INDEPENDENT POWER PRODUCER (IPP) E&S GUIDELINES FOR SOLAR PV PROJECT

PT PLN (Persero)

Prepared by,	Verified by,	Approved by,
	VP ESG DAN SAFEGUARD	EVP TEK
ESMS TEAM	IMAM MUTTAQIEN	KAMIA HANDAYANI

Table of Contents

List of Appendices

List of Table

List of Figures

List of Abbreviation

AMDAL	:	*Analisis Mengenai Dampak Lingkungan Hidup* (Environmental Impact Analysis)
AOI	:	Area of Interest
AZE	:	Alliance for Zero Extinction
CIA	:	Cumulative Impact Assessment
DED	:	Detailed Engineering Design
DPPT	:	*Dokumen Perencanaan Pengadaan Tanah* (Land Acquisition Planning Document)
E&S	:	Environment and Social
ES Team	:	Environmental and Social Team
ESIA	:	Environmental and Social Impact Assessment
ESMP	:	Environmental and Social Management Plan
ESMS	:	Environment and Social Management System
FPIC	:	Free Prior Informed Consent
GBV	:	Gender Based Violence
IFI	:	International Financing Institution
IP	:	Indigenous People
IPP	:	Independent Power Producer
ISLE-1	:	Indonesia Sustainable Least-cost Electrification-1
KKP	:	*Kajian Kelayakan Proyek* (Project Feasibility Study*)*
OHS	:	Occupational Health & Safety
PC/PO Team	:	Project Construction/Operation Team
PP Team	:	Project Planning Team
PPA	:	Power Purchase Agreement
PLN	:	PT PLN (Persero)
POM	:	Project Operation Manual
PV	:	Photovoltaic
RKL-RPL	:	*Rencana Pengelolaan Lingkungan – Rencana Pemantauan Lingkungan* (Environmental Management and Monitoring Plans)
SEA/SH	:	Sexual exploitation and abuse/sexual harassment
STDs	:	Sexually Transmitted Diseases
RUPTL	:	Rencana Usaha Penyediaan Tenaga Listrik (Electricity Power Supply Business Plan)
UKL-UPL	:	*Upaya Pengelolaan Lingkungan – Upaya Pemantauan Lingkungan* (Environmental Management and Monitoring Efforts)
UNESCO	:	The United Nations Educational, Scientific and Cultural Organization
VECs	:	Valuable Environmental and Social Components

1 Introduction

The present Guidelines are aimed to provide guidance to Independent Power Producer ('IPP') that work with PT PLN Persero ('PLN') to develop, build, own, and operate a power plant[1], in aligning their environmental and social ('E&S') standards with PLN's Environmental and Social Management System ('ESMS'). [2]

Activities undertaken by an IPP to prepare, construct, and operate a power plant can introduce impacts to the surrounding environment, workers, communities, and other affected parties (e.g., neighboring business, other land user, public infrastructure, natural resources, etc.). Those aspects hereinafter are collectively referred to as E&S aspects.

The present IPP E&S Guidelines are specifically developed to address E&S impact relevant for Solar Photovoltaic ('PV') power plants of a size of at least 10 MW that will be part of the Indonesia Sustainable Least-cost Electrification-1 ('ISLE-1') Program-for-Results funded by the World Bank. This document includes identification of gaps between the national regulations and the PLN ESMS, and it aims to provide recommendations to IPPs to fill these gaps.

The E&S Impact Assessment and Management processes defined in PLN's ESMS is aligned with the processes regulated in the Indonesian laws (such as, *Analisis Mengenai Dampak Lingkungan Hidup*, or 'AMDAL'; *Upaya Pengelolaan dan Pemantauan Lingkungan Hidup*, or 'UKL-UPL'; *Rencana Pengelolaan dan Pemantauan Lingkungan Hidup*, or 'RKL-RPL'; etc.). However, some E&S requirements of the International Financing Institutions (IFI) are often more stringent and requires a more comprehensive analysis and assessment. Some E&S aspects that typically have to be assessed and managed beyond regulatory process may include, but not limited to: land acquisition and resettlement; livelihood restoration; community health, safety, and security; stakeholder engagement and grievance redress mechanism; biodiversity management; indigenous people management; cultural heritage; gender-related issue; etc. that are discussed further in **Section 2 (Requirements)**.

[1] IPP Book, PLN, 2022

[2] PLN's ESMS is developed in accordance to E&S standards/frameworks of various IFIs, such as the World Bank's ESF, International Finance Corporation ('IFC') Performance Standards and Environmental, Health, and Safety ('EHS') Guidelines, Asian Development Bank (ADB)'s Environmental and Social Standards ('ESS'), and other Good International Industry Practices.

2 Requirements

2.1 Requirement Checklist

IPPs are expected to fill the Requirement Checklist, that is in annex to this Guideline (***Appendix A***), presenting how the IPP has met the additional requirements beyond the national regulatory requirement to meet PLN's E&S standards. This Requirement Checklist (and the documents attached to it) presenting how the IPP has met these gaps will be reviewed and approved by PLN (Procurement Team supported by Environment and Social ('ES') Team[3]) prior to the construction process. PLN's clearance of requirement checklist is subject to the IPP providing all the information needed for PLN to review and assess if the IPP has indeed met the additional requirements for its given Solar PV project. If significant gaps still remain, PLN can ask IPP to modify/adjust its E&S Impact Assessment and Management & Monitoring Plan.

Requirements described in these Guidelines are provided to fill the gaps between E&S assessment, management, and monitoring that are based solely on national regulations and those conducted following international standards. IPPs will be required to demonstrate that the baseline study assessment methodology used is robust in light of international standards. The requirements apply for:

1) General Process of Screening and Impact Assessment (see **Section 2.2** and **Section 2.3** respectively), and
2) Specific E&S Requirements, including:
   a. Biodiversity (see **Section 2.4**)
   b. Land Acquisition (see **Section 2.5**)
   c. Indigenous People ('IP') (see **Section 2.6**)
   d. Cultural Heritage (see **Section 2.7**)
   e. Labor and Working Conditions (see **Section 2.8**)
   f. Community Health, Safety and Security (see **Section 2.9**)
   g. Stakeholder Engagement (see **Section 2.10**)

2.2 Screening

As per national regulations, screening on E&S aspects is only conducted to determine a type of environmental impact assessment document (commonly also called 'Environmental Document') that is required for the project (i.e., the AMDAL[4], UKL-UPL[5], SPPL[6], or other type of documents[7]).

[3] Refer to terms in PLN's ESMS.

[4] *Analisis Mengenai Dampak Lingkungan Hidup* (Environmental Impact Analysis).

[5] *Upaya Pengelolaan Lingkungan – Upaya Pemantauan Lingkungan* (Environmental Management and Monitoring Efforts).

[6] *Surat Pernyataan Kesanggupan Pengelolaan dan Pemantauan Lingkungan Hidup* (Statement of Capability on Environmental Management and Monitoring).

[7] Indonesian regulation acknowledges some other types of Environmental Document, for example the *Dokumen Evaluasi Lingkungan Hidup* (DELH – Environmental Evaluation Document) and *Dokumen Pengelolaan Lingkungan Hidup* (DPLH – Environmental Management Document), however those

The screening criteria using national regulations mainly focus on the project type, project scale, project area, and current land use of the project site.[8]

For IPP projects that are committed to apply the IPP E&S Guidelines, and are to meet PLN's ESMS requirements, these IPPs are to collect and review additional information on given E&S aspects mentioned in these Guidelines when carrying out project's E&S screening as early as possible. The additional information can be collected during Pre-Feasibility Study (Pre-FS), Feasibility Study (FS), or any other preliminary studies (as adequate), that are typically conducted by IPPs prior to answering a tender organized by PLN, or through a separate E&S study.

2.2.1 Identification and Review of Condition triggering PLN's Exclusion Criteria

Additional Requirements:

In conducting the project screening, IPP shall review if the projects trigger PLN's Exclusion Criteria. List of PLN's Exclusion Criteria is provided in **Table 2-1**.

Table 2-1 PLN's ESMS Exclusion Criteria

No.	*Exclusion Criteria*
1	Project component (including third-party or goods) likely to involve forced labor, child labor, and/or human trafficking practice.
2	Project is expected to bring adverse impact to existing or proposed protected conservation areas and/or national and internationally protected ecosystem without legally and technically acceptable process to compensate the biodiversity net loss.
3	Project is expected to bring adverse impact to feature or characteristic which qualifies a location to become part of UNESCO World Heritage sites or Alliance for Zero Extinction (AZE) sites.
4	Project that causes land acquisition of Indigenous People (IP) community's customary lands (including physical cultural heritage) or their physical relocation without Free Prior Informed Consent (FPIC).
5	Project is of a type that historically released or potentially release significant amount of greenhouse gases and contaminants to the environment without measure to reduce them to acceptable levels.
6	Project uses or trades goods or services that are prohibited by Indonesian law or international conventions or agreements; or uses or trades goods or services beyond the allowable limit determined in those regulations/standards.

documents are applicable only for businesses that already operate for a while without having a valid Environmental Document/Permit.

