BAPEDAL Decree 124/12/1997: Guidelines for Reviewing Public Health Aspects on Environmental Impact Assessment
- Head of BAPEDAL Decree 105/1997: Monitoring of Implementation of Environmental Management and Monitoring (RKL & RPL) – relevant as reference for reviewing the progress of environmental management and monitoring plan
- Head of BAPEDAL Decree 56/1994: Guidelines to determine significance and scale of environmental impact – as the most relevant reference for reviewing important and significance impacts.

HSE Regulations

Relevant requirements with respect to workers' health and safety include Law No.1 year 1970 on Workers' Safety and Ministry of Workforce Decree Kep-51/MEN/1999 on Reference Standard for Activities in Working Area.

e. Government Screening



based on Annex II, MoE Regulation No. 05/2012

f. Comparison of ADB Requirements with GOI Regulation

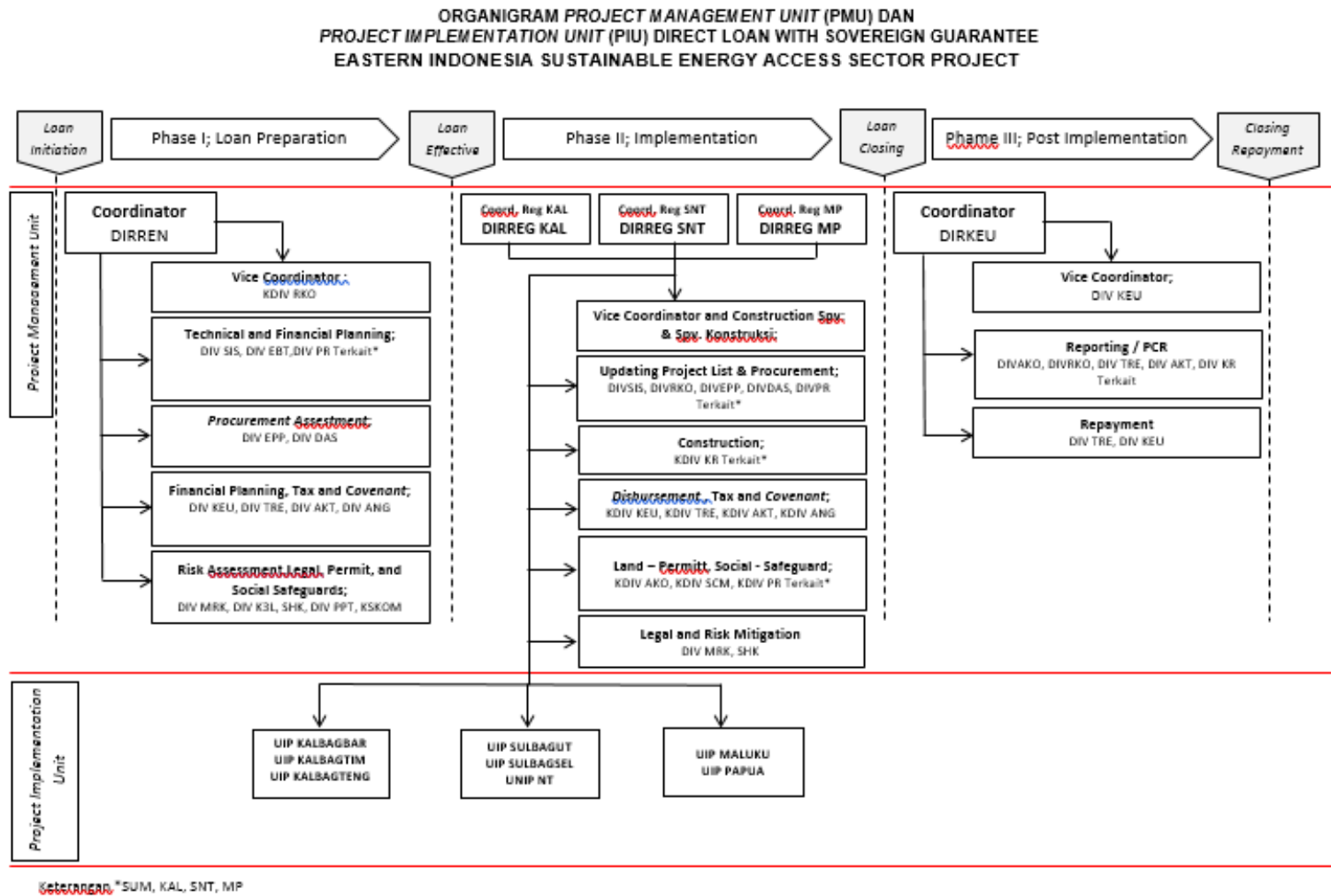
No.	ADB'S ENVIRONMENTAL SAFEGUARDS (SPS 2009)	INDONESIA LAW / REGULATION	CORRESPONDENCE	COMMENTS	CHANGE RECOMMENDED FOR FULL EQUIVALENCE
1.	Use a screening process for each proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment so that appropriate studies are undertaken commensurate to the significance of potential impacts and risks.	<ul style="list-style-type: none"> Law No. 32/2009, Environmental Management and Protection Act; Government Regulation No. 27/2012, Environmental Clearance; MOE Regulation No. 05/2012, Types of Activities that require AMDAL. 	Full	Clearly stated on the MOE Regulation No. 05/2012, concerning Types of Activities that require AMDAL, Appendix I and II.	
2.	Conduct an environmental assessment for each proposed project to identify potential direct, indirect, cumulative and induced impacts and risks to physical, biological, socio-economic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential trans-boundary and global impacts, including climate change. Use strategic environmental assessment where appropriate.	<ul style="list-style-type: none"> Law No. 32/2009, Environmental Management and Protection Act; Government Regulation No. 27/2012, Environmental Clearance; MOE Regulation No. 16/2012, Environmental Document Preparation Guidelines. Appendix II: Guidelines for the preparation of ANDAL. 	Full	Clearly stated on the MOE Regulation No. 16/2012, concerning Environmental Document Preparation Guidelines.	
3.	Examine alternatives to the project's location, design, technology and components, their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also, consider the no project alternative.	<ul style="list-style-type: none"> MOE Regulation No. 16/2012, Environmental Document Preparation Guidelines. Appendix I: Guidelines for the preparation of TOR. 	Full	Clearly stated on the MOE Regulation No. 16/2012, concerning Environmental Document Preparation Guidelines.	
4.	Avoid and, where avoidance is not possible, minimize, mitigate and/or offset for adverse impacts and enhance positive impacts by means of environmental planning and management. Prepare an environmental management plan (EMP) that includes the proposed mitigation measures, environmental monitoring and reporting	<ul style="list-style-type: none"> Government Regulation No. 27/2012, Environmental Clearance; MOE Regulation No. 16/2012, Environmental Document Preparation Guidelines. Appendix III: Guidelines for the preparation of Environmental Management and Monitoring Plan. 	Partial	The regulation about Environmental Document Guidelines, especially Appendix III for preparing EMP, does not require capacity development and training measures, and cost estimates.	The legal framework should be revised to comply the EMP reporting requirements such as capacity development and training measures, and cost estimates.

