

Initial Environmental and Social Examination Report – Annex I

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Proposed Loan and Administration of Loans Da Nhim - Ham Thuan - Da Mi Hydro Power Joint Stock Company Floating Solar Energy Project (Viet Nam)

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1 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

1.1 ESMP PLANNING BACKGROUND

This ESMP outlines the regulatory EIA and IESE expectations and provides guidance on how the actions might be implemented. It is expected that this would be formalized as the Project Sponsor prepares to commence construction.

The development of an ESMP is considered to be good management practice for any project or activity with the potential to impact upon the physical, chemical, biological, social and health environment. It provides guidance and a framework for ensuring that the commitments of the Project Sponsor, made within the Project's EIA and IESE reports, are upheld and that the HSE impacts of the Project are managed to an acceptable level and in accordance with the requirements of the Project EIA and IESE reports.

Specifically, this ESMP collates the mitigation and management measures identified within the EIA and IESE reports required for the preparation, construction, and operational phase of the Project.

The mitigation and monitoring measures specific to the impact assessment conducted during the Project EIA and IESE reports are detailed in the Section 1.6 together with information on:

- Phase and activity;
- Impact summary and receptor impacted;
- Mitigation measures, responsibility and timing;
- Monitoring requirements, responsibility and timing; and
- Reporting.

Where specific mitigation measures could not be adequately defined due to the lack of Project information or uncertainty regarding the environmental or social baseline, recommendations for the development of specific management plans or procedures or follow-up actions have been made.

1.2 RESPONSIBILITY FOR IMPLEMENTING THE ESMP

The key parties and their primary roles in implementing the ESMP are as follows:

- The Project Sponsor – responsible for the overall Project monitoring, ensuring compliance with environmental policy and obligations in the ESMP;

- EPC – responsible for complying with ESMP requirements set out by the Project Sponsor during the construction phase; and
- Other contractors –responsible for complying with the ESMP requirements set out by the Project Sponsor during the operation phase and by the EPC Contractor or the Project Sponsor during the construction phase depending on indirect/direct contracts.

ERM has provided guidance on the types of roles and responsibilities that would be required for implementation of the ESMP during the preparation, construction and operation phases. At the time of reporting, a number of roles as recommended here are not available within DHD organization structure to be in charge of the recommended responsibilities under this ESMP. As such, it is recommended that DHD should assigned or recruited relevant persons to these roles to ensure the commitment of the implementation of this ESMP.

1.2.1 Project Manager

The Project Manager is responsible for all construction activities and is accountable for the overall EHSS (Environmental, Health, Safety and Social) performance of the Project. Expectations for the role, in terms of implementing a management system, would include:

- Actively promoting and participating for all Health, Safety, and Environment (HSE) activities;
- Ensuring that the HSE procedures and work practices are implemented across the Project;
- Ensuring that the HSE activities reflects the requirements of the Project in terms of resources and budget;
- Ensuring that all legislative and company requirements are complied with;
- Ensuring that all contractors are made aware of their roles and responsibilities with regard to HSE management;
- Ensuring that HSE issues is regularly discussed and reported on i.e. in the weekly contractor progress meeting;
- Ensuring that all contractors are evaluated throughout the duration of the Project, as to their capabilities and performance; and
- Ensuring implementation of HSE audit recommendations for non-compliances.

1.2.2 HSE Department

The HSE Department would be expected to undertake the following roles:

- Manage, review and develop the HSE program to ensure that it fulfils Project requirements, including measures observed in this ESMP, and

monitor the implementation including e.g. patrolling the job site daily to ensure construction works comply with the Project HSE Procedures and safe working practices;

- Coordinate and evaluate the effectiveness of all program elements;
- Liaise with relevant government bodies as necessary;
- Manage the Project HSE team and supervise them to ensure that all areas of the Project are given the required level of safety support and attention;
- Ensure proper housekeeping and waste disposal in accordance with company requirements and regulations;
- Ensure that the respective control areas are given the required level of safety support and attention e.g. only safety-approved material and equipment are allowed to be brought onto site;
- Ensure that all HSE reports/findings of any unsafe conditions/practices is brought to the attention of field management and those are immediately corrected, and coordinate accident/incident investigations and report to Project Manager; and
- Manage HSE Audits and report the results to the Project Manager.

1.2.3 *Community Liaison Officer*

The Community Relations Officer would be expected to undertake the following roles:

- Develop, manage and review the Social Program to ensure that it fulfils Project requirements, including measures observed in this ESMP, and monitor the implementation;
- Coordinate and evaluate the effectiveness of all program elements;
- Manage the implementation of stakeholder relations and grievance management to ensure that all social-related requirements in this ESMP are implemented;
- Coordinate with HSE team on the implementation of the Project vehicle safety measures associated with the management of impacts to community safety;
- Coordinate with HR (Human Resources) representative to ensure implementation of labour-related measures required in this ESMP;
- Consult with community and liaise with relevant stakeholders in implementing the required stakeholder and grievance management measures, including liaison with related government bodies as necessary;

- Lead collaboration to establish and implement the Project grievance mechanism during construction and operation phases, and supervise contractor's social performance as required in this ESMP; and
- Manage the social monitoring program and report the results to the Project Manager.

