

Environmental Monitoring Report

Project Number: 51182-001
Loan 3789-CAM/Loan 8357-CAM/Grant 0645-CAM
Semestral Report (January to June 2023)
July 2023

Cambodia: National Solar Park Project

Prepared by JOINT VENTURE OF NEWJEC INC. AND CHEANG ENGINEERING CONSULTANTS CO., LTD, for the Electricité Du Cambodge (EDC) and the Asian Development Bank.

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ELECTRICITÉ DU CAMBODGE

**CONSULTING SERVICES FOR PROJECT IMPLEMENTATION CONSULTANT
FOR NATIONAL SOLAR PARK PROJECT**

**CONTRACT No. CS-NSPP-ADB-EDC-2020-01
ADB LOAN No. 3789-CAM (COL)**

**SEMI-ANNUAL ENVIRONMENTAL MONITORING REPORT N° 5
(JAN TO JUN 2023)**

July 2023

Prepared by Project Management Unit of the EDC under technical supports from JOINT VENTURE OF NEWJEC INC.
AND CHEANG ENGINEERING CONSULTANTS CO., LTD

NOTE

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1 ENVIRONMENTAL SAFEGUARDS SUMMARY

1.1 Summary of Project Progress

1. The fifth Semi-Annual Environmental Monitoring Report (SEMR#5) covers the period of January to June 2023 for National Solar Park Project (Transmission line and Substations) in the provinces of Kampong Chhnang and Kampong Speu, ADB Loan No 3789 - CAM (COL). The SEMR has been prepared to fulfil the environmental safeguard policy requirements of ADB.
2. The SEMR is prepared by PIC and checked by SEPRO/EDC.
3. The following table gives a brief summary of the project progress for contract award, construction and key activities in this reporting period:

Table 1: Summary of Project Progress

Safeguards Category	Environment	B
Reporting Period:	January to June 2023	Last Report Date Issued: Jul-Dec, 2022
Contracts Awarded to Date:	Substation and Towers of Transmission Line– in-construction period	
Key Sub-project Activities since last report:	<p>The physical construction progress is as follows:</p> <ul style="list-style-type: none"> - The package including substations, GS6 substation, and 230 kV transmission line has been contracted with Xian Electric Engineer Co. Ltd on 04 March 2020. - The civil works have been started by middle of April 2021 for the substation and by Middle of June 2021 for the tower. - The progress of the overall physical/construction works including the national solar park for period from January –June 2023, the GS6 substation, the transmission line and access road are completed 90% (in average of all components). The progress of the Solar Park and GS6 substation, the transmission line and access road are completed 90% (in average of all components). Details of the construction progress are: (i) National Solar Park Substation is completed 98%; (ii) GS6 substation is completed 98%; (iii) Transmission line is completed 100%; and (iv) access road including the bridge is completed 60% (bridge 40%). 	
	-	
Report prepared by:	PIC (Project Implementation Consultant)	
Report checked by:	SEPRO/EDC	

4. The Environmental Monitoring Report (EMR) findings are based on progress reports and site visits between January and June 2023..
5. All works in the Construction stage are proceeding in accordance with the provisions of the EMP, such as review of monitoring report format, regulatory compliance action plan and camp layout review and preparation of site camp and approval by local authorities.
6. Most of the mitigation measures that mentioned in the Environmental Management Plan (EMP) such as physical and biological resources, including work safety at site are successfully implemented by the Contractor such as PPE use, solid waste management at site, dust management ...etc., through the PIC (Environmental Consultant) engaged by the executive agency. Based on ADB advice, a Construction Environmental Management Plan (CEMP) should be developed and approved by the EDC. PIC, therefore, asked the contractor to develop the CEMP

immediately. The CEMP was finalized and approved on 30 July 2021. Anyway, EMP updated again on 1st Sept 2022 after IEE had been updated. Thus, CEMP was also required to be updated by PIC, as the results, CEMP was submitted then approved in January 2023.

7. For this fifth Semi-Annual Environmental Monitoring Report, from January – June 2023, the construction activities were finished for substations and transmission-line, but it is just waiting to install some equipment remained. Various proactive measures are being taken to implement the project in compliance with requirements, prevent damages to heritage structures, coordinate with relevant agencies, communicates with the public, and address the grievance of the local residents. Areas such as public communications, documents, and reporting need further enhancement.