No.	ADB'S ENVIRONMENTAL SAFEGUARDS (SPS 2009)	INDONESIA LAW / REGULATION	CORRESPONDENCE	COMMENTS	CHANGE RECOMMENDED FOR FULL EQUIVALENCE
	requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle				
5.	Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned NGOs early in the project preparation process and ensure that their views and concerns are made known and understood by decision makers and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to environmental assessment. Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance.	<ul style="list-style-type: none"> Law No. 32/2009, Environmental Management and Protection Act; Government Regulation No. 27/2012, Environmental Clearance; MOE Regulation No. 17/2012, Community Involvement in AMDAL process and Environmental Clearance. 	Partial	The MOE Regulation No. 17/2012 is equivalent with this policy principle with the exception of any specific provisions such as to ensure women's participation in the consultation process and establish a grievance mechanism.	The legal framework should be revised to include specific provisions to ensure women's participation in the consultation process and establish a grievance mechanism.
6.	Disclose draft environmental assessments (including EMP) in a timely manner, before project appraisal, in an accessible form and language(s) understandable accessible to the affected people and other stakeholders.	<ul style="list-style-type: none"> Government Regulation No. 27/2012, Environmental Clearance; MOE Regulation No. 16/2012, Environmental Document Preparation Guidelines. 	Partial	There is no requirement for public disclosure of draft AMDAL and EMP. Public consultation and disclosure as per "Environmental Clearance" and the Environmental Document Guidelines, 2012.	The legal framework should be revised to include disclosure of draft EMP in a form, manner and language accessible to affected people and other stakeholders.

