REQUEST FOR TENDER

Tender:	**Technical assistance on evaluation of solar project feasibility studies in Laos (Activity)**
Duration:	Until July 2025[1]
Location:	Remote, with travel to Laos if required
Reports to:	Activity Lead
Bid submission closing Date:	11:59pm (Bangkok time) on Monday, 7 April 2025

About P4I

Partnerships for Infrastructure (P4I) is an Australian Government initiative partnering with Southeast Asia to drive sustainable, inclusive, and resilient growth through quality infrastructure. P4I partners with Cambodia, Indonesia, Lao PDR, Malaysia, Philippines, Thailand, Timor-Leste, Vietnam and the Association of Southeast Asian Nations (ASEAN).

Delivered through a single team, P4I is led by the Australian Department of Foreign Affairs and Trade (DFAT) in collaboration with Ernst & Young, Adam Smith International, The Asia Foundation and Ninti One.

P4I works with partners to strengthen infrastructure decision-making and practice across the transport, energy, utilities and telecommunications sectors. P4I's focus is on the early stages of the infrastructure lifecycle, including planning and prioritisation, financing strategy, and procurement. Foundational to quality infrastructure, P4I integrates Gender Equality, Disability, Social Inclusion (GEDSI), and Disaster Risk Reduction and Climate Change (DRRCC) considerations into all activities.

P4I has a head office in Bangkok, with other staff located around the region. More information about P4I is available at www.partnershipsforinfrastructure.org.

Background

Laos-Australia Sustainable Energy Partnership (LASEP)

Australia and Laos have launched the Laos-Australia Sustainable Energy Partnership (LASEP) to improve the sustainability, reliability and profitability of the sector and drive the country's energy transition by increasing the share of other alternative renewables in the energy mix. LASEP will be delivered collaboratively by Lao PDR's Ministry of Energy and Mines (MEM) and the Australian Government, primarily through P4I, with potential inputs from other Australian initiatives such as the Mekong Australia Partnership (MAP). LASEP's goal is to support the Government of Laos (GOL) with a more reliable, sustainable and profitable energy sector in Laos. LASEP is structured around two workstreams:

(i) Energy sector planning - develop approaches to assess available technologies and improve planning and resilience outcomes in the energy sector, and support creation of an enabling policy, regulatory and market environment to attract more quality investment; and

(ii) Energy transition - understand new low-emissions energy and storage technologies and the application to increase energy stability, sustainability, access, and reliability, and improve institutional capacity to better equip Lao PDR in realising a just, inclusive and resilient energy transition.

P4I engagement

An activity under LASEP's Energy transition workstream is to provide technical assistance on evaluation of solar project feasibility studies in Laos. Under this scope, P4I is providing support to the GOL to evaluate

[1]The timeline may be extended due to events outside of the P4I Activity team's control and in the event the deliverable timeline is extended the Consultant will be notified accordingly.

feasibility studies on solar photovoltaics (PV) projects. The key counterpart agency is the Department of Energy Policy and Planning (DEPP) under MEM.

DEPP has a set of guidelines for developing solar PV feasibility studies in Laos (Guidelines). Based on these Guidelines, P4I is providing technical assistance to DEPP in developing a Standard Operating Procedure (SOP) manual that would guide the in-house DEPP team in evaluating solar PV feasibility studies received from private developers and bolster understanding of how to apply the Guidelines. In addition, P4I will provide capacity building on the practical use of the developed SOP.

Based on the above, P4I will support DEPP on the following:

- Part A: development of SOP to evaluate solar PV feasibility studies (Feasibility Studies) in line with the Guidelines; and
- Part B: Knowledge exchange and training workshops on SOP and sharing Australian experience of evaluating Feasibility Studies.

Activity objectives

- Enhance DEPP's capacity to evaluate solar PV projects in line with the existing Guidelines at the project approval stage, including by introducing and promoting the use of international best practices and globally accepted standards/principles in evaluating Feasibility Studies. Over time, this is expected to improve the selection of solar projects that maximise opportunities for Laos in a sustainable way;
- Enhance DEPP's capacity for appropriate consideration of climate change and disaster resilience in the evaluation of Feasibility Studies in line with the existing Guidelines, including by introducing and promoting the use of international best practices and globally accepted standards/principles in evaluating Feasibility Studies; and
- Enhance DEPP's knowledge on the appropriate consideration of GEDSI aspects in the evaluation of Feasibility Studies in line with the existing Guidelines, including by introducing and promoting the use of international best practices and globally accepted standards/principles in evaluating Feasibility Studies.

Scope of work

P4I is seeking a qualified entity(s), including an organisation, individual consultant, or groups of consultants, for the role of Technical Consultant (Consultant) to be engaged in the P4I Activity team to undertake and deliver the following scope of work.

Part A: Development of SOP to evaluate Feasibility Studies in line with the Guidelines as attached in Appendix A;

- Assist the P4I Activity team and participate at stakeholder consultations and meetings as required and relevant for the development of the SOP
- Identify and document the key processes and procedures to follow in evaluating the Feasibility Studies.
- Develop draft and final SOP to enable DEPP to evaluate the Feasibility Studies at several levels during assessment. This may include:
    - Level 1: level of substantial responsiveness to the Guidelines
    - Level 2: Identification of material omissions/deviations in the Feasibility Studies
    - Level 3: Detailed evaluation of the Feasibility Studies as per the existing Guidelines
- This scope includes the development of the SOP based on international best practices and globally accepted standards/principles to the extent permitted in the Guidelines covering the applicable sections in the Guidelines.
    - **Appendix B** provides a matrix with the potential division of input required from various workstreams as per the contents of the Guidelines for reference.

Deliverables: Input to the table of contents and to the SOP manual to evaluate Feasibility Studies in line with the above "Scope of work - Part A". The deliverables shall be in P4I branded MS Word templates or format advised by the P4I Activity team.

Part B: Knowledge exchange and training workshops on the SOP

The Consultant shall develop content for the SOP training workshop using P4I branded materials encompassing Part A of the "Scope of work" above. The exact format and structure of the workshop to be informed by the P4I Activity team.

Deliverables: Delivery of 1-2 days of in-person workshop sessions on the implementation of the SOP manual

Approach to the development of the SOP manual

The P4I Activity team will follow the following approach which is subject to amendments as may be required.

Part A:

1. **Stakeholder consultations and meetings** will be held and led by the P4I Activity team to gather input and clarifications as required for the development of the draft and final SOP manual. The Consultant shall assist and participate in such stakeholder consultations and meetings as may be required.
2. **A structure, format and the table of contents for the Guidelines** will be developed by the P4I Activity team with input from the Consultant for the relevant sections encompassing Part A of the above "Scope of work".
3. **Development of the draft SOP manual.** The Consultant shall liaise with the P4I Activity team as required to ensure the deliverable is inline as per the table of contents and requirements, to resolve any clarifications, and for any other relevant matters.
4. **Finalise the SOP manual** based on received feedback and review comments from DEPP on the draft SOP manual. The Consultant shall make the necessary amendments to the draft SOP manual for the output of the final version for DEPP endorsement.