1.2 Summary of EMP Implementation

8. key summaries of the contractor performance of implementation of the EMP such as:

(i) Occupational Safety:

- Contractor provided PPE to all workers and all workers wear the PPEs properly;

(ii). Community Safety:

- Contractor provided safety barriers at working area (good cooperation with local authority and people to avoid any accident); (iii). The worker camp site:
 - The worker camp site is located in good environment & safe place,
 - There are sufficient toilets provided for all workers,
 - There are soap available at the toilets,
 - Contractor provided safe drinking water to all workers,
 - Contractor provided separated room for the workers,
 - Contractor provided sufficient waste bins and manage solid waste properly at site.

9. EMP implementation is summarized in the following points for this reporting period:

- Provision of first aid kit, fire extinguishers and PPE were done.
- Waste lubricants and oil are kept in and kept at a proper place.
- Water tank for clean water storage was provided and installed in camp site;
- Traffic signage were installed to ensure people's safety guidelines to the construction zones (see the sign board in annex 4);
- Personal protective equipment (PPE) was provided to all the workers (see the sign board in annex 4);
- Dust control: Water is sprayed by water truck to control dust in the construction area. Condition of Air quality, Noise and vibration levels were good due to the site observation; Dust control was implemented;
- COVID-19 precautionary measures were being implemented that require all workers did the rapid test, whenever they get cough and temperature increased.
- There are no water body or water source nearby the worksite of substation, so water pollution is not identified.
- Solid and liquid wastes were properly managed and disposed at an approved dumpsite by local authority.
- A safe Campsite/Worker's Camp were provided for workers



Worksite in Solar Park Substation





1.3 Summary of EMP Monitoring

10. EMP monitoring during the construction period was currently being established. Xian Electric Engineer Co. Ltd is fully mobilized at the project sites in April 2021 for substation and middle of June 2021 for the tower. For this fifth Semi-Annual Environmental Monitoring Report is from Jan–June 2023.
11. EMP monitoring is summarised in the following points, for this reporting period from January to June 2023:
 - a) A number of Monitoring Visits to Construction Sites and wider area:
 - Four visits by PMO/SEPRO/ EDC
 - Six visits by PIC
 - b) Site inspection:
 - The PIC, EDC and EPC Contractor visited site of Solar Park substation, Transmission Line, access road Site regularly.

1.4 Summary of Complaints, Issues and Corrective Action

12. No grievance case reported in the period of January- June 2023.
13. Also, due to some discussions with local people living along the project site of Transmission Line, there was no any complaint.

Conclusions:

14. There were no significant environmental impacts observed during the reporting period, and a few short-coming on follow-up with regulatory agencies, regular technical support by PIC's environment consultants, public communications, documentation, and reporting were observed for which necessary corrective measures have to be taken. Contractors should continue the implementation of the Environmental Monitoring Plan (EMoP), perform self-monitoring, highly considering all of the sub plans in the CEMP that approved on 30 July 2021, then the new updated CEMP was approved on 20, January 2023.
15. Anyway, for PPE use at the site, contractor did well and followed the EMP/CEMP for PPE (all workers required to have their present in the toolbox meeting in order to check PPE use before starting work), waste management, air/dust pollution, noise management, first aid kit, toilets... etc; as mentioned in EMP/CEMP; but some new workers did not know how to use the right PPE during

working that require contractor and site inspector shall highly pay attention to instruct or train them regularly.

16. Monthly Reports should regularly be submitted to PIC and SEPRO/EDC on time. The correction actions due to the recommendations during this monitoring period should be implemented then showing in the next reporting period (from July to December 2023), especially the access road and bridge construction that it will have more concerned.

2 SAFEGUARDS STAFF, TRAINING AND DOCUMENTATION

2.1 Implementation Arrangements

17. The environmental management plan (EMP) was defining the institutions and responsibilities for environmental safeguards and EMP implementation.
- 1) EDC is the executing agency (EA) of the project: EA is overall project management to ensure that project complies with loan covenant.
 - 2) PMO has formed Social, Environment and Public Relations Office (SEPRO) in charge of the social and environmental issues and also to monitor the EMP implementation for the whole Project. The PMO leaders and staff in charge of each package, are aware of responsibilities of the implementation of environmental impacts mitigation measures. The PMO staffs are in close coordination with PIC, thus compliance to the Update EMP is gradually improving.
 - 3) PIC Consultants. Provide support to the PMO and the Contractors through close inspection of implementation of the environmental management measures and daily compliance at site. The consultant regularly submits reports to SEPRO/EDC on monitoring of EMP implementation and compliance of Contractors, which serve as the bases for PMO to provide close guidance at site.
 - 4) Contractors: try to provide staff in charge of environment and safety to ensure that CEMP is prepared and follow-up. Some of the assigned personnel, however; still have not spent sufficient time for environmental management activities or have not regularly stayed on site., therefore; The PIC consultants provided an orientation training on environment safeguards including the monitoring system to PMO, SEPRO and Contractors on 1st December 2021 as planned.
18. The roles and responsibilities of the different in EMP implementation and monitoring are described in the table below