1.2.4 EPC's Site Representatives/HSE Department

The EPC and its contractors, depending on their work scopes, would be expected to have an HSE team or delegated responsible person/persons. The contractors' site representatives or HSE Department should be assigned clear responsibilities and expectations with respect to implementing the Project's EHSS expectations and should be fully responsible for implementing any required expectations which fall under their work scopes. More specifically, they will:

- Actively promote and implement all Project HSE Plans related with the work they are performing. The contractor will make sure that all activities under his/her responsibility shall follow all safety regulation/requirements, coordinating with the Project Manager; and
- Ensure that committed resources (personnel, material, and equipment) used are consistent with achieving the objectives and requirements of the Project EHSS Plan.

1.2.5 Employees

All employees involved in the Project will be suitably qualified through training, experience, or knowledge. Non-supervisory personnel employed on the Project shall:

- Familiarize themselves with the concept of the Project EHSS rules and regulations;
- Work in accordance with Project EHSS Procedure, safe work practices, and method statements, risk assessments, permits to work and any other instructions that apply to their works;
- Only use tools/equipment and materials, which have been approved for use, and employ them only for the purpose for which they were designed;
- Take an active part in the protection of themselves, fellow workers, property and the environment from accidental losses;
- Immediately report to the respective supervisor or HSE officer/inspector if any potential hazards are found (relating to unsafe conditions and/or unsafe acts), which could lead to an accident;
- Promptly report to immediate supervisor and HSE officer/inspector if any incidents/near misses occur as well as injuries, regardless how minor; and

- Attend project safety training programs as required.

1.3 *TRAINING, AWARENESS AND COMPETENCY*

It is expected that the Project Sponsor would implement a training and awareness program covering the HSE expectations of the Project. As a minimum, this should be implemented as an induction for all employees and contractors engaged on the Project construction, with further training to be implemented depending on the level of responsibility for implementing HSE and social expectations and exposure to environmental and safety risks.

The Project Sponsor should ensure that all personnel responsible for the implementation of this ESMP are competent on the basis of education, training and experience. All personnel shall be provided with environmental and social training appropriate to their scope of activity and level of responsibility.

1.4 *MONITORING, REVIEW, AUDIT AND REPORTING*

It would be expected that a monitoring, review and auditing program would be implemented during construction to monitor implementation of the Projects HSE requirements and environment and social commitments. Ultimately the Project Sponsor would normally be responsible for ensuring that the EPC and its contractors are complying with the applicable HSE and social requirements.

To implement the ESMP, it is recommended that twice annual audits of the ESMP implementation be undertaken by the Project Sponsor. Monthly audits and inspections are expected to be undertaken by the EPC contractor during the construction phase.

Monthly management reports shall be prepared and distributed to relevant managers by the HSE Department. These reports shall include standard key performance indicators tracked by HSE Department. The HSE Department will prepare and submit in a timely manner monitoring reports of parameters for each regulatory authority and Lenders, where applicable.

During the construction and operation phases, the Project Sponsor shall prepare an environment monitoring report every six months and submit to the regulatory authority and Lenders where applicable. During the operation phase, the Project Sponsor shall submit monitoring and performance reports in a frequency agreed with Lenders.

The results of the monitoring will be disclosed to the community by posting the relevant reports on the bulletin board of the People's Committee in the Project area bi-annually.

1.5 *ESMP LINK TO OTHER E&S MANAGEMENT PLANS*

Other types of plans are required to facilitate practical implementation of the ESMP commitments. These plans or studies are not substitutes for the overall ESMP, but serve to describe how the commitments will be implemented in

greater detail (and likely at a later stage in Project development) than in the ESMP.

This ESMP will be part of the future construction and operational activities, and as the future construction and operational plans are prepared, these are expected to confirm how these commitments will be incorporated into the relevant E&S management systems. This implementation will be the responsibility of the Project Sponsor. This ESMP is a live document and will be updated periodically, depending on Project execution and performance.

1.6

CONSTRUCTION AND OPERATIONAL ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This Section outlines the construction and operational ESMP which will be developed for the Project. Specific standalone tables are provided for the following requirements:

- Air quality management;
- Noise and vibration management;
- Water management;
- Waste management;
- Occupational health and safety management;
- Socio-economic management; and
- Critical habitat.

These are provided as a working tables (see *Table 1.1* to *Table 1.7*) to support future implementation and preparation of the Project's specific EHSS plans.

These tables detail minimum requirements for mitigation measures that will be implemented during all phases of the Project to avoid, or mitigate environmental or social impacts as a result of the Project.

Table 1.1 Air Quality Management - Preparation, Construction and Operation phase

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
IESE	ESMP - J	Preparation phase	-	No air emission	-	<ul style="list-style-type: none"> The Project Sponsor 	Preparation	-	<ul style="list-style-type: none"> The Project Sponsor 	-	-
IESE EIA	ESMP - J EIA 4.1.2.1	Construction phase	Construction activities such as mobilize vehicles, machines, and construction equipment; execute solar power plant, inverter station, transformer station, etc.	Air quality impact	<p>Survey and select roads, sources of construction materials for the Project</p> <p>Use vehicles still in valid period to use for the construction of the Project. The vehicles must have operation license valid and registered with Vietnam Registry Department</p> <p>Implement the regime of periodical maintenance of vehicles, machinery and construction equipment</p> <p>Require trucks to load properly as designed, without any tank extension and cover construction materials during transportation</p> <p>Require vehicles to follow the speeds of up to 10 km/h within the construction site</p> <p>Implement extra control measures, either excavation stopped if excessive dust generated or water applied in case of extremely dry weathers</p> <p>Cover and secure the transportation trucks with loose materials</p> <p>Maintain construction vehicles and equipment as per manufacture/s recommendation and industrial practices</p>	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (All three contractors) 	Construction	Dust, CO ₂ , NO _x , SO ₂ (Project site, access road and commune road)	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor 	Quarterly monitoring throughout construction	Semi-annual Environmental monitoring report for construction and Annual Environmental monitoring report during operations
IESE EIA	ESMP - J	Operation phase	-	No air emission during operation	N/A	<ul style="list-style-type: none"> The Project Sponsor 	Operation	-	<ul style="list-style-type: none"> The Project Sponsor 	-	-