Part B:

In-person training workshops shall be over 1-2 days of delivery in Vientiane, Laos to provide DEPP and other relevant GOL stakeholders with a training on the implementation of the SOP manual. This training is envisaged to be interactive and to be developed and delivered based on the format to be agreed between DEPP and P4I.

Deliverables

Deliverable	Reference to the scope of work	Indicative timeline
Input to the SOP table of contents and Draft SOP manual	Part A of the scope of work	May 2025
Final SOP manual		May 2025
Slide presentations and delivery of in-person training workshops	Part B of the scope of work	May/June 2025

Indicative travel requirements

The Consultant is expected to travel in-person to Vientiane, Lao PDR if required for in-person meetings/presentations and workshops. The Consultant shall dispatch the required team for such in-person representations with prior approval of the P4I Activity Lead.

Indicative travel plan as follows.

Deliverable	Reference to the scope of work	Indicative number of in-person trips
Draft SOP manual	Part A of the scope of work	1 trip to present the draft SOP and discussion over 1 day
Delivery of in-person training workshops	Part B of the scope of work	1 trip to deliver the workshop

Any additional in-person trips that may be required shall be discussed and agreed with the P4I Activity team and cost of such trips shall be considered separate to the below mentioned indicative budget.

Work arrangements

- The Consultant will work closely and report to the P4I Activity Lead on the execution of the scope of work.
- Day-to-day point of liaison would be with the Activity Manager.
- The P4I Activity team will report to P4I with involvement from the LASEP Team Lead as required.
- The implementation of all activities in a coherent manner is the responsibility of the P4I Activity team, under the supervision of P4I.
- Regular meetings should be planned with the P4I Activity team such as, weekly status update meetings to be discussed and agreed with the P4I Activity team.
- Delivery of the workshops shall take place in Vientiane, Lao PDR.
- The Consultant shall be expected to attend in-person/virtual meetings with the P4I Activity team on a need basis.

Application Instructions

The Consultant should respond to this Request for Tender (RFT) with a proposal at a minimum, that includes the following requirements. The proposal shall be in English language and would encourage to limit the proposal to a maximum of 15 pages (not including CVs).

- Deep understanding of conducting Feasibility Studies in the ASEAN region covering the above scope of work.
- Credentials of past similar and/or related engagements completed and ongoing in Laos, within ASEAN or globally.
- The proposed approach detailing how the Consultant would structure and deliver the required deliverables
- The proposal should provide all-inclusive budget breakdown including all applicable taxes, travel and accommodation and any other reimbursable expenses to deliver the scope of work. The Consultant is required to provide a detailed budget (in AUD) adhering to the proposed timeline – including fee rates for all key staff members, the number of days allocated to specific tasks, and any anticipated reimbursable expenses for travel for meetings and the workshop. Travel expenses for meetings and delivery of workshops are to be included as a separate component in the detailed budget.
- CVs of the proposed team member(s) in the implementation of the Scope of work.

Cost of proposal preparation

The Consultant shall bear all costs associated with the preparation and submission of the respective proposal, and P4I or any of its delivery partners shall not be responsible or liable for those costs, regardless of the conduct or outcome of the selection process. P4I is not bound to accept any proposal and reserves the right to annul the selection process at any time prior to contract award, without thereby incurring any liability to the Consultant.

Validity of the proposal

Proposals shall remain valid until 90 days from the date of submission or any extended date if amended by P4I.

Confidentiality

The Consultant or anyone on behalf of the Consultant shall not influence improperly the P4I team in the evaluation of the proposals or contract award decisions, as it may result in the rejection of the subject proposal submission.

if a Consultant wishes to contact P4I on any matter related to the evaluation process, it should do so only in writing.

Evaluation criteria

Received responses to the RFT by the above submission date will be evaluated by P4I based on the following weighted criteria.

#	Name	Description	Weighting
1	**Company Experience**	Relevant technical experiences. Applicants previous experience and proven track record in performing similar projects or providing similar services.	20%
2	**Technical approach**	Proposed methodology, techniques and processes the bidder plans to use to meet the project's objectives efficiently and effectively, including demonstrating compliance.	40%
3	**Value for Money (VfM)**	The financial proposal submission will be assessed using the criteria set out in this RFT (resource cost). Following the DFAT VfM principles, this assessment considers whether the proposed cost of the project is commensurate with the scale and quality of the outcomes, including economic, efficient, effective, and ethical use of resources.	30%
4	**Local experience and context**	Applicants' local knowledge and understanding of ASEAN region or Laos local context.	10%
		Total	100%

Submission

Please submit applications and queries about the tender via email to the P4I Procurement team at tenders@partnershipsforinfrastructure.org with Subject of Tender - Technical assistance on evaluation of solar project feasibility studies in Laos (Activity) and copy to the following.

Melaine Marian - Melaine.Marian@sg.ey.com

Applications must be submitted by **11:59pm (Bangkok time) on Monday, 7th April 2025**.

This tender will be managed through Adam Smith International (ASI). Consultants located in P4I's partner countries are strongly encouraged to apply. We also seek Consultants who can work remotely from Australia and other countries, particularly those identifying as Aboriginal and Torres Strait Islanders.

P4I is committed to promoting and empowering local and marginalised groups within the region and strongly encourages Consultants identifying as such to apply. Consultants with strong governance initiatives to engage such groups should also apply.

Appendix A – Guidelines for Conducting Feasibility Study for Solar PV Projects in Laos (Guidelines)

USAID
FROM THE AMERICAN PEOPLE

USAID SOUTHEAST ASIA SMART POWER PROGRAM

Guidelines for Conducting Feasibility Study for Solar PV Projects in Laos

December 20, 2023

This report is made possible by the support of the American people through the United States Agency for International Development (USAID). The contents of this report are the sole responsibility of Deloitte Consulting LLP and its implementing partners and do not necessarily reflect the views of USAID or the United States Government.

USAID SOUTHEAST ASIA SMART POWER PROGRAM (SPP)

Guidelines for Conducting Feasibility Study for Solar PV Projects in Laos

IDIQ Contract No. 7200AA19D00025

Task Order No. 72048622F00001

Prepared for: USAID Regional Development Mission for Asia (RDMA)

Prepared by: USAID Smart Power Program

Task Order Contracting Officer's Representative: David Stonehill

Submitted: December 20, 2023

Cover Photo Credit: Pixabay

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BACKGROUND

The United States Agency for International Development (USAID) Southeast Asia Smart Power Program (SPP), through cooperation under the Japan-United States Mekong Power Partnership (JUMPP), supports strengthening Laos' regulatory framework and process for management of on-grid solar and other types of Renewable Energy (RE). SPP focuses on advancing the Mekong region's energy security goals, regional power trade, clean energy integration, decarbonization, and resilience.