[8] Refer to the Minister of Environment and Forestry (MOEF)'s Regulation No. 4 of 2021 regarding *Business or Activities that Must Have AMDAL, UKL-UPL, or SPPL.*

IPP shall adjust the project design/plan and project location, or implement mitigation measures based on the Impact Assessment process, to ensure it does not trigger the Exclusion Criteria. Exclusion of the project is one possible outcome of Screening which may be required if, after all the potential mitigation measures including through changing project locations and design, one of the Exclusion Criteria is still triggered. The Exclusion Criteria is applicable from the screening process until the validity of the Power Purchase Agreement (PPA) between PLN and the IPP.

2.2.2 Site Screening

When assessing a site location, technical/engineering aspects are normally considered by IPP, i.e., solar resource, size of the area, climate, land contour, geotechnical, access, grid connection, land use, module soiling, water availability, and financial incentive.

Additional Requirements:

E&S aspects are to be also considered when reviewing those technical/engineering aspects. Detailed E&S aspects to be considered by IPP during site screening process are described in ***Appendix B***

To consider the E&S aspects, IPP shall collect at least some information including:

- Distance to nearest community and public facility/institution (e.g., airport, helipad, military base, etc.);
- Potential scale of land acquisition and resettlement;
- Presence of road access to mobilize workers, vehicles, equipment, and material safely;
- Presence of areas or services near to the location to properly accommodate lodging for workers (particularly during construction);
- Degree of likely nuisance, health, or safety impacts on nearby communities (e.g., traffic, noise, air and water emission, hazardous materials, labor influx, etc.);
- Presence of available facilities or services to support the project activities, such as waste management, hazardous material management, inbound or temporary storage area, existing power connection lines/grid;
- Presence of needed resources and how to get them, e.g., groundwater, surface water, fuel, gas, etc.;
- Distance and sensitivity of sensitive natural receptors and receptors of conservation concern;
- Presence of indigenous people community and customary land or forest area;
- Presence of physical cultural heritage;
- Presence and capacity of institutions dealing with security issues and emergency situation around the site, e.g., police, army, fire brigade, etc.; and
- Local weather conditions and relevant climate risk (for example, flooding vulnerability, temperature, wind speed, etc.).

IPP can develop its own form/checklist to capture all information necessary to make E&S considerations. Example of form/checklist for this activity is provided in ***Appendix C***.

2.2.3 Preliminary Identification and Assessment of Risk/Impact

Based on the national regulatory requirements, identification and assessment of E&S risks and impacts start when the formal Impact Assessment process (preparation of AMDAL, UKL-UPL, or SPPL) begins.

Additional Requirements:

IPPs are to preliminarily identify and assess any potential E&S risk/impact in a high-level scale as early as possible, using information that is collected from the project screening. Any adverse E&S risk/impact that are identified shall be assessed further proportionally (in Impact Assessment and/or other studies) until adequate management and monitoring plans to mitigate that risk/impact can be developed.

Section 2.3 – 2.10 of these Guidelines describe some requirements beyond what are required in national regulation in managing some possibly-encountered risk/impact during IPP project.

2.3 Impact Assessment

Based on Indonesian regulation, impact assessment is done within the context of preparing mandatory environmental document that is suitable for the project (AMDAL and UKL-UPL). If a project only requires a SPPL, in practice, no assessment is conducted and no management and monitoring plan is prepared as per the regulations. However, in general, these Guidelines require that all identified E&S risk/impact are assessed by IPP with depth that is proportionate to the level of risk/impact itself. It also requires the adequate management and monitoring plan to be developed and implemented to mitigate the risk/impact. Any additional assessment conducted by IPP based on international standards could be incorporated into the Environmental Document in condition that it is allowed by government authority approving the Environmental Document.

Additional requirements to the Impact Assessment process are described in sections below:

2.3.1 Baseline Study

Baseline Study that is conducted as part of the regulatory-mandated Impact Assessment uses observation and sampling methodology as well as threshold standards specified in national regulations. The national regulatory requirements also require that assessment done in only one seasonal condition.

Additional Requirements:

IPP is to use methodology and thresholds that is more comprehensive as per international standards, as long as they are technically feasible to be conducted for the project context (e.g., service provider for sampling/survey and analyses are available within the country/region and cost to adopt the methodology is reasonable within the project context).

Additionally, for certain E&S risk/impact that is dependent to climate, such as soil erosion, sedimentation, and water resource availability, this Guideline requires that the assessment represents seasonal conditions (either wet season, dry season, or both), by considering the season/period when the project activity will be undertaken, and proportional to the level of potential impact significance.

2.3.2 Analysis and Assessment

A typical Impact Assessment following national regulation does not provide identification and assessment of Induced and Cumulative Impact.

Additional Requirements:

Induced Impact and Cumulative Impact are to be identified, assessed, and mitigated accordingly by IPP in the impact assessment process. The impact analysis and assessment processes must be accompanied by sets of data that can be analysed for identifying Induced and Cumulative Impacts, possibly collected during the Scoping and Baseline Study stage. As applicable, IPP can refer to the guideline on the principle of Impact Assessment based on PLN's ESMS provided in ***Appendix D***. Detailed description of Induced and Cumulative Impacts is also provided in the same appendix.

2.3.3 Development of E&S Management and Monitoring Plan

Components that have to be described in a regulatory-mandated E&S Management and Monitoring Plan, for example RKL-RPL, are consisted of the type of risk/impact, determined management and monitoring action plan, parameters to be monitored and applicable threshold, monitoring frequency, and parties to implement the action plan.

Additional Requirements:

IPP is to include estimated cost for each management and monitoring action plan. In case adverse E&S risk/impact is identified in the project (based on results of Impact Analysis and Assessment), it has to developed an Environmental and Social Impact Management and Monitoring Plan, at depth and scale that is proportionate to the risk/impact (simpler plans for non-significant risk/impact), even if by national regulation the project is only mandated to use SPPL as its Environmental Document (no requirement to do assessment, management and monitoring plans, and reporting as per regulations).

2.4 Impact on Biodiversity

As part of the national requirements, a comprehensive impact assessment (i.e., AMDAL) with a more detailed assessment on impacts on biodiversity is only required if a project is located within or bordered with a protected area/forest.

Additional Requirements:

Identification of potential impact on biodiversity must consider several aspects, such as habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, pollution and incidental take, and projected climate change impacts. These aspects should be considered at the Screening and Impact Assessment process and not only limited for preparation of AMDAL study.

Determination of the level of impact assessment on biodiversity should not only be based on the status of the area (protected or not), but **should also consider other key biodiversity aspects, such as ecosystem type, protected species that inhibits the area, wildlife sensitivity, internationally recognized key biodiversity area, etc.** At the screening stage, potential critical habitat shall be identified based on preliminary information of species protection and conservation requirements, land cover and habitat classification, including feedback from social receptors and stakeholders, and expert justifications. **Critical habitat assessment shall be carried out for projects that are located within areas recognized/indicated to have high biodiversity value, or potentially located in a critical habitat.**

2.5 Impact due to Land Acquisition

As per national regulations, the management of land acquisition process includes the preparation of land acquisition plan (DPPT) which covers the identification and analysis of social impact due to land acquisition process. This analysis informs the social impact assessment in AMDAL document. The Fair Replacement Value[9] is applied when the IPP engages in land acquisition process. IPP are to identify all those who are entitled for compensation including those informal rightsholders whose tenure rights can be recognized per Law 2/ 2012 and its implementation regulation (GR 19/ 2021), and technical guidelines (MAA Regulation. 19/2021), as well as those whose tenure rights cannot be recognized per prevailing law but who are eligible for protection under Presidential Regulation 62/ 2018, including through intensive stakeholder engagements and Grievance Mechanisms.

Additional Requirements:

IPP should hire a certified appraiser with a license issued by KJPP to determine compensation eligible for all affected people and include all recognizable losses in the contract with them, so that they can receive compensation at Fair Replacement Value (FRV) per national valuation standards (SPI 204, or any revision to it) for losses.

IPP should also assess not just the size of land that the project needs but the total land and non-land asset ownership of affected people so that the impacts of the loss of land/non-land assets on their welfare and livelihoods can be assessed. The IPP should develop additional mitigation measures beyond compensation at FRV if the result indicates that affected people's welfare and livelihoods cannot be restored even at compensation at FRV.

In doing so, IPP should pay particular attention to vulnerable people who are particularly vulnerable to shocks due to the project, including those who depend on land or natural resource-based livelihoods which are difficult to replace even at compensation at FRV due to local market, economic and environmental conditions, potentially prolonging the time needed for their livelihood restoration. IPP should also assess any additional support that those who need to physically relocate need in additional to compensation for physical assets at FRV in order to restore their welfare and livelihoods. Particular attention should be paid when affected people face challenges in acquiring replacement livelihoods means such as alternative lands for farming, and when they need to switch livelihood, such as from farming to trade or wage employment, because experience shows that livelihood restoration is particularly challenging in such contexts.

IPP should prepare a land acquisition feasibility study[10], DPPT and additional planning document(s), including when the total size of land to be acquired is below 5ha, to describe the approach to land acquisition and resettlement to the satisfaction of the PLN, and complete their implementation prior to start of works.

In addition to the scale and type of lands that the project needs to acquire from individual land owners, the total size of land owned by the affected landowner, as well as their dependency on the land to be acquired for their livelihoods, need to be assessed so that the impact of the project on affected people's

[9] The World Bank defines full replacement cost as the minimum amount of money needed to replace an asset with an equivalent or better one, taking into account its current location, functionality, and standard. See Guidance Notes (GN) for ESS 5.