No.	ADB'S ENVIRONMENTAL SAFEGUARDS (SPS 2009)	INDONESIA LAW / REGULATION	CORRESPONDENCE	COMMENTS	CHANGE RECOMMENDED FOR FULL EQUIVALENCE
7.	Implement the EMP and monitor its effectiveness. Document monitoring results, including development and implementation of corrective actions, and disclose monitoring reports.	<ul style="list-style-type: none"> Government Regulation No. 27/2012, Environmental Clearance; MOE Regulation No. 16/2012, Environmental Document Preparation Guidelines. 	Partial	There is no requirement for public disclosure of EMP monitoring results. Periodic progress reports only disclose to relate Environmental Agency.	The legal framework should be revised to include document monitoring results, development and implementation of corrective actions, and disclose progress reports.
8.	Do not implement project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources.	<ul style="list-style-type: none"> Law No. 05/1990, Conservation of Ecosystem and Natural Resources; Law No. 32/2009, Environmental Management and Protection Act; MOE Regulation No. 05/2012, Types of Activities that require AMDAL. 	Partial	ADB requires Environmental Monitoring Plan for monitoring of mitigation of environmental impacts. Environmental Appraisal Committee (EAC) releases recommendations for mitigating the environmental impacts.	The legal framework should be revised to include implementation of additional program to promote and enhance the conservation aims of the protected area or critical habitats.
9.	Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines. Adopt cleaner production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load	<ul style="list-style-type: none"> Law No. 32/2009, Environmental Management and Protection Act; Government Regulation No. 41/1999, Air Pollution Control; Government Regulation No. 82/2001, Water Pollution Control. 	Full	ADB requires Environmental Monitoring Plan for monitoring & mitigation of environmental impacts and risks. The mitigation of environmental impacts and risks based on GOI	

No.	ADB'S ENVIRONMENTAL SAFEGUARDS (SPS 2009)	INDONESIA LAW / REGULATION	CORRESPONDENCE	COMMENTS	CHANGE RECOMMENDED FOR FULL EQUIVALENCE
	of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phase-outs. Purchase, use, and manage pesticides based on integrated pest management approaches and reduce reliance on synthetic chemical pesticides.			regulations of pollution prevention.	
10.	Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.	<ul style="list-style-type: none"> ▪ Law No. 32/2009, Environmental Management and Protection Act; ▪ Law No. 1/1970, Work Safety; ▪ Government Regulation No. 50/2012, Implementation of Health and Work Safety Management System. 	Full	Appropriate extent of worker's safety and the health can be discussed under the EMP.	
11.	Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of "chance find" procedures that include a pre-approved management and conservation approach for materials that may be discovered during project implementation.	<ul style="list-style-type: none"> ▪ Law No. 05/1992, Cultural Heritage; ▪ Government Regulation No. 10/1993, Implementation of Cultural Heritage. 	Partial	There are no provisions that require pre-approved procedures for "chance finds" for chance finds within the EIA or Physical Cultural Resources (PCR) legal framework.	The EIA Notification should be revised to include a provision requiring pre-approved procedures for "chance finds" of PCR.