Specifically in Laos, SPP supports the Ministry of Energy and Mines (MEM) and the Department of Energy Policy and Planning (DEPP) in updating guidelines for conducting feasibility studies (FS) of solar, wind, biomass, and floating solar projects.

Recognizing the evolving landscape of RE technologies, grid interconnection requirements, and the current market situation, this report focuses on the review and update of the existing guidelines developed by USAID Clean Power Asia in 2020 and adopted and used by DEPP.

The objectives of this update include addressing current technical requirements, refining the descriptions of critical concerns related to environmental and interconnection impacts, and providing inputs on the minimum requirements that will not burden the developers' cost and capacity, while ensuring compliance with Laos' laws, rules, regulations, and technical guidelines. The updates cover four main key sectors:

- Land Use Type Identification for RE Projects
- Grid Connection Requirement and Grid Impact Study
- Environmental and Social Impact Assessment
- Decommissioning and Post-Project Management Plan

The methodology employed involves a comprehensive desk study drawing from international and regional leading practices, interviews with key stakeholders including DEPP staff, expert reviews from utility professionals, and feedback from developers and investors. This report was co-developed by the Hawaii Natural Energy Institute (HNEI) of the University of Hawaii at Manoa, via grant funds from the Office of Naval Research; and by SPP.

It is important to note that this technical assistance aims to support the DEPP in reviewing and updating the guidelines. The recommendations resulting from this assistance will undergo a thorough review by DEPP, and upon approval, the updated guidelines will then be officially adopted and launched to guide future RE projects in Laos.

GUIDELINES FOR CONDUCTING FEASIBILITY STUDIES FOR SOLAR PV PROJECTS IN LAOS

https://pxhere.com/en/photo/92503

-DRAFT-
Updated Version of Guidelines for Conducting Feasibility Study for Solar PV Projects in Laos (December 20, 2023)

This report was co-developed by the Hawaii Natural Energy Institute (HNEI) of the University of Hawaii at Manoa, via grant funds from the Office of Naval Research; and by SPP. This work has been performed as part of the Bilateral Technical Cooperation with Laos under the Japan-U.S.-Mekong Power Partnership (JUMPP) Action Plan.

CONTENTS

1. INTRODUCTION

1.1 OBJECTIVE OF THE FINAL FEASIBILITY STUDY

According to Article 51, 58, and 59 of Laos' Law on Electricity (Amended), dated May 9, 2017, interested developers who submitted solicited or unsolicited proposals for any power projects shall conduct a feasibility study ("Feasibility Study") which consists of a technical feasibility study, financial feasibility study, and a social and environmental impact assessment. The Feasibility Study will be reviewed and approved by the Ministry of Energy and Mines (MEM) prior to the signing of Power Purchase Agreement (PPA) and Concession Agreement (CA).

These guidelines are designed for developers to use as an outline for conducting Feasibility Studies for solar photovoltaic (PV) projects. The objective of conducting the Feasibility Study is to provide the project rationale (e.g., location, offered tariff rate, benefits to the country), detailed information on the potential project design, the investment requirements, and to plan for financing and implementation. The Feasibility Study report shall provide sufficient information for relevant agencies, including the Government of Laos (GOL) and Electricité du Laos (EDL), to give permission for development of the proposed projects, for investment agencies and private financial institutions to decide whether to fund the projects, and for developers to make decisions regarding the investment, development, and execution of the project.

The developer shall conduct a Feasibility Study referring to the following scope:

- Conduct technical analysis including a topological survey and investigations, a geotechnical study, a power market study, a technical assessment and final feasibility design, a solar resource study, and an energy yield assessment;
- Assess environmental and social impacts;
- Estimate project costs and operation and maintenance ("O&M") costs, and conduct financial and economic evaluation; and
- Develop a construction plan, implementation schedule, O&M plan, and assess potential risks mitigation strategies.

1.2 RESPONSIBLE AGENCIES FOR EXAMINATION AND INSPECTION OF FINAL FEASIBILITY STUDY

The Department of Energy Policy and Planning (DEPP), on behalf of MEM, is responsible for the examination and inspection of feasibility studies for Solar PV projects larger than 5 megawatts (MW), while the Provincial Department of Energy and Mines (PDEM) is responsible for examination and inspection of feasibility studies for Solar PV projects equal to or smaller than 5 MW.

1.3 SUBMISSION OF REPORTS

The developer shall prepare and submit the draft Feasibility Study report ("Draft Report") and Feasibility Study report ("Final Report") to the responsible organizations as specified below based on project size.

Installed Capacity	Submit Report To	Responsible Organization	Note
100 kilowatt (kW) or less	PDEM	DDEM	PDEM will send to District Department of Energy and Mines (DDEM).
> 100 kW and ≤ 5 MW	DEPP	PDEM	DEPP will send to PDEM.
> 5 MW	DEPP	DEPP	

1.4 DRAFT FINAL FEASIBILITY STUDY REPORT

The developer shall submit the Draft Report within 21 months after the memorandum of understanding (MOU) signing and the content of the Draft Report shall follow these guidelines. Responsible organizations, e.g., DEPP, PDEM or DDEM, will issue written comments on the Draft Report to the project developer within two months after receiving the Draft Report.

The developer shall submit the Final Report within one month after receiving written comments from responsible organizations. The number of Draft Reports to be prepared are as follows:

Installed Capacity	Criteria for Submission of the Draft Report
100 kW or less	Five copies in Lao language and one electronic file
> 100 kW and ≤ 5 MW	Five copies in Lao or English language and one electronic file. In case the document is in English, five copies of a summary in Lao language are required.
> 5 MW	Five copies in English, five copies of Executive Summary report in Lao language and one electronic file

1.5 LAWS AND REGULATIONS

The developer shall be sufficiently familiar with, and conform to the laws, rules and regulations related to, power development in Laos, as applicable. Specific requirements related to Feasibility Study may be found in the Electricity Law, Lao Electric Power Technical Standards, and Grid Request Guidelines.

1.6 RESPONSIBLE AGENCIES

In Laos, there are many agencies responsible for and involved in the Independent Power Producer (IPP) process for solar projects. Private investment for solar projects is governed by the Electricity Law. The MEM and the Ministry of Planning and Investment (MPI) are jointly responsible for signing of related documents on behalf of the GOL, while other agencies and line ministries are responsible for matters under their responsibilities as defined by laws and regulations or assigned by the GOL.