Table 2: The roles and responsibilities of the different in EMP implementation and monitoring

Agency	Roles/ Responsibilities
Electricite du Cambodge (Executing Agency)	<ul style="list-style-type: none"> - Responsible for overall supervision and monitoring of the project implementation - Establish the PMO with sufficient staff and appropriate qualification - Ensure implementation of the safeguards planning document is compliant with the loan and grant covenants - Provision of counterpart staff, operational support and budget for project activities - Ensure compliance with all loan and grant covenants
Project Management Office (within EDC)	<p>In coordination with PIC</p> <ul style="list-style-type: none"> - Responsible for day-to-day project management and supervision - Implement project in accordance with the legal agreements - Coordinate with line ministries to ensure smooth and efficient implementation of the project - Responsible for procurement of goods, works and services - Secure technical and safeguard approvals for all civil works prior to contract award - Ensure compliance with all loan and grant covenants - Implement/comply with safeguards requirements detailed in the safeguard documents - Responsible for submission of reports, including submission of summary of financial and project accounts and annual financial statements, and safeguards monitoring report

Agency	Roles/ Responsibilities
Social, Environment and Public Relations Office (SEPRO)	<p>In coordination with PMO and PIC</p> <ul style="list-style-type: none"> - Ensure compliance with ADB safeguards requirements - Ensure compliance and consistency of safeguards documents with the government policy, legal and administrative framework across all jurisdictions--national, state and local - Responsible for overall coordination and reporting for various project activities - Responsible for overall implementation of safeguards requirements
Project Implementation Consultant (PIC)	<ul style="list-style-type: none"> - Responsible for preparation of safeguards documents - Ensure compliance with safeguards requirements through effective implementation and monitoring of social and environmental safeguards - The PIC will: (a) update, as necessary, the Initial Environmental Examination (IEE), Environmental Management Plan (EMP), and Land Acquisition and Resettlement Plan (LARP), and, after obtaining ADB's approval, oversee their implementation; and (b) supervise the design, supply, installation, and commissioning of the solar park infrastructure works by the EPC contractor. - Project performance monitoring and evaluation, including preparation of progress reports and completion report - The PIC will recruit and manage a local registered firm, who will work with EDC to prepare and submit an Initial Environmental Impact Assessment (IEIA) or full EIA for the solar park infrastructure to the Ministry of Environment (MOE) for clearance and approval, as required, prior to any civil works contract awards.
Contractor	<ul style="list-style-type: none"> - Preparation of CEMP, and conduct monitoring environmental items basically and follow-up all activities at the project sites, camp site, and other material yards. - Daily/Weekly and monthly monitoring - Monthly Environmental Health, and Safety (EHS) monitoring report - Provide sufficient budget and human resources for the implementation of the EMP/CEMP - Ensure proper and timely implementation of required pre-construction and construction mitigation measures in the EMP/CEMP - Implement additional environmental mitigation measures, as necessary.

19. The specific roles and responsible persons are required to be filled in order to meet the EMP requirements. The following table gives the status of the key specific roles for EMP implementation:

Table 3: Status of Environmental Safeguard Roles

Safeguards Role	Status & Comment			
PIC-Project Consultant Environmental Specialist	Date Started:	26 March 2020	Full Time/Part Time	[PT]
	Comment	<ul style="list-style-type: none"> - Mr. Shusuke Minato - Mr. Chheang You 		
SEPRO	Date Started:	18 September 2019	Full Time/Part Time	[FT]
	Comment	<ul style="list-style-type: none"> - Mr. Mao Visal 		
PMO GRM Focal Point	Date Started:	18 September 2019	Full Time/Part Time	[FT]
	Comment	<ul style="list-style-type: none"> - Mr. Salim for Transmission Line - Mr. Im Am for Substation 		