g. PMU Organogram



Abbreviation	Bahasa Indonesia	English
DIRKEU	Direktur Keuangan	Director of Finance
DIRREG KAL	Direktur Bisnis Regional Kalimantan	Director of Regional Business Kalimantan
DIRREG MP	Direktur Bisnis Regional Maluku Papua	Director of Regional Business Maluku Papua
DIRREG SNT	Direktur Bisnis Regional Sulawesi Nusa Tenggara	Director of Regional Business Sulawesi Nusa Tenggara
DIRREN	Direktur Perencanaan Korporat	Director of Corporate Planning
DIV AKO	Divisi Administrasi Konstruksi	Construction Administration Division
DIV AKT	Divisi Akuntansi	Accounting Division
DIV ANG	Divisi Anggaran	Budgeting Division
DIV DAS	Divisi Pengadaan Strategis	Strategic Procurement Division
DIV EBT	Divisi Energi Baru dan Terbarukan	New and Renewable Energy Division
DIV EPP	Divisi Engineering dan Perencanaan Pengadaan	Engineering and Procurement Planning Division
DIV K3L	Divisi Kesehatan, Keselamatan Kerja, Keamanan dan Lingkungan	Health, Work Safety, Security, and Environment Division
DIV KEU	Divisi Keuangan	Finance Division
DIV KR Terkait (BUM, KAL, SNT, MP)	Divisi Konstruksi terkait (Sumatra, Kalimantan, Sulawesi Nusa Tenggara, Maluku Papua)	Relevant Construction Divisions (Sumatra, Kalimantan, Sulawesi Nusa Tenggara, Maluku Papua)
IV MRK	Divisi Manajemen Risiko dan Kepatuhan	Risk Management and Compliance Division
DIV PPT	Divisi Perizinan dan Pertanahan	Land and Permit Division
DIV PR Terkait (BUM, KAL, SNT, MP)	Divisi Perencanaan terkait (Sumatra, Kalimantan, Sulawesi Nusa Tenggara, Maluku Papua)	Relevant Planning Divisions (Sumatra, Kalimantan, Sulawesi Nusa Tenggara, Maluku Papua)
DIV RKO	Divisi Rencana Korporat	Corporate Planning Division
DIV SIS	Divisi Perencanaan Sistem	System Planning Division
DIV TRE	Divisi Treasury	Treasury Division
KD/IV AKO	Kepala Divisi Administrasi Konstruksi	Head of Construction Administration Division
KD/IV AKT	Kepala Divisi Akuntansi	Head of Accounting Division
KD/IV ANG	Kepala Divisi Anggaran	Head of Budgeting Division
KD/IV KEU	Kepala Divisi Keuangan	Head of Finance Division
KD/IV KR Terkait (BUM, KAL, SNT, MP)	Kepala Divisi Konstruksi terkait (Sumatra, Kalimantan, Sulawesi Nusa Tenggara, Maluku Papua)	Head of relevant Construction Divisions (Sumatra, Kalimantan, Sulawesi Nusa Tenggara, Maluku Papua)
KD/IV PR Terkait (BUM, KAL, SNT, MP)	Kepala Divisi Perencanaan terkait (Sumatra, Kalimantan, Sulawesi Nusa Tenggara, Maluku Papua)	Head of relevant Planning Divisions (Sumatra, Kalimantan, Sulawesi Nusa Tenggara, Maluku Papua)
KD/IV RKO	Kepala Divisi Rencana Korporat	Head of Corporate Planning Division
KD/IV SCM	Kepala Divisi Supply Chain Management	Head of Supply Chain Management Division
KD/IV TRE	Kepala Divisi Treasury	Head of Treasury Division
KSKOM	Kepala Seksi Komunikasi Korporat	Head of Corporate Communication Section
BHK	Seksi Hukum Korporat	Corporate Legal Unit
UIP KALBAGBAR	Unit Induk Pembangunan Kalimantan Bagian Barat	Construction Unit - Western Kalimantan
UIP KALBAGTENG	Unit Induk Pembangunan Kalimantan Bagian Tengah	Construction Unit - Central Kalimantan
UIP KALBAGTIM	Unit Induk Pembangunan Kalimantan Bagian Timur	Construction Unit - Eastern Kalimantan
UIP MALUKU	Unit Induk Pembangunan Maluku	Construction Unit - Maluku
UIP PAPUA	Unit Induk Pembangunan Papua	Construction Unit - Papua
UIP SULBAGSEL	Unit Induk Pembangunan Sulawesi Bagian Selatan	Construction Unit - Southern Sulawesi
UIP SULBAGUT	Unit Induk Pembangunan Sulawesi Bagian Utara	Construction Unit - Northern Sulawesi
UNIP NT	Unit Induk Pembangunan Nusa Tenggara	Construction Unit - Nusa Tenggara

h. Outline of an Environmental Impact Assessment Report

This outline is part of the ADB SPS 2009 Safeguard Requirements 1.