[10] Feasibility study is equal to 'studi kelayakan'. Feasibility study and DPPT are required by national standard based on Ministerial Decree of ATR/BPN No. 20/2020 on DPPT Preparation.

welfare and livelihoods are assessed and mitigated. DPPT should be complemented with such information on impact, as well as applicable Grievance Mechanisms.

Voluntary land donation / *Hibah* is only acceptable when the land donor has been informed beforehand that PLN has the ability to purchase / to compensate the land per applicable national valuation standard. Social impact due to voluntary land donation should be identified and managed properly, in particular if any physical or economic displacements are identified.

2.6 Impact on Indigenous People ('IP')

When the project location is within, nearby or adjacent to IP area, it means that the project might have an impact to IP groups. In Indonesia, IPs can only be considered as such when acknowledged and recorded in Social Ministry records.

Additional Requirements:

IPP should conduct an IP screening to identify if affected communities have IP characteristics[11] even though they're not in the Indonesian Social Ministry records. IPP should make every effort to respect the culture and sensitivity of IP communities, and carry out consultations with them in good faith. If the project need to acquire lands that are customarily used and occupied by an IP community; physically relocate an IP community; or significantly affect their cultural heritage, IPP will obtain their Free Prior and Inform Consent ('FPIC')[12]. The result of the screening, processes and outcomes of good faith consultations including FPIC if required, assessment and mitigation of negative impacts and benefit generation measures, will be recorded in an Indigenous Peoples Plan (IPP).

2.7 Impact on Cultural Heritage

Identification of the value of cultural heritage is suggested to be completed during the screening process. Nationally, cultural heritage value is only acknowledged if the cultural heritage is registered in provincial or national government.

Additional Requirements:

IPP should consult local communities so that the cultural heritage that have significant value to them are appreciated, avoided and protected. When avoidance is not possible, the impact assessment process should consider the feedback from community and cultural heritage protection agency on how to management the impact to cultural heritage identified. All cultural heritage preservation activities should be recorded in cultural heritage management plan.

2.8 Labor and Working Conditions

In the national impact assessment document, AMDAL, the assessment related to workforce is commonly only limited to the increased economic opportunity for local people. It often does not

[11] Indigenous Peoples Characteristics can be reviewed in GN7.1. here https://documents1.worldbank.org/curated/en/972151530217132480/ESF-Guidance-Note-7-Indigenous-Peoples-English.pdf

[12] See FPIC information in green box after GN23.4. and 24.2 at https://documents1.worldbank.org/curated/en/972151530217132480/ESF-Guidance-Note-7-Indigenous-Peoples-English.pdf

consider health and safety conditions of workforce, especially the third-party workforce hired by the subcontractors or employment agencies.

As per the national requirements, IPP should assess health and safety risks to their workers, including workers hired by third-parties for example suppliers or subcontractors. IPP is required to carry out Hazard Identification Risk Assessment and Control (HIRAC) periodically throughout the project life, during the design phase to avoid and minimize risks through design and siting adjustments; before the start of work to determine what potential hazard risks exist and where, and to develop safety plans accordingly, and during construction and operational phases periodically including after significant incidents and repeated near misses. IPP is required to include monitoring reports on worker safety in their progress report.

Additional Requirements:

IPP should commit to ensure that national labor requirements are applied beyond the workers they hire directly, but to workers hired by the third party, by contractually requiring them to comply with national regulatory requirements and check their labor conditions periodically, including in particular age and identification checks to minimize risks of child/forced labor; remuneration; leave and rest time; medical insurance; etc. These requirements are aligned with existing PLN policies[13]

The IPP will also declare[14] in its technical proposal submitted at the bidding stage that it:

a. has not used or engaged forced labor in its workforce as per national regulation;
b. is committed to not use or engage any forced labor when carrying out activities under the Solar Project; and
c. will require each of its primary suppliers of solar panels, or in the event the solar panels are supplied through its EPC (sub)contractors, will require each of its EPC (sub)contractors and their primary suppliers of solar panels, to: (A) confirm that such supplier/(sub)contractor has not used or engaged any forced labor in its own workforce; and (B) commit that such supplier/(sub)contractor will not use or engage forced labor when carrying out activities under the Solar Project.

2.9 Impact on Community Health, Safety and Security

Risk to community's health due to the project's activities, such as from the derivative[15] impacts of environmental pollution on natural resources (e.g., air, water, etc.) to potential increase of incidence of disease or illness following the presence of the project are part of the national requirement for impact assessment. While for community safety, the national regulation does not require impact assessment beyond the traffic impact assessment to see the impact of increased traffic caused by the project activities to community safety incidents.

Additional Requirements:

[13] ● PT PLN (Persero) Green Procurement Policy (https://web.pln.co.id/statics/uploads/2023/09/Green-Procurement-Policy.pdf) and
● PT PLN (Persero) Social Policy for Suppliers and Contractors (https://web.pln.co.id/statics/uploads/2023/09/Social-Policy-for-Suppliers-and-Contractors.pdf)

[14] Reference of declaration form on forced labor is in Appendix E.

[15] The consequences of a proposed project or activity that arise indirectly from its direct impacts.

IPP is required to commit to the protection of the project affected communities by avoiding, minimizing and imitating negative impacts that fall on them due to its operation, and include in the safety plan measures to protect neighboring communities.

IPP should include in the safety plan provisions of emergency preparedness and response measures that cover neighboring communities. IPP should socialize them to local community members and train them if necessary. IPP is required to develop a plan of action to prevent incidents of gender-based violence ('GBV') and venereal or sexually transmitted diseases ('STDs') due to interactions between project workers and communities, preventing incidents or accidents caused by the use of project's security forces that may violate human rights, etc.

IPP is required to include in the impacts assessment an assessment of community's existing condition on health, safety and security aspects and provide measures to prevent adverse impacts and to maintain or promote the quality of community's health, safety and security conditions.

2.10 Stakeholder Engagement

Per national standards, stakeholder engagement is conducted as public consultations, typically conducted as one-time, townhall style events where all stakeholders are gathered together and given limited airtime to provide comments, with limited prior opportunities to understand the project and the mitigation measures proposed.

Additional Requirements:

IPP should be committed to conducting meaningful stakeholder engagement, above and beyond one-time public consultation of EIA or DPPT reports. Meaningful stakeholder engagement involves all relevant stakeholders including women and vulnerable groups within the affected communities, as well as those "indirectly affected" communities who may not lose land but who will experience various environmental and social impacts. Stakeholder engagement should also be ongoing and responsive too, meaning that it should be conducted periodically, separately for vulnerable members of the communities who may face difficulties voicing their concerns publicly.

IPP should establish and socialize to directly and indirectly affected communities its Grievance Redress Mechanisms (GRM). GRM should be accessible, responsive and fully staffed and funded. IPP should prepare and keep a GRM log which should include all grievances raised, including those that are addressed together with how they are addressed.

Also, stakeholder engagement should be conducted through multiple forms (public consultation, face to face meeting, focus group discussion, online workshop, etc.) during the project lifecycle.

IPP is required to demonstrate its adequacy in stakeholder engagement through preparing and implementing the Stakeholder Engagement Plan (SEP), and describe in it all the evidence/records and strategies of stakeholder engagement (stakeholder identification and analysis). IPP will update the SEP at least once a year.

3 Reporting and Monitoring

3.1 Reporting

IPP will share with PLN the following items:

1) ***Requirement Checklist***

IPP shall use the Requirement Checklist as a guidance to meet the requirements provided in this IPP E&S Guideline. The Requirement Checklist should be submitted by the IPP to PLN's Procurement Team in two events:

1- During submission of the technical and financial proposals.
The first submission includes requirement checklist on Screening process (including screening process that associated with each specific E&S Topic). The submission shall be completed with the result of project screening (based on result of Pre-FS, FS, or separate high-level study) and other supporting evidence/documentation. Upon review of the IPP's Requirement Checklist, PLN may provide feedback and recommendation on the project screening process or provide approval to proceed with the E&S Impact Assessment and E&S Management & Monitoring Plan.

2- After completion of Impact Assessment Process.
The second submission includes the rest of component of the Requirement Checklist, completed with E&S Impact Assessment and E&S Management & Monitoring Plan (see Point 2 below).

Illustration on how and when the Requirement Checklist have to be filled-out and updated (by IPP) or being reviewed by PLN is provided in ***Figure 3-1***.

2) Impact Assessment and Management & Monitoring Plan

IPP will share the E&S Impact Assessment and E&S Management & Monitoring Plan with PLN once it is completed. These documents should be completed and shared with PLN before the start of the construction stage. Documents to be shared should cover elements required in Impact Assessment process according to national regulation (the Environmental Document) and these Guidelines.

3) Management and Monitoring Reports

During construction and operation phases, the IPP will share its E&S Management and Monitoring Reports to PLN (through Regional Unit or Project Construction Team of PLN) once every six months. The reports shall include documentation and evaluation of implementation of the E&S Management & Monitoring Plan (see point no. 2), covering aspects managed and monitored based on national regulation and these Guidelines.