Table 1.2 Noise and Vibration - Preparation, Construction and Operation Phase

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
IESE	ESMP - J	Preparation phase	-	-	-	• The Project Sponsor	Preparation	-	• The Project Sponsor	-	-
IESE	ESMP - J	Construction phase	Construction activities such as mobilize vehicles, machines, and construction equipment; execute solar power plant, inverter station, transformer station, etc.	Generate noise and vibration	<p>Optimize scheduling of vehicles and construction equipment to reduce noise</p> <p>Post speed limit for vehicles to adhere</p> <p>Monitor noise levels on site</p> <p>Prepare and implement a vehicle and machine maintenance program.</p> <p>Evaluate ambient noise levels from machinery and vehicular traffic</p> <p>Ensure that construction machinery are kept in good condition to reduce noise generation</p> <p>Ensure that all generators and heavy-duty equipment are insulated or placed in enclosures to minimize ambient noise levels</p> <p>Plan the noisy construction works on during daytime (06:00 - 18:00). Minimize construction works generating noise at the night time</p> <p>Limit the hours of operation for specific pieces of equipment or operations through the nearest residential community</p> <p>Re-locate noise sources to less sensitive areas to take advantage of distance and shielding</p> <p>Site permanent facilities away from community areas if possible</p> <p>Develop a grievance mechanism to record and respond to complaints</p> <p><u>To reduce the level of noise and vibration caused by float manufacturing process</u></p> <p>Appropriately organize according to the relevant regulations on the installation of industrial equipment</p> <p>Ensure the production workshop be constructed with walls, windows and doors for sound insulation</p> <p>Use dashpots for production equipment and machines</p> <p>Use sound absorbing material for the wall of the workshop, and ventilation fans must use less noise generation</p>	<ul style="list-style-type: none"> • The Project Sponsor • EPC Contractor (All three contractors) 	Construction	• Noise level (dB) at Project site, nearest residential areas	<ul style="list-style-type: none"> • The Project Sponsor • EPC Contractor 	Quarterly monitoring throughout construction	Semi-annual Environmental monitoring report

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
					Strengthen the management of the company staff, operation of equipment in accordance with regulation Enhance daily checking and maintenance of equipment, machinery to minimize noise sources Minimize the operation of the float manufacturing workshop during the night time						
IESE	ESMP - J	Operation phase	-	Noise and vibration is assessed negligible level	-	• The Project Sponsor	Operation	-	• The Project Sponsor	-	-

Table 1.3 Water Management – Preparation, Construction and Operation Phase

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
EIA	3.1.2.1	Construction phase	Anchor activity	Disturbance of bottom sediments Reduced water quality	Follow the anchor technique Paint anchors with waterproof layers or make anchors of stainless steel	• The Project Sponsor • EPC Contractor (Pontoons)	Construction	QCVN 08-MT:2015/BTNMT (Da Mi Reservoir)	• The Project Sponsor • EPC Contractor	Quarterly throughout construction	Environmental monitoring report
EIA	4.1.2.1	Construction phase	Activities of workforce	Sanitary wastewater discharge leading to soil or groundwater contamination	Utilize mobile sanitary facilities that are tailored for construction site (e.g. equipped with effluent collection tank)	• The Project Sponsor • EPC Contractor (all three contractors)	Construction	Sanitary wastewater discharged (QCVN 14:2008/BTNMT and the World Bank General EHS Guideline on Wastewater): pH, BOD ₅ , TSS, TDS, Sulphur, Ammonium, Nitrate, oil and grease, surface active agent, phosphate, coliforms, COD, total nitrogen, total phosphorus, total suspended solids, total coliform bacteria	• The Project Sponsor • EPC Contractor	Quarterly throughout construction	Environmental monitoring report
EIA	4.1.2.1	Construction phase	Maintain machines, equipment and vehicles	Generating oily water leading to soil or groundwater contamination	Wash and maintain construction equipment and vehicles at nearby garages where oil and effluent are collected	• The Project Sponsor • EPC Contractor (all three contractors)	Construction	Maintenance logbook	• The Project Sponsor • EPC Contractor	Monthly throughout construction	Environmental monitoring report
EIA IESE	4.1.2.1 218	Construction phase Operation phase	Rain water Water using for PV modules cleaning	Impact on surface water quality	Establish rainwater drainage system for the transformer area Construct in consecutive form and clean immediately after completion	• The Project Sponsor • EPC Contractor (for the PV panels, and contractor with	Construction	QCVN 08-MT:2015/BTNMT (for Da Mi Reservoir) Volume of water used for PV panel cleaning	• The Project Sponsor • EPC Contractor	Quarterly throughout operation for surface water quality	Environmental monitoring report