An environmental assessment report is required for all environment category A and B projects. Its level of detail and comprehensiveness is commensurate with the significance of potential environmental impacts and risks. A typical EIA report contains the following major elements, and an IEE may have a narrower scope depending on the nature of the project. The substantive aspects of this outline will guide the preparation of environmental impact assessment reports, although not necessarily in the order shown.

A. Executive Summary

This section describes concisely the critical facts, significant findings, and recommended actions.

B. Policy, Legal, and Administrative Framework

This section discusses the national and local legal and institutional framework within which the environmental assessment is carried out. It also identifies project-relevant international environmental agreements to which the country is a party.

C. Description of the Project

This section describes the proposed project; its major components; and its geographic, ecological, social, and temporal context, including any associated facility required by and for the project (for example, access roads, power plants, water supply, quarries and borrow pits, and spoil disposal). It normally includes drawings and maps showing the project's layout and components, the project site, and the project's area of influence.

D. Description of the Environment (Baseline Data)

This section describes relevant physical, biological, and socioeconomic conditions within the study area. It also looks at current and proposed development activities within the project's area of influence, including those not directly connected to the project. It indicates the accuracy, reliability, and sources of the data.

E. Anticipated Environmental Impacts and Mitigation Measures

This section predicts and assesses the project's likely positive and negative direct and indirect impacts to physical, biological, socioeconomic (including occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media), and physical cultural resources in the project's area of influence, in quantitative terms to the extent possible; identifies mitigation measures and any residual negative impacts that cannot be mitigated; explores opportunities for enhancement; identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions and specifies topics that do not require further attention; and examines global, transboundary, and cumulative impacts as appropriate.

F. Analysis of Alternatives

This section examines alternatives to the proposed project site, technology, design, and operation—including the no project alternative—in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring

requirements. It also states the basis for selecting the particular project design proposed and, justifies recommended emission levels and approaches to pollution prevention and abatement.

G. Information Disclosure, Consultation, and Participation

This section:

- (i) describes the process undertaken during project design and preparation for engaging stakeholders, including information disclosure and consultation with affected people and other stakeholders;
- (ii) summarizes comments and concerns received from affected people and other stakeholders and how these comments have been addressed in project design and mitigation measures, with special attention paid to the needs and concerns of vulnerable groups, including women, the poor, and Indigenous Peoples; and
- (iii) describes the planned information disclosure measures (including the type of information to be disseminated and the method of dissemination) and the process for carrying out consultation with affected people and facilitating their participation during project implementation.

H. Grievance Redress Mechanism

This section describes the grievance redress framework (both informal and formal channels), setting out the time frame and mechanisms for resolving complaints about environmental performance.

I. Environmental Management Plan

This section deals with the set of mitigation and management measures to be taken during project implementation to avoid, reduce, mitigate, or compensate for adverse environmental impacts (in that order of priority). It may include multiple management plans and actions. It includes the following key components (with the level of detail commensurate with the project's impacts and risks):

(i) Mitigation:

- (a) identifies and summarizes anticipated significant adverse environmental impacts and risks;
- (b) describes each mitigation measure with technical details, including the type of impact to which it relates and the conditions under which it is required (for instance, continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; and
- (c) provides links to any other mitigation plans (for example, for involuntary resettlement, Indigenous Peoples, or emergency response) required for the project.

(ii) Monitoring:

- (a) describes monitoring measures with technical details, including parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions; and
- (b) describes monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and document the progress and results of mitigation.

(iii) Implementation arrangements:

(a) specifies the implementation schedule showing phasing and coordination with overall project implementation;

(b) describes institutional or organizational arrangements, namely, who is responsible for carrying out the mitigation and monitoring measures, which may include one or more of the following additional topics to strengthen environmental management capability: technical assistance programs, training programs, procurement of equipment and supplies related to environmental management and monitoring, and organizational changes; and

(c) estimates capital and recurrent costs and describes sources of funds for implementing the environmental management plan.

(iv) Performance indicators: describes the desired outcomes as measurable events to the extent possible, such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods.