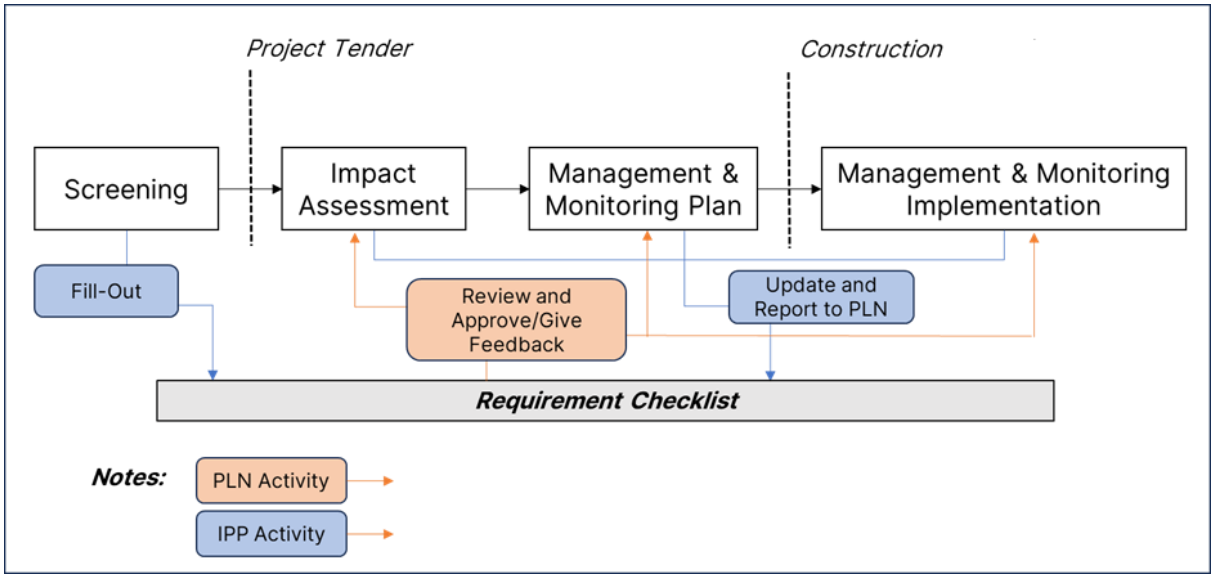

Figure 3-1 Use of the Requirement Checklist

3.2 Monitoring

PLN will conduct monitoring through review of documentations that are shared by the IPP (i.e. the Requirement Checklist, the Impact Assessment, the Management & Monitoring Plan, and the Management & Monitoring Reports) and may conduct direct site observation and interview at IPP's project site (hereinafter referred to as the 'Monitoring Visit'). The Monitoring Visit will confirm information related with E&S risk/impact assessment and management provided by IPP. If such visit is organized, IPP will prepare, provide access, and accommodate PLN's team. Feedback or recommendation from PLN will be shared and discussed with IPP during or after the period of Monitoring Visit.

APPENDIX A: The Requirement Checklist

Requirement Checklist

No.	Topic	Requirements (1)	*Filled by IPP*		*Filled by PLN*			
			Applicability (2)	Supporting Documentation/Evidence	Requirement-Filling Status			PLN Feedback and Recommendation
					Incomplete	Partially Complete	Fully Complete	
1st section - Screening Process - Bidding								
1	General Screening	Review the project design against PLN's Exclusion Criteria		☐ Letter of commitment that the project is free from forced labor, child labor, and/or human trafficking practice. (including third party or goods) ☐ Screening result of no adverse impact to existing proposed conservation area and/or national and international protected ecosystem (screening IBAT and public/government screening result) ☐ Screening result of no adverse impact to location to become part of UNESCO World Heritage sites or Alliance for Zero Extinction (AZE) sites. ☐ Screening result of no impact that cause land acquisition of Indigenous People (IP) community's customary lands (including physical cultural heritage) or their physical relocation without FPIC ☐ Screening result shows the project is not the type of project that going to release significant	☐	☐	☐	

No.	Topic	Requirements (1)	*Filled by IPP*		*Filled by PLN*			
			Applicability (2)	Supporting Documentation/Evidence	Requirement-Filling Status			PLN Feedback and Recommendation
					Incomplete	Partially Complete	Fully Complete	
				amount of greenhouse gases and contaminants to the environment without measure to reduce them to acceptable levels. ☐ Letter of commitment that the project is free from any prohibited goods or services and complies to allowable limit for goods or services according to national or international standards				
		Record of Site Screening activities in a report (See Appendix C for reference)		☐ Information of Distance to nearest community and public facility/institution ☐ Information of Potential land acquisition and resettlement ☐ Information of presence of road access to mobilize workers, vehicles, equipment, and material safely ☐ Information of areas or services near to the location to properly accommodate lodging for workers (during construction); ☐ Information of degree of likely nuisance, health, or safety impacts on nearby communities ☐ Information of presence of available facilities or services to support the project activities,	☐	☐	☐	

No.	Topic	Requirements [1]	*Filled by IPP*		*Filled by PLN*			
			Applicability [2]	Supporting Documentation/Evidence	Requirement-Filling Status			PLN Feedback and Recommendation
					Incomplete	Partially Complete	Fully Complete	
				such as waste management, hazardous material management, inbound or temporary storage area, existing power connection lines/grid; ☐ Information of presence of needed resources and how to get them, e.g., groundwater, surface water, fuel, gas, etc.; ☐ Information of distance and sensitivity of sensitive natural receptors and receptors of conservation concern; ☐ Information of presence of indigenous people community and customary land or forest area; ☐ Information of presence of physical cultural heritage; ☐ Information of presence and capacity of institutions dealing with security issues and emergency situation around the site, e.g., police, army, fire brigade, etc.; and ☐ Information of local weather conditions and relevant climate risk (for example, flooding vulnerability, temperature, wind speed, etc.)				

No.	Topic	Requirements [1]	*Filled by IPP*		*Filled by PLN*			
			Applicability [2]	Supporting Documentation/Evidence	Requirement-Filling Status			PLN Feedback and Recommendation
					Incomplete	Partially Complete	Fully Complete	
		Preliminary Identification and Assessment of E&S Risk/Impact		☐ Result of potential social and environment risk/impact caused by the project in every project stage and activities.	☐	☐	☐	
2nd Section- Impact Assessment Process – Prior construction								
1	Impact Assessment	Baseline Study: Adopt the most stringent standard in social and environment data collection Consider the result from E&S impact/risk to decide data to be collected for baseline study		☐ National & International Social and Environment Regulation / Standard review to choose the most stringent and visible to do ☐ Data collection based on the risk and impact found during screening process, including induced and cumulative impact	☐	☐	☐	
		Analysis and assessment: Conduct induced and cumulative impact assessment as part of EIA		☐ Induced and cumulative impact assessment is integrated to the current method of impact assessment	☐	☐	☐	
		Development E&S Management and Monitoring Plan:		☐ Estimated cost for each management and monitoring action plan	☐	☐	☐	

No.	Topic	Requirements (1)	*Filled by IPP*		*Filled by PLN*			
			Applicability (2)	Supporting Documentation/Evidence	Requirement-Filling Status			PLN Feedback and Recommendation
					Incomplete	Partially Complete	Fully Complete	
		Add estimated cost for each management and monitoring action plan Design and implement specific mitigation measure at the depth and scale proportionate to the risk/impact even if the project is only required to do SPPL by national standard		☐ Mitigation measure planed for a specific risk /impact at the depth and scale proportionate to the risk/impact even if the project is only required to do SPPL by national standard				
2	Biodiversity Aspect	Conduct critical habitat assessment	☐	☐ Critical habitat assessment	☐	☐	☐	
		Impact identification and assessment considering the following threats to biodiversity: • invasive alien species; • overexploitation; • hydrological changes; • nutrient loading;	☐	☐ Consideration of these aspects in the identification of impacts during the scoping process. ☐ Each of these aspects which has potential significant impact are assessed.	☐	☐	☐	

No.	Topic	Requirements (1)	*Filled by IPP*		*Filled by PLN*			
			Applicability (2)	Supporting Documentation/Evidence	Requirement-Filling Status			PLN Feedback and Recommendation
					Incomplete	Partially Complete	Fully Complete	
		• pollution and incidental take; and • projected climate change impacts.						
3	Land Acquisition and Resettlement	Implement of Livelihood restoration for severely affected people due to land acquisition	☐	☐ Determination of project impacts on affected people's welfare and livelihoods, not only the size of land to be acquired and compensation to be paid. ☐ Determination of all affected people, their compensable losses and other impacts that need to be mitigated to restore their livelihoods. ☐ Determination of people who are physically displaced and additional mitigation measures needed to restore their livelihoods above and beyond compensation for loss of land. ☐ Determination of "Fair Replacement Value" compensation per SPI 204. ☐ Identification of vulnerable groups who are particularly vulnerable to shocks due to the projects ☐ Land Acquisition and Resettlement Plan (LARAP) that includes contents of the DPPT	☐	☐	☐	