Safeguards Role	Status & Comment			
Contractor	Date Started:	4 March 2020	Full Time/Part Time	[FT]
	Comment	-		
Environmental Monitoring Consultant (EMC)	Date Started:	N/A	Full Time/Part Time	[FT]
	Comment	Not yet hired by the Consultant during the report period		
Contractor Environment Health & safety Staff	Date Started:	4 March 2020	Full Time	[FT]
	Comment	- Mr. Theng Samrith(for transmission line) - Mr. Keang (for substation)		
GRM Focal Person	Date Started:	18 September 2019	Full Time	[FT]
	Comment	- Mr. Bin Sopheakda for SEPRO - Mr. Theng Samrith for contractor		

20. The project concludes that the environmental safeguards roles are in the process of filling up. The Environment, H & S position for Xian Electric Engineer Co. Ltd, the contractor for the substation, transmission line, upgrade GS6 and the access road.

2.2 Monitoring and reporting System on Environmental Safeguards

21. PMO/SEPRO will establish a system to monitor environmental safeguards of the project including monitoring the indicators set out in the monitoring plan of the EMP. Safeguard team will comprise Social expert, Environmental expert and Technical expert. PMO under technical support from the PIC will prepare quarterly environmental monitoring and semi-annual monitoring report and submit to ADB.
22. The Semi-annual Environmental Monitoring Report (SEMR) will be continuously conducted and updated every 6 months during the construction stage whenever there are adjustments in design or revision in construction methodology to ensure that the mitigation measures are appropriate for the potential impacts. The SEMR for project has been updating due to changes in the project's scopes and monitoring the progressive works to ensure minor environmental negative impacts and people satisfactorily. The PIC consultants provided an orientation training on environment safeguards including the monitoring system to PMO, SEPRO and Contractors on 1st December 2021 as planned.

Table 4: Schedule of Reporting

No.	Activity/Task	2021				2022				2023			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
I	Understanding the Project and Setting the Schedule												
1.1	Field visit												
1.2	Update IEEs/EMPs												
1.3	Update CEMP outline for the Contractors and approved by EDC												
II	Environmental Management Training and Environmental Instruments Monitoring												
3.1	Provided an orientation training on environment safeguards including the monitoring system to PMO, SEPRO and Contractors on 1st December 2021 as planned.												
3.2	Refresher training on the implementation of the EMP and GRM												

No.	Activity/Task	2021				2022				2023			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
III	Environmental Monitoring of Construction Impacts												
4.1	Periodic instrument monitoring 6 months		■										
4.2	Works with contractors to complete CEMP				■	■							
4.3	Visual monitoring and inspection of constructors 'environment management	■	■	■	■	■	■	■	■	■	■	■	■
4.4	Quarterly report	■	■	■	■	■	■	■	■	■	■	■	■
4.5	Semi-annual Environmental Monitoring report unit project end		■	■		■		■		■		■	

2.3 Training & Capacity Building

23. The following table gives the environmental safeguards training courses that have been completed during this reporting period. The training courses was hold on 1st December 2021.

Table 5: Environmental Safeguards Training Provided and Planned

Training Course Title	Training Date	Participants	Training Provider
Orientation/ training for EMP and GRM Implementation	1 st December 2021 (finished)	EDC, Contractors PIC,	PIC's International Environmental Specialist and National Environmental Specialist

2.4 ADB Approvals

24. The following table gives information on the status of the safeguard documents. During this reporting period the safeguard documents of this project is in progress.

Table 6: Status of Environmental Safeguards Documents

Environmental Documents	Update Issued (Latest Version)	Submitted to EDC	Submitted to ADB	Comments
Draft IEE	04 May 2021	04 May 2021	21 May 2021	finalized
Updated EMP	19 March 2021	19 March 2021	24 May 2021	finalized
Bird Deflector		6 April 2022	Letter from ADB on 16 March 2022	ADB approved on the place for bird deflector

2.5 National Approvals

25. Final IESIA report had been submitted to MOE at the end of July 2021 and got the final approval of the IESIA and license from MoE since 16 September 2021. So, project is able to carry out the construction activities after MoE issued this licence.

26. The following table gives an update on the necessary national approvals required for the project to proceed.

Table 7: Approval of MOE for Submitted Report

Documents	Submitted to MOE	Approved By MOE:	Status – if not approved	Comment
N/A	N/A	N/A	N/A	N/A

2.6 Construction Environmental Management Plan (CEMP) Approvals

27. As mentioned in the table 2 above, the updated EMP was submitted on May 24, 2021. CEMP was prepared and submitted by contractor. The CEMP was approved on 30 July 2021. Then EMP was updated in October 2022 after IEE has been updated. So, PIC required contractor to update CEMP accordingly in order to submit to EDC/PIC, later on Jan 2023 CEMP was approved.