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
					Store materials away from surface water and drains, and check this practice on a regular basis Locate substation transformers within secure and impervious areas with a storage capacity of 100% spare oil	the transformer package)				Monthly throughout operation for PV panel cleaning activity	
EIA	4.1.3.1	Operation phase	Workforce's activities during operation	Sanitary wastewater discharge leading to soil or groundwater contamination	Collect and treat sanitary wastewater in three compartment tanks. Add a septic tank to treat water from the compartment tanks Monitor water quality of Da Mi reservoir regularly	The Project Sponsor	Operation	IFC General Guidelines	• The Project Sponsor	Bi-annually or when requests received from authorities Volume of water used for cleaning: Monthly	Environmental monitoring report

Table 1.4 Waste Management – Preparation, Construction and Operation Phase

Source of Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
EIA IESE	4.1.2.1 ESMP	Construction phase	Workforce activities	Generate domestic wastes	Develop and implement a Waste Management Plan Place trash bin in convenient areas Request workforce to leave litter in proper places and arrange waste bins in construction site	• The Project Sponsor • EPC Contractor (all three contractors)	Construction phase	Volume of waste generated Contracts with collection and treatment companies Appropriate disposal of waste	• The Project Sponsor • EPC Contractor	Monthly throughout construction for volume of waste generated Contracts with collection and treatment companies: Once a year Appropriate disposal of waste: Monthly	Environmental monitoring report
EIA	4.1.2.1	Construction phase	Construction activities such as mobilize vehicles, machines, and construction equipment; execute solar power plant, inverter station, transformer station, etc.	Generation of hazardous waste	Maintain construction equipment and vehicles at garages where oil and effluent are collected Collect and store oily rags and waste oil in proper containments (one 100litres (L) waste oil drum and two 60L oily-drag drum) Contract licensed waste vendor for collection, transfer and treatment of hazardous waste Register with DONRE as a hazardous waste generator Classify hazardous waste in accordance to Circular 36/2015/TT-BTNMT on Hazardous waste management Engage a licensed waste disposal company to collect and handle all hazardous waste in accordance with the applicable regulation.	• The Project Sponsor • EPC Contractor (all three contractors)	Construction phase	Volume of waste generated Contracts with collection and treatment companies Appropriate disposal of waste	• The Project Sponsor • EPC Contractor	Monthly throughout construction for volume of waste generated Contracts with collection and treatment companies: Once a year Appropriate disposal of waste: Monthly	Environmental monitoring report

Source of Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
					Store hazardous waste generated by the Project in temporary storages prior to transport and treatment/disposal. The temporary storage area for hazardous waste will be constructed as per the guidelines of the relevant regulation						
EIA IESE	4.1.2.1 B. ESMP	Construction phase	Construction activities such as mobilize vehicles, machines, and construction equipment; execute solar power plant, inverter station, transformer station, etc.	Generate excavated materials and construction waste from site clearance, formation and civil works	<p>Use excavation stones and soil for levelling</p> <p>Return unused construction materials to manufacturers or reuse and sell scraps such</p> <p><u>Waste generated from the floating manufacturing workshop:</u> Provide screens (diameter <2mm) at all drainage systems in the float manufacturing workshop to ensure small plastic pieces will be prevented from entering the surface water bodies</p> <p>Implement a comprehensive housekeeping program to ensure all small plastic pieces are collected and handled appropriately</p> <p>Provide secondary containments and spill kits at all oil storage areas" and "Develop and implement an oil spill response procedure</p>	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor 	Construction phase	Waste collection and disposal	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor 	Monthly throughout construction	Environmental monitoring report
EIA IESE	4.1.3.1 B. ESMP	Operation phase	Human activities from workforce	Generate of domestic wastes	<p>Collect and store non-hazardous solid waste generated from the Project in containers located at the Project site</p> <p>Provide adequate containers across the Project site to collect non-hazardous waste prior to transport to temporary storage areas</p> <p>Engage a licensed waste disposal company to collect and handle the non-hazardous solid waste in accordance with the applicable laws and regulations</p>	The Project Sponsor	Operation phase	<p>Volume of waste generated</p> <p>Contracts with collection and treatment companies</p> <p>Appropriate disposal of waste</p>	<ul style="list-style-type: none"> The Project Sponsor 	<p>Volume of waste generated: Regularly</p> <p>Contracts with collection and treatment companies: Once a year</p> <p>Appropriate disposal of waste: Monthly</p>	Environmental monitoring report

Source of Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
EIA	4.1.3.1	Operation phase	Operation activities such as mobilizing the operating workers, transmission activity of transformer station and connection line, and maintenance of power plants, inverter station, transformer station	Generation of hazardous waste	<p>Collect and store hazardous waste (e.g. PV panels) in hazardous waste storage and transfer to the certified hazardous waste contractors for transportation and disposal</p> <p>Oil waste from transformer is stored in proper area</p> <p>Prepare and submit annual hazardous waste management report to the authority</p> <p>Store hazardous waste (e.g. impaired solar panels) in hazardous waste storage and report the authority</p> <p>Built underground oily tank to contain oil waste from transformer</p> <p>Damaged and replaced PV panels, the Project Sponsor will temporarily store in the hazardous waste area in Ham Thuan Hydropower plant. The Project Sponsor will contract with licensed waste treatment agencies to collect and treat the panels as well as hazardous waste in compliance with national regulations</p> <p>Contract licensed waste vendor for collection and treatment of hazardous waste (e.g. oily rags, fluorescent tubes, impaired solar panels)</p> <p>Ensure waste collection, carriage and treatment in accordance with Decree No. 38/2015/ND-CP and Circular No. 36/2015/TT-BTNMT</p>	The Project Sponsor	Operation phase	<p>Volume of waste generated</p> <p>Contracts with collection and treatment companies</p> <p>Appropriate disposal of waste</p>		<p>Volume of waste generated: Regularly</p> <p>Contracts with collection and treatment companies: Once a year</p> <p>Appropriate disposal of waste: Monthly</p>	Environmental monitoring report