No.	Topic	Requirements [1]	*Filled by IPP*		*Filled by PLN*			
			Applicability [2]	Supporting Documentation/Evidence	Requirement-Filling Status			PLN Feedback and Recommendation
					Incomplete	Partially Complete	Fully Complete	
				and addresses additional requirements that are not covered in DPPT.				
		Document case when land is acquired by using Voluntary land donation scheme	☐	☐ SOP of Voluntary land donation ☐ Land certificate ☐ Impact assessment review to land owners / land users ☐ Agreement between project owner and land donors	☐	☐	☐	
4	Indigenous Peoples (IP)	Provide detail IP Screening and impact assessment	☐	☐ Indigenous people screening Report ☐ Identified Impact for IP communities, with or without FPIC	☐	☐	☐	
		Conduct FPIC	☐	☐ Detailed description of project impacts on IP communities in an Indigenous People Plan. ☐ Detailed description of good faith engagement with IP communities, and FPIC achieved, if necessary, in Indigenous People Plan	☐	☐	☐	
5	Cultural Heritage	Identify of Cultural Heritage Value to communities	☐	☐ Identified of impact to cultural heritage including those that are not registered in government's CH registries.	☐	☐	☐	

No.	Topic	Requirements [1]	*Filled by IPP*		*Filled by PLN*			
			Applicability [2]	Supporting Documentation/Evidence	Requirement-Filling Status			PLN Feedback and Recommendation
					Incomplete	Partially Complete	Fully Complete	
				☐ Results of stakeholder engagement ☐ Identified of impact mitigation measures				
6	Labor and Working Condition	Conduct impact assessment for workforce working condition as part of EIA	☐	☐ Impact assessment result for workforce working condition for workers hired by the contractor and by the third parties (e.g. subcontractors and employment agencies) ☐ HIRAC and safety plan ☐ Available workforce number and regulation to fulfilled ☐ Force Labor declaration for solar equipment	☐	☐	☐	
7	Community Health and safety	Extend the project commitment to the protection of the project affected communities	☐	☐ Emergency response plan covers and gets socialized to neighboring communities besides workforce ☐ GBV and STD related policy ☐ Security policy covers human rights components	☐	☐	☐	
		Conduct community health and safety impact assessment as part of EIA	☐	☐ Assessment of health and safety risks to local and neighboring communities, and mitigation measures as part of the safety plan.	☐	☐	☐	

No.	Topic	Requirements [1]	*Filled by IPP*		*Filled by PLN*			
			Applicability [2]	**Supporting Documentation/Evidence**	**Requirement-Filling Status**			**PLN Feedback and Recommendation**
					Incomplete	**Partially Complete**	**Fully Complete**	
8	Stakeholder Engagement	Conduct stakeholder engagement in multiple forms during the project lifecycle. Document stakeholder engagement.	☐	☐ Stakeholder screening to identify all key stakeholders, including indirectly affected people and civil society organization with interests and influence to the project. ☐ Stakeholder engagement plan must be equipped with document's update schedule. ☐ Grievance mechanisms accessible to affected people and funded and staffed adequately.	☐	☐	☐	

Notes:

(1) Activities implement to fill in the requirement gap between national and international standards (see Chapter 2 for details of topic discussion)

(2) Applicable if risk/impact is identified, assessed with regards to the proportionality against significance of the risk/impact. If any of the topic is not applicable, please provide justification and evidence.

APPENDIX B: E&S Considerations in Site Screening of Solar PV Project

E&S Consideration in Site Screening based on Applicable International Standards for PLN Foreign-Funded Solar PV Projects

Aspect	*E&S Consideration*
Solar Resource	As much as possible, site will not be placed in heavily vegetated area, like forest, to minimize shading. Note that heavily vegetated area most likely contains high biodiversity value.
Size of the Area	Land acquisition process will have to follow acceptable international standard principles and might require appropriate land acquisition and resettlement plan (LARAP). When floating module is used, arrangement of module will be assessed to avoid negative impact on aquatic species, as large area of floating modules can block sunlight that is needed for aquatic photosynthesis.
Climate	Site will be designed in such a way that it will counter weather-related risk, such as flooding, that may induce other impact such as dispersion of hazardous waste, non-hazardous waste, or wastewater from the construction and operation activities at the Site by the flood water.
Land Contour (Topography)	If terrain of the site needs to be modified, an erosion and sediment control measure will be applied. Modification of the land surface will consider and minimize impact to the environment, such as, surface water run-off direction, shape and direction of existing water bodies, existing riparian habitat on river banks, etc.
Geotechnical	Any soil disturbance activities, including during geotechnical survey or foundation structure construction will consider measure to prevent reduction of soil and groundwater quality, for example by implementing procedure for preventing chemicals (such as lube oil) to interact with soil.
Access	Access preparation will consider health, safety, and security of community that have been living or doing activities at the area from induced traffic (project related or non-project related), labor influx, introduced illness, etc. Community will be protected from safety hazard related to the construction activity and operation of equipment at the power plant by providing some access control and barrier, such as security post and fence. Stakeholder engagement, including development of grievance mechanism, will be provided for community that is impacted from access opening or modification. Possible introduction of invasive alien species due to the access opening will be assessed in the Impact Assessment and mitigated.
Grid Connection	If grid connection needs to be developed, any activity that require land acquisition will be conducted following acceptable international standard principles and might require appropriate land acquisition and resettlement plan (LARAP). Livelihood restoration will be made if identified from the Impact Assessment and the LARAP. Occupational and community health and safety will be taken into account in the Impact Assessment and Management Plan.

Aspect	*E&S Consideration*
Land Use	Land acquisition process will have to follow acceptable international standard principles and might require appropriate land acquisition and resettlement plan (LARAP). Land will be selected at area where it is allowed by the government's spatial plan. Since possible removal of vegetation canopy will be done, site will not be placed in or near to environmentally sensitive area based on the impact assessment. Stakeholder engagement, including development of grievance mechanism, will be provided for community and other institution (for example, glare disturbance to military or flight activity) that can be impacted from access opening or modification.
Module Soiling	Site selection to consider impact for placing power plant near to potential bird and bat habitat (e.g., forest, nature reserves, bird breeding area, cave, lake, etc.), busy road, or industrial/agricultural activity to prevent module soiling.
Water Availability	Water consumption and wastewater (from module cleaning process) will be considered in the Impact Assessment with relevant management plan to be developed and implemented.

APPENDIX C: Example of Site Screening Form

Form 1: E&S Screening for Site Selection Form

Date: _____

Site Identification: _____

Name and Title of Personnel Filling the Information: _____

No.	Screening Criteria	Result (Yes/No)	Reason and information (for 'Yes' answer)
1	Site is part of national or local prohibited or restricted areas for the proposed project development (i.e., conservation and protected forest, PIPPIB, etc.)		To add information of any permitting required (if any)
2	Site is part of UNESCO-designated world heritage site		
3	Site is within or in close proximity to AZE sites		
4	Site is within or in close proximity to protected conservation area and/or national and internationally protected ecosystem		
5	Site is prone to natural disaster		
6	Site has presence of IP		
7	Site has Cultural Heritage		
8	Site is areas with Heightened Social and Security Concerns		
9	Other additional information specific to the site: • Site has area near to it where it is appropriate to accommodate lodging for workers (particularly during construction). • Site has road access to mobilize workers, vehicles, and equipment safely. • Institutions in-charge to deal with security issues and emergency situation, e.g., police, army, fire brigade, etc., is not available, far, take long time to be reached out from the site. • Other information:		
Specific Criteria for Solar PV Power Plant			
10	Access to an adequate amount of clean water is not available or difficult.		

No.	Screening Criteria	Result (Yes/No)	Reason and information (for 'Yes' answer)
11	Site is located in highly vegetated area with high tree/plant canopy coverage.		
12	Access for equipment and material transport from/to the site (e.g., road, port, etc.) is not available, far, or unsafe.		
13	Site does not have space to establish hazardous and toxic waste temporary storage, or access to such facility near to it.		
Specific Criteria for Transmission Line			
14	Site condition does not allow distancing of 1.5 meter (60-inch), at the minimum, between energized components and grounded hardware.		
15	Site for the right of way and the adjacent boundaries have or near to vegetations that are prone to fire risks.		
16	Site condition makes the equipment to be installed above or adjacent to residential properties or other locations with high frequency of human occupancy (e.g., schools or offices).		
17	Site is not suitable for appropriate temporary storage of used transformers; and hazardous waste, including transformer oil/oil.		
Specific Criteria for Distribution Line			
18	Distance to community is closer that what is prescribed in relevant standards, e.g., PUIL or IEC.		
Conclusion ***(If one or more criteria in the Form have 'Yes' result(s), the 'Conclusion' will describe each condition as detailed as possible, in a way that the information will be practically useful to predict the potential consequence, likelihood, and finally significance of E&S impacts that will occur.)***			
…			

Guidance on how to fill the Form:

Each screening criteria listed in the table to be responded by 'Yes' or 'No' depending on the result of the screening exercise. For example:

- If IP is identified in the potential site location, by the information sources, then the 'Result' column will be marked as 'Yes'. Otherwise, no identified IP from the information sources will be marked as 'No' in the 'Result column.

- If answer for the IP criteria is 'Yes', then provide the 'Reason and Information' column with more details, such as (1) name of information sources, (2) name of IP indicated, (3) other necessary information, including notes if the result cannot yet be determined from this initial stage or notes for the needs of follow up verification.

APPENDIX D: Reference to the Process of E&S Impact Assessment in PLN's Foreign Funded Project

Impact Assessment

Disclaimer: This Appendix provides detail references to the principles of E&S Impact Assessment process as per PLN's ESMS that will be adopted for foreign-funded project. Given that, IPP may follow the principles of Impact Assessment provided here, or instead using its own process/practice as long as it considers the requirements in the main body of this Guideline.