2. SCOPE OF WORK

The developer shall include, at a minimum, a summary for each chapter of the report as noted below. The developer is free to include additional information as appropriate. Required content includes:

- **Executive Summary:** The objective of the executive summary is to provide an overview to prepare the dossier for the application for which the Feasibility study is the main supporting document. Thus, the summary shall highlight the main elements of the Feasibility Study report.
- **Chapter 1 Project Overview:** The developer shall provide an overview of the proposed project including general information, project background, project location, access to project area, objective and scope of work, and project benefits.
- **Chapter 2 Related Legal and Institutional Frameworks:** The developer shall briefly describe obligations, regulations and codes, licenses and laws that are relevant to the proposed project.
- **Chapter 3 Survey and Investigations:** The developer shall briefly describe results from survey and investigations of environmental and socio-economic, topographical, geological, and geo-technical, seismic conditions, and solar radiations.
- **Chapter 4 Social and Natural Environment Study:** The developer shall summarize key results of the environmental impact assessment report or other form of requirements required by Ministry of Natural Resources and Environment (MoNRE).
- **Chapter 5 Power Market Study:** The developer shall summarize the power market analysis in project area (e.g., comparison of levelized cost of electricity, available generation capacity) and grid impact study.
- **Chapter 6 Feasibility Stage Design:** The developer shall provide the plant design and layout, grid interconnection, conceptual design for civil and electrical works, and details of equipment used in the proposed project.
- **Chapter 7 Solar Resource and Energy Yield Assessment:** A description of the methodology used for assessing onsite solar irradiation, energy yield analysis, reference data and long-term correction, and summary of the estimated yield of the power plant considering key losses and uncertainty.
- **Chapter 8 Construction Plan, Implementation Schedule, and Cost Estimate:** The developer shall describe construction plan, implementation schedule, and cost estimation of the proposed project.
- **Chapter 9 Operation and Maintenance Plan and Cost Estimate:** The developer shall describe the scheduled O&M plan as well as other relevant O&M tasks.
- **Chapter 10 Financial and Economic Evaluation:** The developer shall indicate the disbursement schedule during the project's lifetime and financial analysis including costs and benefits associated with project implementation as well as sensitivity analysis.
- **Chapter 11 Risk Analysis:** The developer shall summarize key risks and mitigation strategies to address those risks.
- **Chapter 12 Conclusion and Recommendation:** The developer shall provide the overall

conclusions of the Feasibility Study and provide recommendations.

DELIVERABLES

The Draft Report and Final Report shall follow the recommended scope of work outline above. The scope of work for the Draft Report and Final Report shall consist of the executive summary and the twelve sections in the outline above and shall contain the detailed information noted below.

CHAPTER I PROJECT OVERVIEW

SCOPE OF WORK

The developer shall provide an overview of the proposed project which may include, at a minimum, the following:

- General project information;
- Project background and rationale;
- Project location, area, and boundary;
- Access to project area;
- Objective and scope of work;
- Project timeline; and
- Project benefits including financial benefit; environmental co-benefits, e.g., CO2 emission reduction for non-export projects; and socio-economic co-benefits such as job creation.

DELIVERABLES

The developer shall provide an overview of the proposed project.

CHAPTER 2 RELATED LEGAL AND INSTITUTIONAL FRAMEWORKS

SCOPE OF WORK

The developer shall gather and study the relevant obligations, laws, regulations, codes, licenses, or other related documents. Such documents shall be the framework for conducting the rest of this Feasibility Study.

DELIVERABLES

In this chapter, the developer shall describe, but not be limited to, these following topics:

- Relevant laws, rules, and regulations;
- Responsible agencies;
- Undertaking of GOL; and
- Permits and licenses required for constructing and operating the project.

CHAPTER 3 SURVEY AND INVESTIGATIONS

3.1 PRELIMINARY ENVIRONMENTAL AND SOCIO- ECONOMIC SURVEY

SCOPE OF WORK

The developer shall, before submitting a Draft Report, collect and review the basic data and information regarding a provincial/district socio-economic development plan as well as a national plan, national power development plan (NPDP), and provincial/district electrification plan, existing infrastructure at the project location, the solar radiation, and the previous/related study reports, if any

exist. The project study area needs to be defined (using a topography map or Google Earth image), with justification of the spatial limits used for collection of baseline information.

Baseline information collected through this survey is required for physical and biological parameters, socio-economic and cultural aspects, and visual/aesthetic features of the project area.

The developer also needs to provide information on the process used for preliminary evaluation of the project's environmental and social impacts, the results of the preliminary impact assessment (for each of the project phases), and the proposed mitigation measures to mitigate residual project impact to an acceptable level.

The developer shall conduct a preliminary environmental and socio-economic survey covering, at a minimum, the following topics:

- Physical environment;
- Biological environment;
- Socioeconomic aspects;
- Cultural aspects; and
- Visual and aesthetic features.

DELIVERABLES

The developer shall conduct a preliminary environmental and socio-economic survey including topics recommended above. The developer shall also include environmental and socio-economic co- benefits if they exist.

3.2 TOPOGRAPHICAL SURVEY AND MAPPING

SCOPE OF WORK

The developer shall contract a reputable licensed land surveyor to perform a detailed survey at the selected project site and transmission line from project site to connection point. Topographical survey shall include, at a minimum, the following:

- Spot level survey of the entire area at specified intervals and development contours;
- The perimeter boundary survey coordinates;
- Land use category at the site;
- Possible shading effect;
- The limits of administrative and communal boundaries;
- Shape and features of the land surface that may impact development and construction;
- Underground and overhead utility system, including water supply wells and lines, drainage channels and culverts, sewage, cables, drains, telephone lines and poles; and
- Drone or satellite imagery or photo from other sources of the site to overlay on the topographic survey.

DELIVERABLES

The developer shall provide details of topographical survey conducted based on the scope of work which includes the following:

- Details and license of surveyor;
- Topographical map and contours of the project site and transmission line;
- Potential location for the facility;
- Reports and necessary drawings/documents; and
- All field data.

3.2.1 COLLECTION OF EXISTING TOPOGRAPHICAL MAP

The developer shall collect existing topographical maps of 1/100,000 covering the Solar PV plant and transmission lines as well as temporary facilities such as access roads, camp facilities and resettlement areas. The above topographical maps are used only for identification of the locations of project facilities including temporary facilities. Detailed topographical maps are required for preparing preliminary designs. These maps should be collected/ purchased from National Geographic Department (NGD). NGD is the Surveying, Aerial Photography and Mapping Authority of Laos.

3.2.2 TOPOGRAPHY SURVEY AND MAPPING

The developer shall carry out the topographical survey to prepare the topographical maps required for preliminary design. The maps shall have a scale of at least 1/10,000 and cover the project facilities including the layout of the power plant and access roads.