J. Conclusion and Recommendation

This section provides the conclusions drawn from the assessment and provides recommendations.

i. Project Implementation Consultant (PIC) and External Monitor

Terms of Reference for PIC Environmental Safeguards Specialist

A PIC will be recruited to assist PLN in overall Project management, including an environmental specialist team responsible for assisting PLN in implementing the environmental safeguards.

The Environmental Safeguards Specialists, under this PIC, will be responsible for assisting PLN in assessing the environmental situation of the subproject that do not yet have environmental documentation in place as required by ADB.

Environmental Safeguards Specialists will coordinate closely with environmental specialists in the project management unit (PMU) and the subproject implementation unit (SPIU) and with PLN's consultants in charge of monitoring the implementation of the applicable environmental safeguards as defined in the EMP for each subproject along with potential corrective action plans as well as addressing environmental safeguards concerns across the various implementation stages.

If there is a significant change in project scope, the SPIU, supported by the PIC Environmental Safeguard specialist, shall ensure that an environmental assessment is triggered and undertaken by PLN or its consultants and where needed supported by the PIC. The Environmental Safeguards Specialist will assist PLN in developing the ADB SPS compliant EIA or IEE documents for all remaining non-core subprojects (both Category A and B for environment) and support the environmental audit of the existing facilities if this is required for the implementation of the subproject.

The Environmental Safeguards Specialist shall perform at least the following tasks:

- Review, and ensure the application of the EARF and the Project Administration Manual (PAM) in respect of environmental safeguards;
- Review and support PLN in updating and finalizing the EMPs and their integration into bid documents to ensure the EPC contract respect the EMP;
- At the beginning of the planning process for each new non-core subproject:
 - organise a screening and produce a REA, using available information and information collected through a site visit.
 - following ADB SPS 2009 the environmental category shall be determined;
 - the environmental assessment needs to be conducted in line with the requirements of the EARF and Safeguard Requirement of the ADB SPS 2009;
 - the final check of non-sample subprojects in respect of conformity with the selection criteria will be made through the submission of EIA or IEE for ADB's clearance.
- For all non-core projects of environmental Category A:
 - review the environmental relevant documentation of PLN (FS, EIA) and where applicable coordinate with PLN the elaboration of the EIA,
 - identify gaps to the requirements of ADB SPS 2009 and close these gaps by either requiring PLN to complement the EIA or by under-taking own efforts to acquire missing data and performing the necessary modeling and assessments;
 - this may require conducting and documenting environmental audit of existing and associate facilities.
- For all non-core projects of environmental category B:

- review the existing environmental relevant documentation of PLN (FS, UKL-UPL) of all non-core subprojects and where applicable coordinate with PLN the elaboration or complement UKL-UPLs or AMDAL's or other documents;
- analyse in order to identify gaps to the requirements of ADB SPS 2009 and close these gaps by either requiring PLN to complement the AMDAL or UKL-UPL or by undertaking own efforts to acquire missing data and performing modeling and assessments.
- For completing the EIA to comply with ADB SPS 2009, additional studies like of air emission dispersion in degraded airsheds, noise and air emission modelling for the power plant sites, biodiversity conservation study and plan to offset for the areas designated for their high biodiversity value and critical habitat may be required.
- Support PLN in establishing monitoring mechanisms for the EMPs of all sub projects. This shall include a periodic reporting system of all indicators mentioned in the EMoP.
- PIC shall monitor compliance with environmental mitigation and management plans by coordination with PLNs consultant in charge of supervision of EPC contractors and EMPs and assist PLN in implementation of EMPs, among others by training on the job and coaching of national EMP monitoring consultants and assist PLN in updating EMPs if required.
- Carry out capacity building in respect of environmental safeguards, including:
 - drafting ToR for AMDAL that comply with ADB SPS 2009 and how to monitor AMDAL;
 - providing specific training sessions to the supervising engineers for the implementation of subproject and on-the-job training by supporting PLN staff in charge of environmental monitoring, work safety and occupational health and its compliance with the EMP;
- Conduct environmental post-implementation evaluation and document lessons learned.
- Contribute to the semi-annual progress reports, prepare environmental reports as required under ADB SPS 2009 and ensure compliance with ADBs disclosure policy.