E&S Impact Assessment consists of the following activities:

(1) Screening;

(2) Scoping;

(3) Baseline Study; and

(4) Analysis and Assessment of Impact.

Screening is conducted at earliest stage in every project lifecycle, whenever possible concurrent with or part of the pre-FS, FS, or any other preliminary studies (as adequate) , so that major E&S risk can be avoided as early possible (for example: changing location if the proposed location located in internationally recognized key biodiversity area), and to inform the depth of the impact assessment process that need to be pursued, and also any additional studies that may require (e.g. critical habitat assessment, etc.).

Scoping, Baseline Study, and Analysis and Assessment of Impacts are conducted simultaneously with the development of Detailed Engineering Design (DED), by informing and being informed by the designing process, so that the E&S impacts can be avoided or minimized to the extent possible through design choices, while unavoidable impacts can be adequately mitigated. Impact assessment process takes into account the stakeholder's feedback during stakeholder engagement process, when necessary continuous discussions with relevant stakeholders should be implemented event during impact assessment process.

A. Screening

E&S Impact Assessment in PLN's ESMS focuses to all individual E&S impacts that are identified starting from Screening and Categorization stage. This is different with regulatory-based impact assessment which focuses on impacts that have been categorized as important' (*Dampak Penting*). Additionally, the E&S Impact Assessment based on PLN's ESMS pays attention to many social aspects which are typically not (consistently) assessed in regulatory-based impact assessment, except for ones that related with land acquisition activity.

The results of Screening are preliminary in nature and will be expanded and revisited as part of the Impact Assessment, when more information about the nature and the scope of the project becomes available or when project definition and circumstances change (e.g., screening of subprojects identified during project implementation, project restructurings, activation of Contingency Emergency Response Components, etc.). This is in line with the adaptive risk management approach.

Screening Process for a project will be conducted at the beginning of E&S Impact Assessment process for the following purposes:

1) identifying major E&S risks of the potential project at the earliest possible stage;
2) rejecting projects that, based on its characteristics, would have unacceptable E&S risk level that cannot be reduced to acceptable levels;
3) determining project category based on preliminary assessment of the potential E&S risk;
4) identifying the type of E&S impact assessment that will be required based on the Risk Category; and
5) informing PLN management on resources needed to assess the Project E&S risk.

Results of Screening is not a one-time activity of which the result will remain throughout the project. To the contrary, risk screening and categorization is a risk management tool that should be conducted from time to time throughout the project life, as new E&S data become available, project designs and locations change or become clearer, or any other significant information becomes available.

The Screening process is conducted through the following activities:

1) Initial Identification of Potential E&S Risk and Impact;
2) Site Screening;
3) Preliminary Assessment of Potential E&S Risk and Impact;
4) Project Categorization;
5) Exclusion of Project with Unacceptable Risk; and
6) Determination of Detailed E&S Impact Assessment Depth.

Screening process is meant to be limited to E&S impact management process and is separated from engineering or technical impact management process. A separate screening may be needed to cover impact management from engineering or technical perspective.

A.1. Initial Identification of Potential E&S Risk and Impact

There are four type of risks that will be considered in identifying the project's potential E&S risks and impacts:

1. **E&S Risks and Impacts**: Identifying potential E&S risks involves assessing direct and indirect impacts of the project on aspects like land, air, water quality, cultural heritage, safety, and vulnerable communities. These are referred to as risks "from" the project. Interactions between these impacts are considered to determine the overall E&S effect.
2. **Contextual Risks**: Contextual risks involve external factors that can worsen E&S risks and impact project sustainability. These factors include sensitive environments, interaction with existing activities, social tensions, political uncertainties, past project legacies, and natural hazards.

3. **Institutional Capacity Risks**: Institutional risks relate to the project's organizational, administrative, and regulatory capabilities in managing E&S aspects. Complex roles, capacity issues, and reliance on partners can affect the project's ability to handle E&S responsibilities.
4. **Reputational and Political Risk**: This refers to factors that might expose the project to reputational or political risks. It can arise from public perception, controversial project design, historical failures, and social conflicts associated with the project.

Information that is useful to initially identify the potential E&S risk and impact can be obtained through some studies, such as:

- the Pre-Feasibility Study and Feasibility Study, conducted by the candidates of Solar PV IPP as part of requirements for the bidding process with PLN; and/or
- Separate study that is conducted in case such information have not been captured in the studies above.

The abovementioned studies extracts required information from publicly-available reports, online databases, remote sensing data, interviews, and site visits.

A.2. Site Screening

Site Screening process are explained in the body of this Guideline (***Section 2.2***)

A.3 Preliminary Assessment of Potential E&S Impact

Once relevant information has been collected, the significance of identified potential E&S impact will then be assessed. Significance of a potential E&S impact is measured by assessing the probability of the impact to occur and the consequence level if such impact does occur.

Note that some elements of the preliminary assessment of potential E&S impacts provided in this document will be conducted using some instruments that are not specified in regulatory-mandated impact assessment. For example, the use of impact probability factor and significance risk matrix (***Figure A-0-1***) have not been mandated by the regulations.

The probability of risk/impact occurrence in PLN ESMS is expressed in five scales from the highest of Very High (5) to the lowest of Very Low (1). The criteria for each scale are described in ***Table*** .

Table A-1 Criteria of Probability Level

Probability Level	***Criteria***
Very High (5)	>80% to 100% chance to occur
High (4)	>60% to 80% chance to occur
Moderate (3)	>40% to 60% chance to occur
Low (2)	>20% to 40% chance to occur
Very Low (1)	0%-20% chance to occur

The consequence of the impact is assigned as a function of extent/scale, duration and frequency, reversibility of impact, stakeholder concerns, and sensitivity of receptor. Consequence level of risk and impact are expressed on a scale from the highest of Highly Significant (5) to the lowest of Insignificant (1) and the criteria in general for each level is described in ***Table*** Error! Reference source not found..

Table A-2 Criteria of Consequence Level

Consequence Level	***Criteria***
Highly Significant (5)	Adverse impacts on social (individual or community) and/or environment of very high magnitude, including very large scale and/or spatial extent (large geographic area, large number of people, transboundary impacts), cumulative, long-term (permanent and irreversible); receptors are considered highly sensitive; examples are severe adverse impacts on areas with high biodiversity value; severe adverse impacts to lands, resources and territories of indigenous peoples; significant levels of displacement or resettlement with long-term consequences on peoples' livelihood; fatality of individual or community; impacts give rise to severe and cumulative social conflicts with long-term consequences.
Significant (4)	Adverse impacts on social and/or environment of high magnitude, including large scale and/or spatial extent (large geographic area, large number of people and/or high level of injury, transboundary impacts), of certain duration but still reversible if sufficient effort is provided for mitigation; receptors are considered sensitive; examples are adverse impacts on areas with high biodiversity value; adverse impacts to lands, resources and territories of indigenous peoples; significant levels of displacement or resettlement with temporary consequences on peoples' livelihood; impacts give rise to social conflicts; significant impacts to health requiring hospitalization; etc.
Medium (3)	Adverse impacts of medium magnitude on social and/or environment, limited in scale (small area and low number of people affected or medium level of injury), limited in duration (temporary and/or less than few days), impacts are relatively predictable and can be avoided, managed, mitigated and/or repaired with known solutions and straight forward measures.
Minor (2)	Adverse impacts of low magnitude on social and/or environment, at a very small scale (e.g., very small affected area, very low number of people affected, very minimum level of injury) and only short duration, may be easily avoided, managed, mitigated and/or repaired.
Insignificant (1)	No adverse impacts on social and/or on the environment.

The significance of E&S impact is determined using a risk matrix methodology as presented in ***Figure A-0-1***. Significance of each potential E&S impact will be expressed in a five-level scale, namely Low, Moderate, High, Very High, and Extreme.

Risk Rating		Consequence				
		Insignificant (1)	Minor (2)	Medium (3)	Significant (4)	Highly Significant (5)
Probability / Likelihood	Very High (5)	Moderate	Moderate	High	Very High	Extreme
	High (4)	Low	Moderate	High	Very High	Extreme
	Moderate (3)	Low	Moderate	High	High	Very High
	Low (2)	Low	Low	Moderate	High	Very High
	Very Low (1)	Low	Low	Moderate	High	High

Figure A-0-1 Risk Rating Matrix of Impact Significance

A.4.Exclusion of Projects with Unacceptable Risks

Screening against Exclusion Criteria is explained in the body of this Guideline (***Section 2.2***)

A.5. Scoping

Scoping is a part of E&S Impact Assessment, which aims to deepen the understanding of the potential E&S impact identified in the Screening stage. Each and every project will have their own potential E&S impacts, which typically dependent to the design of the project and how the interaction between the project's activities and the environment and social elements at project site is established. ***Table*** lists some of potential E&S impacts that can be identified in a Solar PV project.

Furthermore, Scoping defines the following:

- Boundary of the Detailed E&S Impact Assessment that need to be done, such as:
  - Activities causing E&S impact;
  - Project area and Area of Interest ('AOI');
  - Sensitive receptors;
  - Appropriate time boundaries to do the Detailed E&S Impact Assessment;
  - Existing environmental condition and social issue that are relevant with the potential E&S impact;
  - Expertise and other resources required to do the Detailed E&S Impact Assessment; and
  - Required cost to do Detailed E&S Impact Assessment;
- Information necessary to be assessed in detail;
- Suitable methodology and sampling strategy for Baseline Study; and
- Methodology to do Impact Analysis.