The nearest NGD benchmark shall be located by the developer along with the details of establishment such as year of benchmark for transferring the levels for the project site. The location and coordinates of the permanent benchmark shall also be furnished. All elevations in the survey drawing shall refer to the permanent benchmark of NGD.

3.2.3 LAND USE CATEGORY

The developer shall provide details of the proposed project site's land use category(s). The project site must comply with the Land Law (2003, amended 2019), Forestry Law (2019), Investment Promotion Law (2016) and relevant guidelines, laws, and regulations.

The GOL regulates land and property rights under the Land Law promulgated in 2003. All land is owned by the national community, and the state must safeguard long-term rights to land by ensuring protection, use, usufruct, transfer, and inheritance rights. The Land Law was amended in 2019. It classifies eight categories of land, defining the scope of use rights for each, which are:

Categories	Description
Agricultural land	Land which is determined to be used for cultivation, animal husbandry, fishery, irrigation and agricultural research and experimentation.
Forest land	refers to the area of land parcels, with or without forest cover, which have been defined by the State as forest land, including water catchment areas within forest land as prescribed in the Forestry Law.
Water area land	refers to submerged land or land located around wetlands within other land categories
Industrial land	refers to land which is determined to be the location of industrial zones, industrial estates, energy, mining, Special Economic Zones, and other land that is used for industrial purposes.
Communication land	refers to land which is used as public roads, public road delimitation areas, earth and gravel ditches, drainage channels, bridge sites, airports and runways, cargo and passenger transport terminals, tunnels, railways, warehouses, logistics sites, transportation storehouses, telecommunication infrastructure sites and other land used for communication purposes.
Cultural land	refers to the locations of cultural heritage and is related to historical items, artifact sites, heritage sites, traditional objects, archaeological sites, memorials, temples, religious sites, cultural buildings, including cultural sites, and other places which are classified by the State as cultural land.
Land for national defense and security purposes	refers to land used for national defense and security work
Construction land	is land used for development of new towns and the construction of residential places, offices and premises of organizations, public facilities, trade and service facilities and other constructions in allocated zones and in conformity with the urban plans as prescribed by laws.

3.3 GEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS

SCOPE OF WORK

The developer shall carry out geological and geotechnical studies at the proposed project site. The results of these studies shall be used to determine the recommended type of foundations for PV module mounting structures, transmission line towers, buildings, and roads to receive accurate and binding engineering, procurement, and construction (EPC) quotations.

A desk study and an onsite investigation of the surface and sub-surface geology and geotechnical testing shall be performed, as appropriate, according to a prudent standard which shall consist of at a minimum:

- Site geomorphological survey to determine the nature and engineering properties of the soils/rocks underlying the site;
- Geological and hydrogeological mapping;
- Constraints definition; and
- Flood risk.

DELIVERABLES

The developer shall provide the methodology of the study, uncertainties of the available information, construction principles to be adopted at site and a map referenced to the topographical survey developed in Section 3.2, which shall be attached to the report as an appendix.

3.3.1 GEOLOGY OF PROJECT AREA

The developer will use aerial photos, not only for preparing topographical maps but also as a supplementary means of geologic survey through aerial photo interpretation.

3.3.2 SOIL SURVEY

The developer shall conduct a soil investigation, analysis and classification of soil types and other soil properties in the project area. Primary data for the soil survey is acquired by field sampling and by remote sensing, including aerial photography, light detection and ranging (LiDAR) and other digital techniques.

3.3.3 SEISMIC CONDITIONS

SCOPE OF WORK

The developer shall assess seismic risk and condition in the proposed project area including, at a minimum:

- Seismic hazard map;
- Probabilistic seismic hazard maps;
- Probabilistic evaluations of earthquake occurrence; and
- Comparison of seismic scale.

DELIVERABLES

The developer shall assess seismic risk and condition in the proposed project area following the scope of work above.

3.4 SOLAR RADIATIONS

SCOPE OF WORK

The developer shall provide solar irradiation availability information of the proposed project site which shall consider any factor that could result in the variance of the irradiation such as shadow, etc.

DELIVERABLES

The developer shall provide a monthly solar irradiation report of the proposed project site as mentioned in the scope of work.

CHAPTER 4 SOCIAL AND NATURAL ENVIRONMENT STUDY

SCOPE OF WORK

The developer shall conduct the Environmental and Social Impact Assessment (ESIA) or Initial Environmental Examination (IEE) report, whichever is applicable, in Lao language, in strict compliance with Article 21 of the Environmental Protection Law (Amended 2012) and relevant technical

guidelines, laws, and regulations. Developer shall complete Environmental and Social Management and Monitoring Plan (ESMMP) as well as any other documents required by relevant technical guidelines, laws, and regulations.

The developer shall prepare and submit the ESIA and IEE to the responsible organizations under MoNRE as specified below.

Report	Investment Projects	Responsible Organization	Responsibility
ESIA	Large investment projects which are complicated or create substantial impacts on the environment and society	Department of Environment and Social Impact Assessment (DESIA)	• Review and recommendations for the issuance of the Environmental Compliance Certificate (ECC) • Undertake compliance monitoring
IEE	Investment projects, which are small or create fewer impacts on the environment and society,	Provincial Department of Natural Resources and Environment (PoNRE)	• Review, issuance of ECC, and monitoring

In addition to typical regulatory requirements, additional environmental and social impacts when developing solar PV projects shall consist of, but not limited to, the following:

- **Visual amenity**: Changes in the landscape could affect the visual amenity in the presence of the project.
- **Reflection:** Potential impacts on the health of project-affected people's eyes and vision and vegetation growth. The sights of a large area covered with solar PV panels and the reflected sunlight on the road could affect human and crops in surrounding communities.
- **Land and land-use:** Changes of land use purpose and the anticipation of the impacts of local community livelihoods shall be identified.
- **Terrestrial vegetation:** Changes to vegetation population, health, species abundance and diversity and impact on endangered and economic species, as well as food chain effects.
- **Traffic safety:** Changes in traffic volume contribute to increased risks of traveler safety during construction phase, especially for projects located in mountainous areas.
- **Local and ethnic communities' impact:** In cases where the project land involves the local and ethnic communities affected by development projects, it may result in land-related tensions, conflict, and insecurity.

Visual amenity, reflection, land use, terrestrial vegetation, and traffic safety matter controls shall be put into concrete plans during project development, construction, and commissioning phases.

DELIVERABLES

The developer shall summarize key results of the ESIA or IEE report in Chapter 4 of the Final Report and include that report, ESMMP, and other required documents in the appendix of the Final Report.