Table 8: Approval of CEMP

Civil Works Package/ Subproject	CEMP Given to SEPRO/EDC	Approved By SEPRO/EDC PMO:	Comment:
Solar Park project (substation and Transmission Line)	-on progress after updated EMP approval; - 2 nd CEMP was updated then resubmitted to EDC after EMP has been updated so far.	- Approved on 30 July 2021 - Approved on Jan 2023	-

3 EMP IMPLEMENTATION

3.1 General Note on the Environmental Performance

28. The following table gives the environmental impact mitigation measures in the Borrower (Project) EMP and how the project is progressing with implementing the mitigation measures for project.

29. The evidence for the compliance is through a combination of:

- c) Site visits to observe site practices;
- d) Consultation with affected people;
- e) Regular monthly environmental report from Xian Electric Engineer Co. Ltd, the contractor for the construction of substation, Transmission Line and upgrade GS6.

30. Performance monitoring is required to assess the overall performance of the EMP. A performance monitoring system is normally developed by the EA for the entire subproject. Select indicators of major components of the environment that will be affected primarily by the construction phase are showed from the mitigation and monitoring plans.

3.2 Status of EMP Implementation (Mitigation Measures)

31. This section presents the compliance status of Environmental Management and Monitoring Plans under implementation stage.






3.2.1 Compliance with the EMP during the Pre-Construction Stage




32. All the subprojects require to specify in the EMP with respect to: (i) design measures and public disclosure; (ii) project boundaries/location and change alignment; (iii) environmentally responsible procurement; (iv) allocation, staff mobilization and environmental capacity development; (v) unexploded ordnances of all construction sites; (vi) updating EMP, and reporting.

3.2.2 Compliance with the EMP during the Construction Stage

33. Through continual monitoring, instructions and guidance provided by the PIC-Environment consultant, the implementation of environmental impact mitigation measures by the construction contractors is good. There are still shortcomings however, thus compliance will be continuously monitored and improved (see the Table 9: Status of EMP Compliance below).




Table 9: Status of EMP/CEMP Compliance



EMP Requirement (Mitigation Measure)	Compliance & Description (Yes, No, Partial)	Comment or Further Explanation if Needed	Reasons for Not Full Compliance	
1. Work camps	Complied-Yes	<ul style="list-style-type: none"> Accommodation was cleared at campsite in substation. 		
				
				
2. Toilet	Complied-Yes	<ul style="list-style-type: none"> Toilet and Wash/bathing at worksite and camp site of substation were removed. 		
				
				
				



EMP Requirement (Mitigation Measure)	Compliance & Description (Yes, No, Partial)	Comment or Further Explanation if Needed	Reasons for Not Full Compliance
3. Air quality, Noise and Vibration	Complied-Yes	<ul style="list-style-type: none"> • Access road to substation was well managed to spray water to avoid dust. • The noise and vibration were not identified in the worksite. 	
			
		<ul style="list-style-type: none"> • Most of the construction site of towers were far from the residential area. 	
		<ul style="list-style-type: none"> • Then those towers already finished the activities of the construction; 	
4. Waste management	Complied-Yes	- For Tower	

EMP Requirement (Mitigation Measure)	Compliance & Description (Yes, No, Partial)	Comment or Further Explanation if Needed	Reasons for Not Full Compliance
		<ul style="list-style-type: none"> Waste of woods that had remained on site for tower # 11/02 and from tower 111-114 were removed as the pictures. 	<p>All wastes were solved by January 30, 2023.</p>



EMP Requirement (Mitigation Measure)	Compliance & Description (Yes, No, Partial)	Comment or Further Explanation if Needed	Reasons for Not Full Compliance
	Partially complied	<p>For access road</p> <ul style="list-style-type: none"> • Spoil management : There are some spoils of soil from excavation and road clearance remaining along the both sides of access road that Require to move. <div style="display: flex; justify-content: space-around;">   </div>	Spoils of soil from excavation along the both sides of access road that Require to move.
5. Birds deflectors	Complied- No	By 30 June 2023, we did not see the birds deflectors install on the ground wires from tower #114 to 107.	 <p>No birds deflectors from tower #114 to 107 by 30 June 2023.</p>