Table 1.5 Occupational Health and Safety Management – Preparation, Construction and Operation Phase

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
EIA	4.2.1	Preparation phase	Clearance	Impacts on environment and may damage unknown historical area	<p>Within the construction site, vehicles are required to follow the speeds of up to 10 km/h</p> <p>Implement extra control measures, either excavation stopped if excessive dust generated or water applied in case of extremely dry weathers</p>	<ul style="list-style-type: none"> The Project Sponsor 	Preparation phase	Sign or notice for a site protected for its historical and cultural	<ul style="list-style-type: none"> The Project Sponsor 	On-going throughout construction	Environmental monitoring report

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
EIA IESE	4.1.2.2 ESMP	Construction phase	Gathering many temporary workers	Infection disease among temporary workers and local residents	<p>Develop and implement an Occupational Health and Safety Procedure</p> <p>Arrange regular health check-up for workers and ensure first aid boxes are available in worker's camp to minimize medical risk</p> <p>Arrange worker's accommodation in hygienic areas and do housekeeping on a regular basis</p> <p>Provide necessary supplies for workers such as mats and nets</p> <p>Raise workers' awareness on good hygiene and housekeeping practice</p>	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (all three contractors) 	Construction phase	Infection disease such as diarrhoea, flu and malaria	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (all three contractors) 	Monthly throughout construction	Environmental monitoring report
EIA	4.1.2.2	Construction phase	Gathering many temporary workers	Affect security at local area	<p>Register temporary residence for workers</p> <p>Encourage workers to respect the culture, customs, beliefs of locality</p> <p>Cooperate with local authorities to manage workers</p>	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (all three contractors) 	Construction phase	<ul style="list-style-type: none"> Complaints of local residents Conflicts in local area related workers 		Monthly throughout construction	Environmental monitoring report
EIA	4.1.2.2	Construction phase	Construction activities such as mobilize vehicles, machines, and construction equipment; execute solar power plant, inverter station, transformer station, etc.	Impact of electromagnetic energy to workers at construction stage	<p>Follow QCVN QTĐ-7/BCT National Technical Codes for Installation Power Network</p> <p>Ensure safety on construction site</p> <p>Follow regulations and work procedures</p> <p>Ensure safety activities when digging holes and foundation</p> <p>Follow safety procedures during installation machines, equipment, connecting lines</p> <p>Keep ensure safety when working at high and on surface water</p> <p>Deal with in emergency quickly</p>	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (Transmission line contractor) 	Construction phase	<ul style="list-style-type: none"> Health and safety incidents IFC Environmental, Health, and Safety Guidelines for Electric Power Transmission and Distribution: Electric field (V/m) and Magnetic field (μT) 	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (Transmission line contractor) 	Monthly throughout construction	Environmental monitoring report
EIA IESE	4.2.2.1 B ESMP	Construction and operation phase	Risks in construction and operating phase	Cause incidents/accidents or affect workers' health	<p>Establish HSE board before starting construction phase. This board will control safety aspects for the Project including training and raising safety awareness for workers, inspecting safety, and identifying safety issues. Each EPC contractor will need to fit the training and safety plan according to the potential risks associated with each EPC contractor activities</p> <p>Ensure all workers engaged by the Project Sponsor or contractors be provided appropriate occupational health and safety training</p> <p>Develop and implement an Emergency Response Plan</p>	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (all three contractors, transmission line contractor) 	Construction and operation phase	<ul style="list-style-type: none"> Incidents/accidents Unsafely complaints/grievance Safety regulations/procedures Community health and safety incidents 	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (all three contractors) 	Monthly throughout construction	Environmental monitoring report