CHAPTER 5 POWER MARKET STUDY

5.1 POWER SYSTEM IN PROJECT AREA INCLUDING THE CONNECTING POINT

SCOPE OF WORK

The developer shall gather and study the power system in the proposed project area by cooperating with relevant government agencies and EDL to access necessary data and information as well as the system's layout. The information shall consist of, at a minimum, the following:

- Connection point/area;
- Load profile;
- Voltage level;
- System configuration;
- Grid capacity and availability;
- Grid stability;
- Main electrical equipment review (such as step-up transformer, switchgear, ring main unit, protection relay, etc.); and
- SCADA (Supervisory Control and Data Acquisition) and communication systems (depending on the size of solar PV project).

DELIVERABLES

The developer shall provide the details and layout of the power system in the proposed project area as suggested in the scope of work above.

5.2 POWER MARKET ANALYSIS

SCOPE OF WORK

The developer shall cooperate with relevant government agencies and EDL to obtain information on the available generation capacity (including the project capacity) and load demand in the region of the proposed project to conduct a power market analysis. The analysis shall determine the current power market situation, power purchase, economic review, and opportunities for export to neighboring countries (if applicable). Included in the analysis, the developer shall specify the anticipated off-taker, whether it is EDL, exporting to neighboring countries or both. The developer shall identify clearly how the proposed project aligns with the NPDP or other relevant plans or strategies. The analysis shall be carried out to cover the future scenarios up to the end of project concession.

DELIVERABLES

The developer shall provide details of the analysis results, which includes the power market situation, generation capacity, electricity demand, and potential for export including relevant information based on the scope of work.

5.3 GRID IMPACT STUDY

SCOPE OF WORK

The developer shall cooperate with EDL to conduct study(s) of grid impact of the proposed project

all in accordance with all applicable Lao laws, rules, and regulations including the Laos Grid Code (latest version) and applicable interconnection requirements at the connected voltage levels, if any. The purpose of the grid impact study is to ensure that the project connection will not affect the performance standards of the entire grid.

The scope of the study shall consider the steady-state and transient stability analyses. Steady-state stability analysis is to simulate the load flow on the transformers, feeder lines and the voltage profile of system buses. Transient stability analysis assesses the power system behavior when a three-phase fault occurs at connection points. The study shall undertake all scenario matrices of peak load, light load, maximum generation, and minimum generation. The generation side shall cover all plant capacity, including a proposed solar PV project and existing power plants, as the cumulative embedded generation. Describing the methodology (e.g., hand calculation, simulation software, etc.) and the strategy taken is necessary. The study(s) shall consider the impacts including, at a minimum, the following:

- Load flow analysis (i.e., voltage regulation and thermal ratings);
- Voltage fluctuation and flicker analysis;
- Short-circuit current;
- Harmonic emission;
- Frequency variation;
- Reactive power operation and control;
- System protection coordination (e.g., main breaker ratings in the low voltage system (LV) and fault discrimination at the medium voltage (MV) network); and
- Impacts due to generation uncertainty.

The developer shall clarify and discuss the significant (high probability to occur) grid impacts and shall provide guidelines for preventing or mitigating these impacts.

DELIVERABLES

The developer shall cooperate with EDL to conduct grid impact study that include information as suggested in the scope of work.

CHAPTER 6 FEASIBILITY STAGE DESIGN

6.1 PLANT LAYOUT

SCOPE OF WORK

The developer shall provide the plant design and layout including mechanical and civil works and the electrical system, all in accordance with Lao laws and regulations including technical standards for solar PV projects and technical connection requirements for solar projects. The layout shall clearly include, at a minimum, the following:

- Site entrance and site boundary;
- General layout /array layout;
- Single line diagram of DC and AC systems;

- PV system configuration;
- PV modules and inverters;
- Transformers;
- Substation;
- Equipment required for construction, monitoring and maintenance;
- Lightning and fire protection and grounding system;
- Monitoring and communication system; and
- Neighboring property/nearby dwellings (e.g., type of land use, list, and details of affected villages, etc.).

DELIVERABLES

The developer shall include the information as mentioned in the scope of work above for plant design and layout.

6.2 COMPONENTS OF POWER GENERATION SYSTEM

SCOPE OF WORK

The developer shall provide the relevant information concerning the power generation system (PV module, PV inverter, SCADA system, main equipment, etc.), all in accordance with Lao laws, rules, and regulations, including technical standards for solar PV project and technical connection requirements for solar project. Such information consists of, at a minimum, the following:

- Technical specification of the PV module and inverter;
- Track record of the main equipment;
- Certification;
- Conceptual design; and
- Bill of quantities.

DELIVERABLES

The developer shall provide significant information on the power generation system, especially PV modules and PV inverters, and any other equipment as specified in the scope of work.

6.3 CIVIL WORK

SCOPE OF WORK

The developer shall provide details of civil work (such as foundation construction, mounting frame construction, module installation, substation construction, electrical site works, grid interconnection works, etc.) all in accordance with Lao laws, rules, and regulations, including technical standards for solar PV projects and technical connection requirements for solar project. Such details include, at a minimum, the following:

- Civil work layout;
- Access roads, site roads, hard stands, and drainage;
- Foundation construction (mounting frame construction, control room, substation, etc.);

- Transportation;
- Module installation;
- Restrictions placed on any tasks;
- Contingency of each task;
- Milestones and key dates;
- Interdependencies between tasks;
- Parties responsible for tasks; and
- Project critical path.

DELIVERABLES

The developer shall provide details of civil work following the scope of work above.

6.4 GRID CONNECTION

SCOPE OF WORK

The developer shall provide relevant information on the ability of the proposed project to meet technical connection requirements for solar PV project, grid codes and any site-specific requirements requested by relevant government agencies and/or EDL. The provided information shall cover topics including planning, connection, and operation of the plant. It will also meet, at a minimum, the following requirements. The developer shall cooperate with relevant government agencies to access necessary data, which shall include at a minimum:

- Limits on harmonic emission.
- Limits on voltage fluctuation and flicker;
- Limits on frequency variation;
- Reactive power export requirements;
- Voltage regulation;
- Fault level requirements;
- System protection; and
- Power factor.

DELIVERABLES

The developer shall provide the details relevant to grid connection as mentioned in the scope of work above.

CHAPTER 7 SOLAR RESOURCE STUDY AND ENERGY YIELD ASSESSMENT

7.1 METEOROLOGICAL DATA

SCOPE OF WORK

The developer shall provide the meteorological data for the proposed project site. The data shall be collected from credible international sources (such as Meteonorm, Satel-light, US TMY2/3, Solar Prospector, Canadian EPW, SolarAnywhere, Helioclim-3, SolarGIS, 3Tiers, etc.). The meteorological data may consist of, at a minimum, the followings:

- Direct Normal Irradiance (DNI);
- Diffuse Horizontal Irradiance (DHI); and
- Global Horizontal Irradiance (GHI).