The scoping exercise will ensure that the assessment takes into account inputs from stakeholders on what they consider important and that the input/issues is assessed at an appropriate level of detail.

Note that estimation of cost to do Detailed E&S Impact Assessment is not included as a mandated aspect to be prepared in Scoping of regulatory impact assessment process (but can be prepared as separate process).

Table A-3 Some Potential E&S Impacts in Solar PV Project

No.	Typical Activities	Potential Environmental and Social Impacts																				
		Disturbance to Biodiversity	Reduced Air Quality	Increase in Noise and Vibration	Soil disturbance (structure, erosion, soil quality)	Disturbance to surface water and groundwater quality	Disturbance to surface water and groundwater quantity	Waste	Community Discontent	Social Jealousy - Social/Security Conflict	Increase in Land and Building Values	Land Use and Economic Displacement	Impacts to Indigenous People	Disturbance to Cultural Heritage	Visual / Aesthetic Impacts	Increase in People, Goods and Service Traffic	Disturbance or Damage to Natural/ Common Property Resources	Decrease in Sanitation - Increase of Domestic Waste	Changes in Employment Opportunity and Community Income Level	Community Health, Safety and Security	Occupational Health and Safety	Gender Based Violence - SEA/SH	Limitation of Community Access to Ecosystem Service
Planning and Pre-construction																						
1	Site survey								■		■											
2	Socialization and public consultation								■		■		■									
3	Permitting process								■		■		■									
4	Land acquisition								■			■	■	■								■
Construction																						
5	Recruitment and mobilization of construction workers		■	■						■						■	■	■	■		■	
6	Equipment and materials mobilization		■	■												■	■			■	■	
7	Land preparation, vegetation clearance, site grading	■	■	■	■	■								■			■	■		■	■	■
8	Establishment of labor camp, site office, batching plant, storage areas		■	■				■		■							■			■	■	■
9	Access roads construction or upgrading	■	■	■													■			■	■	
10	Internal road construction		■	■													■			■	■	
11	Substation construction		■	■				■									■			■	■	
12	Solar PV installation and electrical works		■	■				■													■	
13	Water use during construction					■	■															■
14	Commissioning						■	■													■	
15	Demobilization of construction workers		■	■															■	■	■	
Operation																						
16	Operation and regular monitoring	■				■		■		■					■				■	■	■	■
17	Maintenance (greasing, cleaning) and repair					■	■	■													■	■
Non-Routine Activities																						
18	Spills of chemicals, hazardous materials				■	■														■	■	
19	Fire/explosion		■																	■	■	
20	Vehicle accident																			■	■	

A.6. Baseline Study

Following the Scoping, Baseline Study will be conducted to get an up-to-date and factual characteristic of the existing E&S conditions and to identify potential impact receptors, including sensitive receptors.

The Baseline Study will include the following but not limited to:

- Preparation of primary and secondary data collection plan;
- Collection of E&S baseline data through sampling and survey, including social vulnerabilities & sensitive receptors data;
- Identification of perceived impact;
- Recording stakeholders' feedback on project design;
- Issue-specific studies, numerical simulation, and modelling.

A.7. Analysis and Assessment of Impact

In a Detailed E&S Impact Assessment, the impact will be analyzed using appropriate methodology and sufficient baseline data so that the assessment can identify the significance level of impact before and after the proposed mitigation measures (residual impact).

A.7.1. Impact Prediction and Mapping

From Scoping and Baseline Study, collected information is analyzed to deepen the understanding of potential E&S impacts of the project on various resources and receptors. This process involves some prediction methods, such as quantitative, semi-quantitative, and qualitative techniques.

Additionally, some unexpected impacts may surface along the E&S Impact Assessment process, which could trigger the need to have supplementary assessments. To understand how impacts on one receptor can affect others and potentially intensifying their significance, each identified impacts will be compiled in checklists, matrices, or maps, showing their correlation and interplay. This helps understand how impacts on one receptor can affect others, potentially intensifying their significance.

Subsequent impact mapping and issue-specific studies aim to comprehensively evaluate these interrelated risks and impacts, considering factors like impact zones, timelines, potential receptors, and stakeholder concerns. This holistic approach ensures a thorough understanding of project impact. See example below:

- *Emission from diesel power generator and heavy equipment during construction phase of a project (including in Solar PV project) can potentially impact the air quality and the community health living near to the project site. The impact on the community health is a derivative impact from decrement of air quality due to power generator and heavy equipment emission*.
- *Construction mobilization of project vehicles and heavy equipment along public road would result in increasing number of vehicles on public road (traffic impact). Depending on the*

baseline setting (e.g., if existing poor road condition is identified, along with issue with poor safety behavior of locals when driving on road and high incident number), project mobilization has the potential derivative impact on community safety as it is increasing the risk of local traffic incident.

A.7.2. Significance of Impacts

Once the prediction of impacts is complete, each impact is described in terms of its various relevant characteristics (e.g., nature (positive and negative) and type (direct and indirect)). The potential impact will then be assessed for its significance by using the same risk matrix tool used in the Screening stage (see ***Figure A-0-1***).

It is important to note that in determining the impact significance, embedded controls (i.e., physical or procedural controls that are included in Project Description) will have to be taken into account. An example of an embedded control is a standard acoustic enclosure that is designed to be installed around a piece of major equipment.

Once the significance of an impact has been defined, the next step is to evaluate what mitigation and enhancement measures that are warranted.

A.7.3. Identification of Mitigation and Enhancement Measures

The goal of this step is to reduce the significance of project impact to the lowest level possible, even for those that have been initially considered as "Low." Residual impact significance is assessed after implementing mitigation and enhancement measures.

Mitigation measures will follow a hierarchy:

a) Avoiding impacts (through site selection and project design adjustments).

b) Reducing impact significance through efficient resource use, technology, and positive E&S measures.

c) Compensating for residual impacts through actions like habitat restoration, preservation, or creation, used as a last resort with careful assessment and monitoring.

Example of mitigation measures that can be determined based on the associated E&S impacts for Solar PV project is listed in ***Table*** .

Table A-4 Example of Mitigation Measures for Solar PV Projects

No.	Potential E&S Impacts	Examples of Mitigation Measures
Environment Impacts		
1	Disturbance to Biodiversity	• Avoidance of sensitive habitat • Replantation of flora • Provision of wildlife crossing • Biodiversity offset

No.	Potential E&S Impacts	Examples of Mitigation Measures
2	Reduced Air Quality	• Utilization of low emission vehicles, equipment calibration and monitoring • Water spraying to dust • Use cover for materials mobilization
3	Increase in Noise and Vibration	• Conducting work at hour agreed with community • Utilization of low noise equipment, equipment calibration and monitoring • Utilization of noise barriers, sound insulation and vibration dumping • Conducting work at hour agreed with community
4	Soil disturbance (structure, erosion, soil quality)	• Top soil management • Provision of retaining walls, drainage system
5	Disturbance to surface water and groundwater quality	• Provision of drainage system • Wastewater (including water run-off) treatment unit or facility • Provision of protective impermeable layer prior to placement of hazardous material or transfer • Emergency response kit for leaks or spill
6	Disturbance to surface water and groundwater quantity	• Calculation of water balance to determine water availability • Reuse and recycle water
7	Waste	• Waste segregation at source • Waste reuse and recycle • Waste management system • Hazardous waste storage and handling according to regulation
Social Impacts		
8	Community discontent due to project activities	• Community consultation • Community socialization and engagement • Community grievance mechanism • Establish and monitor stakeholder engagement
9	Increase Social Jealousy - Social/Security Conflict	• Socialization and transparent recruitment/selection process for work or other economic opportunity • Community grievance mechanism • Mandatory code of conduct to project workers for their interaction with community • Establish and monitor stakeholder engagement
10	Increase in Land and Building Values	• Coordination with local authority • Transparent land appraisal mechanism • Community socialization and engagement

No.	Potential E&S Impacts	Examples of Mitigation Measures
11	Economic Displacement and Physical Displacement	• Implementation of participative land acquisition protocols • Adopting a willing-buyer and willing-seller scheme • Community grievance mechanism • Establish and implementation of land acquisition and resettlement planning before land acquisition process • Establish livelihood restoration
12	Impacts to Indigenous People	• Implementation of Free, Informed and Prior Consent (FPIC) protocol • Inclusive participation and community engagement • Establish and implementation of Indigenous Peoples Plan
13	Disturbance to Cultural Heritage	• Implementation of chance find procedure • Coordination with relevant authority • Implementation of Cultural Heritage Management Plan
14	Visual / Aesthetic Impacts	• Aesthetic consideration in design • Site screening and appropriate landscaping approach • Community grievance mechanism
15	Increase in People, Goods and Service Traffic	• Timing and load arrangement in mobilization of equipment, material and workers • Community socialization and engagement • Community grievance mechanism • Socialization/training to project workers for their interaction with community
16	Disturbance or Damage to Natural/ Common Property Resources	• Assessment of ecosystem service • Community socialization and engagement • Community grievance mechanism • Careful selection of natural resources or public facilities that will be utilized by the project
17	Decrease in Sanitation - Increase of Domestic Waste	• Waste management practice • Coordination with relevant local authority that manages waste • Provision of adequate sanitation facilities and relevant training to workers
18	Changes in Employment Opportunity and Community Income Level	• Transparent work opportunity and recruitment/selection process • Provision of work agreement with sufficient terms and condition • Provision of labor grievance mechanism • Retrenchment planning