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
					<p>Ensure safety when working in holes/foundation</p> <p>Ensure safety when working with lifting machines/equipment</p> <p>Ensure safety when working related electric jobs</p> <p>Prevent fire and deal with firefighting quickly and approximately via fire-fighting and prevention procedure</p> <p>Provide drinking water, mobile medicine cabinets and medical staff when needed, training for workers to protect themselves, periodical health checking, etc.</p> <p>Compliance with the safety electric distance to carry out any electrical works</p>						
EIA	4.2.2.2	Construction and operation phase	Risks in construction and operating phase	Cause fire	Establish firefighting regulation and provide fighting equipment as per police request by the EPC	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (all three contractors) 	Construction and operation phase	<ul style="list-style-type: none"> Firefighting regulation Fighting equipment 	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (all three contractors) 	Monthly	Environmental monitoring report
EIA	4.1.3.2	Operation phase	Operation activities such as mobilizing the operating workers, transmission activity of transformer station and connection line, and maintenance of power plants, inverter station, transformer station	Impact of electromagnetic energy to operators	<p>Follow operation procedures strictly</p> <p>Provide PPE to those working in areas of high electromagnetic energy levels. Comply with permissible limits of industrial electromagnetic and inspect work place</p> <p>Follow working time limits in areas of high electromagnetic energy levels</p> <p>Minimize exposure to electromagnetic fields by arranging shift plan</p>	The Project Sponsor	Operation phase	<ul style="list-style-type: none"> IFC Environmental, Health, and Safety Guidelines for Electric Power Transmission and Distribution: Electric field (V/m) and Magnetic field (μT) 	The Project Sponsor	Bi-annually or when received request's authorizes	Environmental monitoring report
EIA IESE	4.1.3.2 B. ESMP	Operation phase	Operation activities such as mobilizing the operating workers, transmission activity of transformer station and connection line, and maintenance of power plants, inverter station, transformer station	Impact on community's health and safety	<p>Develop and implement occupational health and safety procedures for activities related to the Project's activities (e.g. working over water, working with electricity, etc.)</p> <p>Implement the measures proposed for mitigation and management of environmental impacts to reduce the environmental disturbance to daily life including livelihood of the local people</p> <p>Prohibit any works carried out in electrical safety corridor should the use of equipment that potentially violates the safety electric distance determined by discharge voltage if possible; otherwise agreement with authority managing the power grids shall be made</p>	The Project Sponsor	Operation phase	<p>Unsafe behaviours or practices</p> <p>Grievance relating to health and safety</p> <p>Community health and safety incidents/accidents</p>	The Project Sponsor	<p>Unsafe behaviours or practices: Bi-annually throughout operation</p> <p>Grievance relating to health and safety: Monthly monitoring throughout operation</p>	Environmental monitoring report

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
					<p>Allocate Project personnel to in charge of security in the Project area and restrict unauthorised people to access to this area, especially the lake where the solar panels will be installed</p> <p>Disclose the ESMP to the affected communities before such operation activities commence. ESMP can posted at the Commune People's Committee where the Project will be built</p> <p>Develop and implement work related procedure in consideration of community health and safety if related</p> <p>Install and regularly inspect lightening protection systems</p> <p>Implement a LRP and a CDP with a major focus on livelihood and skill development and promote the health and safety of local people</p> <p>Promote local procurement during operation of the Project. In particular, the Project should use local foods/products and local supply to enhance benefits to the local communities</p>					Community health and safety incidents/accidents: Bi-annually throughout operation	
EIA	4.2.3.1	Construction phase	Electric shock	May cause of death	<p>Incorporate safety issues into design</p> <p>Design safely grounding system</p>	• The Project Sponsor	Operation phase	Incidents/accidents related electric shock	• The Project Sponsor	On-going	Environmental monitoring report
EIA	4.2.3.3	Construction phase	Oil spill/slick	Affect environment and human health	Design the transformer station with an oil collection system and an oil trap. Oil spill response measures are also expected to be put in place	• The Project Sponsor	Operation phase	Oil spill	• The Project Sponsor	On-going	Environmental monitoring report
EIA	4.2.3.4	Construction phase	Lightning conductor	Affect human health	Design the floating solar power construction with lightning protection according to national standards so it is not likely to occur lightning strike. Otherwise, it is possible that electricity equipment is damaged by weather conditions. Therefore, it is necessary to have regular inspections right after floods or heavy rain	• The Project Sponsor	Construction phase	-	The Project Sponsor	-	-
EIA	4.2.3.6	Operation phase	Maintenance, operating, and managing activities on land	Affect human health and environment	Follow safety regulations and procedures during operation and maintenance	• The Project Sponsor	Operation phase	Incidents/Accidents	• The Project Sponsor	On-going	Environmental monitoring report
EIA	4.2.3.6	Operation phase	Maintenance, operating and managing activities on surface water	Affect human health and environment	Follow safety regulation for surface water jobs: provide PPE appropriately, do not work alone, must be training before handing, etc.	• The Project Sponsor	Operation phase	Incidents/Accidents	• The Project Sponsor	On-going	Environmental monitoring report

Table 1.6 Socio-economic Management – Preparation, Construction and Operation Phase

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
EIA	4.1.1	Preparation phase	Land acquisition	Impact to local community's livelihood, land use	<p>Conducted a target survey to identify those land-losing households who lost more than 10% of their land, in vulnerable situation and would have faced high livelihood impacts. Development of a livelihood programme for these households based on engagement with them is under progress</p> <p>List ethnic minority households in the vulnerable group to provide special support and monitoring during the implementation of SEP, LRP and CDP</p> <p>Having a communication and persuasion with the five household living near Da Mi lake for them to understand that they may be the receptor for the potential health and safety impacts from the Project activities, and relocation will be a good mitigation measure for them.</p> <p>Upgrade the activities under social and environmental fund to be a CDP. This CDP shall include a number of programmes for local development with details of beneficiary community's eligibility, roles and responsibilities for implementation, monitoring and reporting, and timeframe of implementation. It is noted that separate programme for affected ethnic minority households should be designed in the CDP. A CDP is under development by ERM for the Project</p> <p>Implement a SEP including assigning Community Liaison Officer to ensure effective project information disclosure and communication with the project affected people, including develop and disclose a Grievance Procedure to receive and address concerns raised by the Project affected people. This SEP is also being developed for the Project</p> <p>Implement a grievance procedure for the Project through which the local people, especially who are affected by the land acquisition and/or construction activities of the Project can lodge their concerns and complaints. The grievance procedure should be easily accessible to local communities</p> <p>Develop and implement a monitoring programme of the SEP, grievance mechanism, LRP and CDP implementation to continuously evaluate the effectiveness of the activities. Comply with specific monitoring and reporting mechanism designed in each plan</p>	The Project Sponsor	Preparation phase	Grievances/complaints	<ul style="list-style-type: none"> The Project Sponsor 	Monthly checking grievance log book and stakeholder engagement records	Environmental monitoring report