DELIVERABLES

The developer shall provide meteorological data from the credible sources as mentioned in the scope of work above.

7.2 RESOURCE DATA COLLECTION, MEASUREMENT AND MONITORING

SCOPE OF WORK

The developer shall provide information relevant to data collection, measurement and/or monitoring.

In addition to the meteorological data from the credible sources in Section 7.1, the developer shall monitor and collect onsite solar irradiation data for the proposed project site. The monitoring and data collection shall be completed by installing a pyranometer at a specific site. Since the onsite daily, monthly, and yearly solar irradiation data are required to be submitted to the GOL, the period of data collection shall be conducted for a period of at least one year long and should be done prior to the Commercial Operation Date (COD).

DELIVERABLES

The developer shall provide a detailed description of the equipment used in the measurement and monitoring of the solar irradiation data in the report.

7.3 PERFORMANCE RATIO AND LOSSES

SCOPE OF WORK

The developer shall assess the performance ratio (PR) and losses of the proposed project over the lifetime of the project. The PR may be calculated using the ratio of the energy effectively produced with respect to the energy which would be produced if the system were continuously working at its nominal Standard Test Condition (STC) efficiency (see IEC-61724 for full definition of PR). The PR of the proposed project site may be predicted using simulations or alternatively may be calculated for an operational plant by measuring irradiation and the AC yield. Losses considered under assessment shall consist of, but not limited to, the following:

- Shading losses;
- Incidence Angle Modifier factor (IAM);
- Soiling losses;

- Module-degradation losses;
- Irradiance level losses;
- Loss due to module temperature;
- Module quality losses;
- Module array mismatch losses;
- DC ohmic wiring losses;
- Inverter losses during operation;
- Inverter losses over inverter nominal power;
- Transformer losses;
- AC ohmic losses;
- Auxiliary consumption; and
- System, plant and grid, unavailability.

DELIVERABLES

The developer shall provide estimated PR and losses of proposed project as suggested in the scope of work.

7.4 ESTIMATE OF MONTHLY AND ANNUAL ENERGY PRODUCTION

SCOPE OF WORK

The developer shall estimate the monthly and annual energy production. The estimation shall be carried out based on the meteorological data, data collection, and performance ratio and losses provided in Sections 7.1, 7.2, and 7.3 respectively. The historical data for the site may be used to determine whether the solar resource will follow the same patterns as the historical values. The data should be presented at least in hourly increments, but sub-hourly time steps are preferable. The estimation shall conduct for selected years such as years 1, 10, 20 and 25, based on the availability of data.

DELIVERABLES

The developer shall provide an estimate of the monthly and annual energy production of the proposed project which include the following:

- Power and energy yield for selected years, such as years 1, 10, 20 and 25 (estimated based on the available data);
- Detailed methodology; and
- Assumptions and input components including the used data from Sections 7.2 and 7.3.

7.5 UNCERTAINTY AND ESTIMATED 25-YEAR ENERGY YIELD ASSESSMENT

SCOPE OF WORK

The developer of a project utilizing an intermittent, variable renewable energy ("VRE") resource (e.g., solar PV, wind) shall assess the uncertainty of power (MW) and energy (MWh) yield during project lifetime (25 years). The uncertainty shall be considered at least one of P50, P75, and P90 based on the

available data. The assessment may be continuous from the monthly and annual energy production in Section 7.4.

DELIVERABLES

The developer shall conduct probability-based energy yield assessment of the proposed project, including the following:

- Results of power and energy yield assessment including probability-based forecasts for the expected power production in MWh (P50, P75, and P90 for year 1, 10, 20 and 25 estimates based on the available data).
- Detailed methodology.
- Assumptions and inputs: monthly generation profile, characteristic and performance of PV technology applied, possible losses (i.e., from system components, environment conditions, grid and plant availability assessed, auxiliary losses), uncertainties, and deviations.

CHAPTER 8 CONSTRUCTION PLAN, IMPLEMENTATION SCHEDULE AND COST ESTIMATION

8.1 CONSTRUCTION PLAN

SCOPE OF WORK

The developer shall develop the construction plan for the proposed solar PV project site, including a Gantt chart, tasks and durations, restrictions placed on any task, contingency of each task, milestones and key dates, interdependencies between tasks, parties responsible for tasks, and the project critical path. The construction plan of the proposed project may consist of any relevant data such as final design works, procurement and manufacture of equipment, site access, security, etc.

DELIVERABLES

The developer shall provide any information relevant to the scope of work. The plan for any of the following shall be included in this section:

- Foundation construction;
- Mounting frame construction;
- Module installation;
- Substation construction;
- Electrical site works;
- Grid interconnection works; and
- Commissioning and testing.

8.2 IMPLEMENTATION SCHEDULE

SCOPE OF WORK

The developer shall develop an implementation plan for the project, including a Gantt chart showing the project timeline, resource requirements, project development budget, and procurement and O&M concepts. A Gantt chart shall include list of required steps for project implementation, including the

PPA negotiations and signing, project financing and financial closure reached, signing of EPC, design, start of construction, commissioning, start-up, performance acceptance testing, and commercial operations date (COD), indicating estimated time required for each step and milestones. The developer shall include a logistic plan for delivering equipment to the project site and identify labor requirements.

DELIVERABLES

The developer shall include a comprehensive implementation plan for the project that includes information as suggested in the scope of work above.

8.3 DECOMMISSIONING AND POST-PROJECT MANAGEMENT PLAN

SCOPE OF WORK

The developer shall develop a detailed decommissioning and post-project management plan describing the management of all equipment of the solar PV project sites, including structures, fencing, roads, foundations, and site restoration, up to the end of the project concession. The plan shall include relevant obligations, laws, regulations, codes, and licenses required for the decommissioning of the solar PV project.

Since the solar PV project lifespan is 25 to 35 years, decommissioning plans should be expected to be revised over time. The decommissioning plan is typically updated within ten years after the project begins operating and subsequently updated every five years.

DELIVERABLES

The developer shall provide decommissioning plan and associated cost. The plan for any of the following shall be included in this section.

- Conditions upon which decommissioning will be initiated, such as the end of project concession, in operation of the facility for a certain period or a pre-identified end date.
- Responsible party for decommissioning
- Agreements and/or financial assurance made with the government entity regarding decommissioning
- Decommissioning tasks and timeframe, including:
    - Removal of all equipment, structures, fencing, roads, and foundations.
    - Restoration of property to condition prior to project development or in line with the CA awarded by the government (if any).
    - Alternative strategy, in which the developer can propose an alternative plan for extending the performance period can be conducted through reuse, refurbishment and repowering solar PV projects or rehabilitating buildings, roads, and transmission lines for other purposes.
    - Recycling and disposal implementation tasks.
    - Timeframe for completion of decommissioning activities.
- The decommissioning obligation costs and labor cost shall be included in the cost estimation in Section 8.4.
- Plans and schedule for updating the decommissioning plan over time.