Qualification requirements

The international and national experts shall have suitable bachelor or master's degree in associated environmental safeguards' fields and have substantial experience associated with power generation and international infrastructure projects, preferably involving gas power plant and LNG distribution. The national experts should preferably have a degree in environmental management or similar, have excellent command of English, and should be familiar with Indonesia's environmental safeguards policies.

Terms of Reference for External Monitor

For environment category A sub-projects PLN will engage qualified and experienced external environmental expert(s), which will be approved by ADB. These external experts will review and verify the monitoring reports regarding EMP implementation and to determine if EMP provisions are being conducted in an appropriate and timely manner and in accordance with the budget identified within the EMP. The External Monitor shall undertake such monitoring on a semi-annual basis and shall submit semi-annual monitoring report to PLN and ADB.

The objectives of the report are:

- Review and verify the scope, accuracy, and relevance of environmental monitoring information provided by PLN to ADB with regard to EMP implementation.
- Determine whether EMP provisions: mitigation, monitoring, reporting, functioning of the Grievance Redress Mechanism (GRM), etc. are being conducted in a thorough and timely manner.
- Undertake independent semi-annual review to verify the environmental monitoring information (semi-annual environmental monitoring report) submitted by PLN to ADB.
- Undertake the above tasks through review of last environmental monitoring report, specific site visit and interviews with affected households, local officials and other stakeholders.

The external environmental monitoring report to be prepared after completion of the works in each period shall provide details of the methodology used; findings (results of desk review, site observations, and consultations/interviews); recommendations; and other relevant information to support the findings (minutes of meetings, photo-documentation, etc.).

Qualification requirements

The External Monitor to be engaged has not been and shall not be involved in day-to-day project implementation or supervision. The External Monitor shall have relevant academic qualification in the field of environmental management, environmental science, or environmental engineering, shall have at least 10 years experience in environmental management and monitoring and/or supervision of EMP for major infrastructure project, be knowledgeable on ADB and Indonesian environmental policies and guidelines and fluent in written English.

j. Project Semi-Annual Environmental Monitoring Report Outline (example)

1. Introduction

1.1. Report Purpose

1.2. Project Implementation Progress

2. Compliance with ADB loan covenants and applicable government laws, regulations and requirements

3. Changes in project scope

4. Incorporation of Environmental Requirements into Project Contractual Arrangements

5. Summary of Environmental Mitigations and Compensation Measures Implemented

6. Summary of Environmental Monitoring

6.1. Compliance Inspections

6.2. Summary of Inspection Activities

6.2.1. Mitigation Compliance

6.2.2. Mitigation Effectiveness

6.3. Emission Discharge (Source) Monitoring Program (if relevant)

6.3.1. Summary of Monitoring

6.3.2. Results

6.3.3. Assessment

6.4. Ambient Monitoring Program (if relevant)

6.4.1. Summary of Monitoring

6.4.2. Results

6.4.3. Assessment

7. Key Environmental Issues

7.1.1. Key Issues Identified

7.1.2. Action Taken

7.1.3. Additional Action Required

8. Conclusion

8.1. Overall Progress of Implementation of Environmental Management Measures

8.2. Problems Identified and Actions Recommended

Appendixes

1. Site Inspection / Monitoring Reports

2. Ambient Monitoring Results

3. Photographs

4. Others

9.11 Preliminary List of Possible Subprojects

SUBPROJECT	MW	COD	Bid issuance	Fuel
Kaltim Peaker 2	100	2020	Oct-17	Gas (pipeline)
Kupang Peaker 2	50	2022	Jun-19	LNG
Minahasa Peaker	150	2021	Dec-19	LNG
Kalbar Peaker	100	2021	Apr-19	LNG
Lombok (load follower)	150	2022	Jun-19	LNG
Timor (Atambua)	40	2022	Jun-19	LNG
Waitabula (Tambolaka)	30	2023	Dec-19	LNG
Kaltim Steam Cycle	80	2023	Dec-19	Existing steam
PV hybrid 1	5	2021	Dec-18	Solar
PV hybrid 2	5	2022	Jul-20	Solar
Total	710			

COD = Commissioning date, LNG = liquified natural gas, MW = megawatt, PV = photovoltaic (solar)

[illegible]

COD = Commissioning date, LNG = liquified natural gas, MW = megawatt, PV = photovoltaic (solar)