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
					<p>Report to ADB about the effectiveness of the implementation of these plans every six months during the construction and annually during the operation</p> <p>Set up a cut-off date which is defined as the date immediate after the completion of IOL and DMS and people who occupy the land within the Project boundary after this date will not be eligible for compensation or assistance</p> <p>Appoint Project personnel to guard the area to remind people to not access the area for illegal activities including fishing and settlement and warn them with health and safety risks</p>						
IESE	ESMP - J	Construction phase	Construction activities such as mobilize vehicles, machines, and construction equipment; execute solar power plant, inverter station, transformer station, etc.	Worker and local community relation	<p>Conduct health screening of all job applicants before employment</p> <p>Provide periodic health examination or health surveillance program for workers for early detection of communicable diseases</p> <p>Establish onsite health clinic and referral system</p> <p>Provide health awareness training to all workers on hygiene and sanitation, good housekeeping practices, communicable and infectious diseases</p> <p>Issue a Work Site Regulation and a Worker's Code of Conduct, both to be approved by the Project Company, in order to reduce the potential for cultural related conflicts among the migrant and local workforce and the local population</p> <p>Establish a liaison forum or committee to promote good relations between the workers and the communities</p>	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (all three contractors) 	Construction phase	-	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor 	-	-
EIA	4.1.2.2	Construction phase	Construction activities such as mobilize vehicles, machines, and construction equipment; execute solar power plant, inverter station, transformer station, etc.	Impact on landscape	<p>Disclose the ESMP for construction to affected communities before such construction activities commence</p> <p>Construct in consecutive form and clean immediately after completion</p> <p>Use excavated soil and rock to level ground</p> <p>Store construction equipment and materials at the gathering yard</p> <p>Collaborate with local authority to communicate with local communities in advance of commencing the construction activities</p>	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (all three contractors) 	Construction phase	-	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor 	Daily	-

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
EIA	4.1.2.2	Construction phase	Transporting materials and equipment	Impact on localized transportation	<p>Ensure no overload carriage of construction materials; use specialized vehicles to transport oversized machinery to avoid damage to roads</p> <p>Repair roads damaged by Project activities</p> <p>Arrange works appropriately to minimize traffic obstruction</p> <p>Liaise and collaborate with authorities in charge of road management to ensure construction safety and minimize transportation interruption</p>	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (all three contractors) 	Construction phase	<ul style="list-style-type: none"> Traffic jam Traffic accidents 	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor 	Daily	Environmental monitoring report
EIA	4.1.2.2	Construction phase	The process of connecting wires intersects with roads	Impact on localized transportation	Control vehicle traffic passing through the intersection by giving a visual indication to drivers when to proceed	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (all three contractors) 	Construction phase	<ul style="list-style-type: none"> Traffic jam Traffic accidents 	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (all three contractors) 	Monthly throughout construction	Environmental monitoring report
IESE	ESMP - J	Operation phase	Operation activities such as mobilizing the operating workers, transmission activity of transformer station and connection line, and maintenance of power plants, inverter station, transformer station	Impact socio-economic	<p>Implement the measures proposed for mitigation and management of environmental impacts to reduce the environmental disturbance to daily life including livelihood of the local people</p> <p>Implement a CDP through the life of the Project, with a major focus on livelihood and skill development</p> <p>Promote local procurement during operation of the Project. In particular, the Project should use local foods/products and local supply to enhance benefits to the local communities</p>	<ul style="list-style-type: none"> The Project Sponsor 	Operation phase	-	<ul style="list-style-type: none"> The Project Sponsor 	Monthly	Environmental monitoring report

Table 1.7 Critical Habitat - Preparation, Construction and Operation Phase

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
IESE	ESMP - J	Preparation phase	-	-	-	The Project Sponsor	Preparation phase	-	• The Project Sponsor	-	-
Critical Habitat Assessment	5.5.2	Construction and Operation phase	The presence of infrastructure on the surface of a lake	Impacts changes to Aquatic Habitat Functionality	<p>All floating PV panels are to be “glass on glass” transparent type. A minimum spacing of 50cm is to be placed between panel arrays. Arrays are to be placed at least 20cm above the lake surface</p> <p>Implement watershed management activities to reduce nutrient runoff entering the lake. These include:</p> <ul style="list-style-type: none"> ○ Identify sources of nutrients entering waterways from land uses ○ Work with stakeholders to identify both educational and physical measures to alter practices that may contribute to nutrients entering the lake ○ Identify measures to reduce existing nutrient loads within the lake ○ Monitor activities to trigger adaptive management as required 	The Project Sponsor EPC Contractor of the Pontoons and PV panels	Construction Operation	<p>Water quality and aquatic flora assessments are to occur on a weekly basis during construction. Algal blooms are observed</p> <p>Bi-annually monitoring of the biota at different trophic levels (phytoplankton, zooplankton, aquatic macroinvertebrates and fish) and depth profile physio chemistry during the operational phase</p> <p>Regularly reviewed (3 monthly) for implementation of the workforce training program for fauna/flora awareness</p> <p>Monitoring if rehabilitation success /failure is to occur on all replanting sites. Monitoring is to consist of regular inspections (3 monthly) to determine plant establishment. Where plant establishment is determined to have failed, reestablishment is to occur</p> <p>Regular social engagement (12 monthly) survey is to occur to gauge the socialization of conservation measures</p>	• The Project Sponsor	Mentioned in column Monitoring Parameter	Environmental monitoring report
Critical Habitat Assessment	5.5.3	Construction and Operation phase	The transmission line construction and operating	Loss of terrestrial habitat	<p>Clear vegetation outside of designated areas will be prohibited</p> <p>Provide training to staff and workers on all rules, regulations and information concerning restrictions</p>	The Project Sponsor EPC Contractors (all three contractors)	Construction phase Operation phase	No additional monitoring measures are considered necessary	-	-	-