No.	Potential E&S Impacts	Examples of Mitigation Measures
19	Community Health, Safety and Security	• Socialization of work activities, with impact to communities, prior to commencing the work • Preparation and socialization/ drills of emergency procedures to affected communities • Coordination with relevant emergency response authorities • Community grievance mechanism / hotline number for project related emergencies • Implement traffic management during construction
20	Occupational Health and Safety	• Pre-assessment of potential high risk works • Toolbox meeting, daily briefing, safety induction • Assurance in the competencies of workers, esp. those performing high risk works (i.e. operator license, training/experience requirements) • Provision of inspector / work supervisor • Permit to work • Restricted area and/or lock-out tag-out mechanism • Stop work authority • Provision of Personal Protective Equipment ('PPE'), warning signs • Implement traffic management during construction
21	Gender Based Violence ('GBV') – Sexual Exploitation and Abuse/ Sexual Harassment ('SEA/SH')	• Provision of mandatory workers code of conduct • Sanction and termination mechanism for any violation of GBV, SEA/SH • Survivor based approach grievance mechanism for GBV, SEA/SH • Equal access to recruitment process • Headcount segregated by gender
22	Limitation of community access to ecosystem service (hunting, animal grassing, gathering fruit, gathering firewood or feed, fishing)	• Ecosystem service mapping and management • Land Acquisition Impact Assessment and Livelihood restoration

A.7.4. Cumulative Impact Assessment (CIA)

Cumulative impacts are resulted from the combined effects of various actions, projects, or activities occurring within a similar timeframe. Often, a location with good solar resources will have more than one solar project proposed, in which cumulative impacts may occur. Cumulative impacts may also result from other activities from different project, or secondary development of the project that together could result in considerable impacts such as new development of substations and access roads.

Examples of cumulative impacts include project contribution to increased pollutant emissions, reduced water flow due to multiple withdrawals, disruption of migratory routes, wildlife

population decline from various factors, depletion of forests, and social effects like in-migration and health issues due to multiple construction projects.

Cumulative Impact Assessment ('CIA') examines how these impacts, both from the project and external factors like other developments or natural events, affect Valuable Environmental and Social Components ('VECs'). CIA's goal is to understand the potential interactions and to propose measures for impact avoidance, reduction, or mitigation. It is applied when there's a concern that a project contributes to cumulative impacts on VECs or when a project's significant impacts affect VECs influenced by other developments.

VECs encompass various environmental and social attributes, including physical features, ecosystem services, natural processes, social conditions, and cultural aspects. They are influenced by changing environmental conditions and external stressors. VECs are often affected by multiple project activities, in which the need for CIA arises from the desire to comprehend the combined effects of development and natural forces on VECs. For example, it helps determine how multiple linear infrastructure projects might fragment terrestrial habitats beyond ecological functionality.

In a typical regulatory-based Impact Assessment, CIA is not required to be done.

APPENDIX E: Reference of Declaration on Forced Labor

I - Forced Labor Performance Declaration[16]

[The following table shall be filled in by <u>the Bidder, each member of a Joint Venture, each Subcontractor/ supplier/ manufacturer</u> providing solar panels and/or solar panel components proposed by the Bidder]

Bidder's Name: *[insert full name]*
Date: *[insert day, month, year]*
Joint Venture Member's or Subcontractor's/supplier's/manufacturer's Name: *[insert full name]*
RFB No. and title: *[insert RFB number and title]*
Page *[insert page number]* of *[insert total number]* pages

Forced Labor Performance Declaration in accordance with Section III, Evaluation and Qualification Criteria			
We: ☐ (a) have not been suspended or terminated, and/or other contractual remedies applied including calling of performance security by an employer, for reasons of breach of forced labor obligations in the past five years. *[if (a) is declared, state N/A for (b) below]* ☐ (b) have been suspended or terminated, and/or other contractual remedies applied including calling of performance security by an employer, for reasons of breach of forced labor obligations in the past five years. Details are provided below:			
Year	Contract identification	Name of Employer	Reasons for suspension or, termination, and/or other contractual remedies applied including calling performance security
-	-	-	-
☐ (c) [*If (b) above is applicable, attach evidence demonstrating that adequate capacity and commitment to comply with Forced Labor obligations.]*			

We declare that all the information and statements made in this Form are true, and we accept that any misrepresentation contained in this Form may lead to our disqualification by the Employer and/or sanctions by the Bank.

Name of the Bidder/ JV member/ Subcontractor/ supplier/ manufacturer _____

Name of the person duly authorized to sign on behalf of the Bidder/ JV member/ Subcontractor/ supplier/manufacturer _____

Title of the person signing on behalf of the Bidder/ JV member/ Subcontractor/ supplier/ manufacturer_____

Signature of the person named above_____

Date signed _____ day of _____, _____

Countersignature of authorized representative of the Bidder (for forms submitted by a JV member, Subcontractor/ supplier/ manufacturer):

Signature: _____

Date signed _____ day of _____, _____

[16] Annex II uses terms such as "RFB" and "bidder". The terms should be adjusted depending on the applicable procurement process terms such as "RFP" "proposer" and "applicant".

II - Forced Labor Declaration[17]

Date: _____ RFB No.: _____

Alternative No.: _____

Contract Title: _____

To:

We, the undersigned, declare that, if awarded the Contract, we, including our Subcontractors and suppliers/ manufacturers, are required to comply with the contractual Forced Labor obligations. In this regard, we:

(a) accept that there will be no Forced Labor among the staff, employees, workers and any other persons employed or engaged by us;

(b) accept that staff, employees, workers and any other persons employed or engaged, will be hired under employment conditions that meet the contractual obligations set out in the Contract;

(c) will include in our contracts with Subcontractors/ suppliers/ manufacturers of *[solar panels] [solar panel components]* obligations to prevent Forced Labor among the staff, employees, workers and any other person employed or engaged by the Subcontractor/ supplier/ manufacturer;

(d) will include in our contracts with Subcontractors/ suppliers/ manufacturers of *[solar panels] [solar panel components]*, that the Subcontractors/ suppliers/ manufacturers include an obligation to prevent Forced Labor in all contracts that they execute with their suppliers/ manufacturers of [solar panel][solar panel components];

(e) will monitor our Subcontractors/ suppliers/ manufacturers of *[solar panels] [solar panel components]* on implementation of obligations to prevent Forced Labor among the staff, employees, workers and any other person employed or engaged by them;

(f) will require our Subcontractors to monitor their suppliers/ manufacturers of *[solar panels] [solar panel components]* on implementation of obligations to prevent Forced Labor among the staff, employees, workers and any other person employed or engaged by them;

(g) will require our Subcontractors/ suppliers/ manufacturers to immediately notify us of any incidents of Forced Labor;

(h) will immediately notify the Employer any incident of Forced labor on the site, or premises of Subcontractors/ suppliers/ manufacturers of *[solar panels] [solar panel components]*;

(i) will include in periodic progress reports submitted in accordance with the contract sufficient details on our, including our Subcontractors/ suppliers/ manufacturers, compliance with Forced Labor obligations; and we

(j) confirm that the Subcontractors/ suppliers/ manufacturers for *[solar panels] [solar panel components]* for this contract are (or likely to be):

[17] Annex III uses terms such as “bid” and “bidder”. The terms should be adjusted depending on the applicable procurement process terms such as “proposal” “proposer”

[Provide each firm's name, address, primary contact, e-mail address, and the link to the firm's website]

OR

confirm that you have not yet finalized the Subcontractors/ suppliers/ manufacturers of solar panels/components, but when known the firm/s name(s), address(es), primary contact(s), e-mail address(es) and web site link(s) will be provided to the Employer, prior to signing the contract, with documentation demonstrating compliance with forced labor obligations to the Employer for approval].

THEN

If (c) above is applicable, attach evidence of how these contract obligations are/will be made.

If (d) above is applicable, attach evidence of how these contract obligations are/will be made.

If (e) above is applicable, please attach evidence of how this monitoring/due diligence is/will be undertaken (such as your inspection protocols, use of inspection agents, frequency of inspections, examples of previous factory/labor inspection reports etc.).

If (f) above is applicable, please attach evidence of how this monitoring/due diligence is/will be undertaken by Subcontractors (such as their inspection protocols, use of inspection agents, frequency of inspections, examples of previous factory/labor inspection reports etc.).

We declare all the information and statements made in this Form are true, and we accept that any misrepresentation contained in this Form may lead to our disqualification by the Employer and/or sanctions by the Bank.

Name of the Bidder***** _____

Name of the person duly authorized to sign the Bid on behalf of the Bidder****** _____

Title of the person signing the Bid _____

Signature of the person named above _____

Date signed _____ day of _____, _____

*****: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

******: Person signing the Bid shall have the power of attorney given by the Bidder attached to the Bid

[Note: In case of a Joint Venture, the Forced Labor Declaration must be in the name of all members to the Joint Venture that submits the Bid.]