8.4 COST ESTIMATE

SCOPE OF WORK

The developer shall prepare a detailed total investment cost estimation. The estimation shall include a detailed breakdown of equipment and materials for all major components, including major equipment, plant balance (consisting of structural elements, cabling, wiring, etc.), instrumentation and controls, electrical interconnection, development cost, financing cost, EPC cost estimates, contingencies cost, decommissioning and disposal cost, and other related costs.

DELIVERABLES

The developer shall provide project cost estimation including equipment and materials cost, development cost, financing cost, EPC cost, contingencies cost, and other related costs.

CHAPTER 9 OPERATION AND MAINTENANCE PLAN AND COST ESTIMATION

SCOPE OF WORK

The developer shall schedule the O&M plan of the proposed project site over the project lifetime. The O&M plan shall cover both preventive and corrective maintenance. The developer shall prepare a detailed cost estimation for operating period such as O&M cost, major maintenance cost, decommissioning and disposal cost, other related costs, as well as applicable annual cost escalation factors. The tasks included in O&M plan shall include, at a minimum, the following:

- Module cleaning;
- Checking module connection integrity;
- Checking junction or string combiner box;
- Checking structural integrity;
- Checking remaining system (monitoring system, security system, etc.);
- Conducting thermography;
- Inverter servicing;
- Tracker servicing; and
- Vegetation control.

DELIVERABLES

The developer shall provide a schedule or Gantt chart of O&M plan and cost estimate of the proposed project during the project lifetime.

CHAPTER 10 FINANCIAL AND ECONOMIC EVALUATION

10.1 DISBURSEMENT SCHEDULE

SCOPE OF WORK

The developer shall provide the disbursement schedule. The disbursement shall be estimated and clearly detailed. The methodology and any factors used for the estimation shall be included in this section.

DELIVERABLES

The developer shall provide any information relevant to the scope of work including the following:

- Disbursement method;
- Disbursement schedule;
- Estimation methodology; and
- Key factors or assumptions.

10.2 PROJECT EVALUATION (FINANCIAL ANALYSIS)

SCOPE OF WORK

The developer shall perform a financial analysis which incorporates all financial costs and benefits associated with project implementation. The analysis shall include a net present value (NPV) and other standard indicators, such as the project internal rate of return (IRR), debt-to-equity (D/E) ratio, equity IRR, payback period, earnings before interest, taxes, depreciation, and amortization (EBITDA) margin, net profit margin, debt service coverage ratio (DSCR), and more. An appropriate sensitivity analysis on the parameters to which the project is financially sensitive (e.g., project cost, energy yield, interest rate, tariff,) shall also be prepared.

DELIVERABLES

The developer shall provide any information relevant to the scope of work including the following:

- Technical assumptions used such as project cost (EPC, equipment, land, development, transmission line, civil works, etc.), energy yield, system loss and degradation, construction, and payment schedule, etc.
- Financial assumptions used such as interest rate, loan tenor, discount rate, D/E ratio, financing fees, etc.
- Operating assumptions used such as O&M, spare parts (inverter replacement), major maintenance, insurance, etc.
- Other assumptions used such as contingencies, decommissioning, tax rate and incentives, etc.
- Financial analysis results.
- Sensitivity analysis on the parameters to which the project is financially sensitive.
- Potential sources of funds for financing the project including funding scenarios.
- Copies of the original electronic files for all financial models attached to the final Feasibility Study report.

CHAPTER 11 RISK MITIGATION

SCOPE OF WORK

The developer shall assess potential risks and mitigation strategies for the project. The risk analysis shall include, at a minimum, risks associated with solar PV plant during all phases of the project (e.g., planning, construction, and operation), and potential mitigation options to manage these risks. One example of a mitigation strategy addressing flooding risk is constructing a dyke.

DELIVERABLES

The developer shall include a risk analysis covering all phases of the project and mitigation strategies to address those risks.

CHAPTER 12 CONCLUSION AND RECOMMENDATION

SCOPE OF WORK

The developer shall formulate an overall conclusion of the Feasibility Study in the Final Report and provide recommendations for EDL, MEM, or any other relevant utilities including, at a minimum:

- Feasibility of the proposed solar PV project;
- General technical, financial, and commercial recommendations for implementation; and
- Potential timeline for implementation.

DELIVERABLES

The developer shall provide conclusions and recommendations as mentioned above.

EXECUTIVE SUMMARY

The objective of the executive summary is to provide a first overview to prepare the dossier for the application for which the Feasibility Study is the main supporting document. Thus, the summary shall highlight key points of the Feasibility Study report. Topics to be covered should at a minimum include:

- Background and context: a summary of the country's energy policies with emphasis on policies for and regulation of the power sector, energy-environment linkage and the role of RE sources and the objective of the project
- Description of the project: a time schedule in terms of key milestones, the project organization, resource assessment and site condition, key figure of the proposed project development, and estimated annual energy output
- Budget, investment, and cash flow figures
- Presentation and comparison of the Economic and Financial Internal rate of return (EIRR and FIRR)
- Key assumptions, uncertainties, and risks

APPENDIX

The Appendix should contain supporting materials as follows:

MAP AND DRAWINGS

Maps and drawings to be attached:

1. Location map;
2. Solar irradiation;
3. Land use map;
4. Topographic survey and mapping of the project area;
5. General layout plan of the project;
6. Floor arrangement plans and profiles of electro-mechanical equipment including solar PV, inverter, and auxiliary equipment;
7. Plan and profiles of switchyard including arrangement of electrical equipment (if any);
8. Single line diagram; and
9. General layout plan of temporary facilities including camps, disposal areas, and access roads etc.

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Appendix B – Matrix with the potential division of input required from various workstreams as per the contents of the Guidelines

Chapter as per the Guidelines	Technical / Engineering (Consultant's Scope of Work)	Financial / Commercial	Social	Environmental
Project Management		L		
1. Project Overview		L		
2. Related Legal and Institutional Frameworks				
3. Survey and Investigations	L		L for social aspects and the Technical/ Engineering workstream to support as required	L for environmental aspects and the Technical/ Engineering workstream to support as required
4. Social and Natural Environment Study	S	S	L	L
5. Power Market Study	L	S		
6. Feasibility Stage Design	L			
7. Solar Resource and Energy Yield Assessment	L			
8. Construction Plan, Implementation Schedule, and Cost Estimate	L			
9. Operation and Maintenance Plan and Cost Estimate	L			
10. Financial and Economic Evaluation	S	L		
11. Risk Analysis	S	L	S	S
12. Conclusion and Recommendation	S	L	S	S

Notes: L-Lead role; S-Support role