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
					<p>related to unauthorized clearing of vegetation</p> <p>Use of the access road should be restricted to construction vehicles only</p> <p>Use native indigenous species for all land rehabilitation. The area of landscaping within the Project area shall re-establish habitat values</p>						
Critical Habitat Assessment	5.5.4	Construction phase	Temporary and permanent barrier creation will occur during construction	Temporary and Permanent Barrier Creation, Degradation of Habitat, Edge Effects and Fragmentation	<p>Use of during construction is to be kept to a minimum around Project construction sites</p> <p>Measures to control dust are to be utilized to limit generation of dust and hence deposition onto vegetation surrounding construction areas</p> <p>Plant native indigenous flora, along the shoreline adjacent to the road and floating PV construction sites</p> <p>Sediment and erosion control measures are to be used in all areas of construction</p> <p>All disturbed soil surfaces are to be rehabilitated and native flora species are to be planted within areas under the Projects control</p> <p>To be outlined in an Invasive Species Management Plan and include measures</p> <p>Appropriate rehabilitation of disturbed areas using native vegetation is to occur to facilitate movement of fauna species</p>	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (all three contractors) 	<ul style="list-style-type: none"> Construction phase 	<p>Records are to be kept and regularly reviewed (3 monthly basis) during construction on the application of the fencing and hoarding implementation</p> <p>Regular inspections (weekly during construction) during the dry season to determine the level of dust deposition on vegetation surrounding the Project Area</p> <p>Records are to be kept and regularly reviewed (3monthly basis) on the planting of indigenous flora and fauna on disturbed areas</p> <p>Monitoring if rehabilitation success/ failure is to occur on all replanting sites. Monitoring is to consist of regular inspections (3 monthly) to determine plant establishment. Where plant establishment is determined to have failed, reestablishment is to occur</p>	<ul style="list-style-type: none"> The Project Sponsor 	<ul style="list-style-type: none"> Mentioned in column Monitoring Parameter 	<ul style="list-style-type: none"> Environmental monitoring report
Critical Habitat Assessment	5.5.5	Construction phase	Vehicle and machinery activities	Mortality of individual fauna	Consultation with the local community on hunting/ poaching activities is to occur according to the Community Engagement Program	The Project Sponsor EPC Contractor (all three contractors)	Construction phase	No additional monitoring measures are recommended	-	-	-

Source Document	Chapter	Phase	Activity/Aspect	Potential Impacts	Mitigation	Responsibility	Timeframe	Monitoring Parameter	Monitoring Responsibility	Monitoring Frequency	Reporting
					<p>Prohibit hunting, fishing and poaching</p> <p>Provide training to staff and workers concerning restrictions related to hunting, fishing and poaching</p> <p>Maintain a speed of a maximum of 40km/h within work sites</p>						
Critical Habitat Assessment	5.5.7	Construction and Operation phase	The transmission line construction and operating	Causing local mortality of individuals	<p>Use of bird deflectors on the length of the power line</p> <p>Remove the thin neutral or earth (shield) wire above the high voltage transmission lines where feasible, and where this is not possible, marking the line to make it more visible</p> <p>Minimize the vertical spread of power lines. Having lines in a horizontal plane reduces collision risk</p> <p>Insulate cables close to poles, at least 70 cm on both sides and around perching areas, and up to at least 140cm</p> <p>Hang insulators under cross arms and poles, provided the distance between a likely perch (mainly the transmission tower cross arm) and the energized parts (conductors) is at least 70 cm</p>	<ul style="list-style-type: none"> The Project Sponsor EPC Contractor (transmission line contractor) 	Construction phase	Regular inspections of the transmission line routes (3 monthly) during construction is to occur to identify any fauna mortality that has occurred. Where patterns in species mortality or conservation significant species are identified, advice from a suitably qualified person should be sought to alter mitigation measures to reduce future potential impacts	• The Project Sponsor	• Mentioned in column Monitoring Parameter	Environmental monitoring report
Critical Habitat Assessment	5.5.8	Construction and Operation phase	Vehicle and machinery	Ecosystem services	No additional mitigation measures are recommended	The Project Sponsor	Construction phase Operation phase	<p>Fish catches from commercial and recreational fishermen should be monitored for at least 6 months following the installation of the solar facility</p> <p>Based on the results of the monitoring, measures to supplement fishing activities may be considered</p>	• The Project Sponsor	Mentioned in column Monitoring Parameter	Environmental monitoring report

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