EMP Requirement (Mitigation Measure)	Compliance & Description (Yes, No, Partial)	Comment or Further Explanation if Needed		Reasons for Not Full Compliance
				
6. First Aid	Complied-Yes	<ul style="list-style-type: none"> • First aid kit 		

EMP Requirement (Mitigation Measure)	Compliance & Description (Yes, No, Partial)	Comment or Further Explanation if Needed	Reasons for Not Full Compliance
			
7. PPE	Complied-Yes	<ul style="list-style-type: none"> • Provision of workers' PPE and uniforms at the worksite of access road 	

34. Most of the EMP subplans are assessed 'Compliant' as the measures are currently implemented. For item assessed as 'Partial', measures are implemented however some minor improvement has to be made. However, solid wastes at the sites need to take more action to improve, especially the trees and some parts of trees after cut; then the spoil of soil along the road requires to remove to dispose off at the proper landfill, which approved by authorized authority

Table 10: Issues for Further Action

Issue	Required Action	Responsibility and Timing	Resolution
Old Issues from Previous Reports			
- CEMP Approval - 2 nd updated CEMP approved	PMO approval	Contractor/PIC, - 30 July 2021 - Jan 2023	Approved
Solid waste as mentioned in the Table 9 above of the Semi-Annual of Environmental Monitoring Report #3 was solved	Contractor should take action immediately	Contractor December 21, 2021	Solved
Waste of woods just remained on site for tower # 11/02 and from tower 111-114 (as mentioned in the Table 9 above).	Contractor required to clean or remove the waste, and disposed it into an approved landfill by local authority	January 30, 2023	Solved.

New Issues from This Report			
Issue	Required Action	Responsibility and Timing	Resolution
Spoil management: There are some spoils of soil from excavation and road clearance remaining along the both sides of access road that Require to move	Contractor should take action immediately	Contractor will take action by November 2023	Will update by next report

3.3 Health and Safety Performance

35. The following table gives the Health and Safety impact mitigation measures in the Borrower EMP and how the project is progressing with implementing the mitigation measures, for all subprojects.

Table 11: Status of Health and Safety Compliance

No.	Health and Safety Requirement	Compliance & Description (Yes, No, Partial)	Comment or Further Explanation if Needed	Reasons for Not Full Compliance
1	Measures against COVID-19 pandemic in terms of preventive measures	Yes	Workers are provided with Facemasks, alcohol (for spraying hand) at the project sites. All workers got 3 and 4 doses of the Covid-19 vaccine due to interviewed with site manager for period report #3 of Semi-Annual of Environment Report.	None
2	Occupational Safety: Individual worker has to be protected with helmet, jacket, facial-mask, glove, safety boots, and safety belt for working at high areas.	Yes	Workers are provided with uniform and applicable PPEs including safe vest, boot, face-mask.	None
3	First Aid Kit	yes	First Aid Kit available in site offices and worker camps	None
4	Community safety: safety barrier, traffic sign.	Yes	Yes	None

36. The health and safety measures have been implemented in order to prevent accidents and health hazards. The worker safety is ensured by providing safety PPEs (helmets, jackets, boots, face mask, safety belt etc.). Also, the hygienic conditions and facilities such as availability of sufficient water, electricity, mosquito nets, separate toilets for man and woman, etc. So far, all workers have never got an accident during works. They have also not infected the Covid-19 due to proper measures of the Covid-19 protection and majority of the workers received the covid-19 vaccine at least 3 doses. While in this period for January to June 2023 Royal Government continues to give further vaccine Covid-19 for dose number 5 and 6. So, some workers already got vaccine number 5 and some got number 6.

Table 12: Health and Safety Issues

Issue	Required Action	Responsibility and Timing	Resolution
Old Issues from Previous Reports			
PPE use at work	Improved with pictures of next report period	July-December 2023	
New Issues from This Report			

None			
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3. EMP MONITORING

3.4 Environmental Quality Monitoring

37. Environmental quality monitoring requirements are defined in the Monitoring Plan section of the EMP. The following table gives a summary of the environmental quality monitoring requirements.

Table 13: EMP Environmental Quality Monitoring Requirements

Environmental Issue Monitored	Location	Parameters/Method	Frequency	Responsible Organisation
Occupational Health and Safety (OHS) Training	Substation	OHS training log book	Monthly during civil works	Supervision by PIC/SEPRO-PMO/EDC Implementation: Contractor C-EHS
Danger and warning signs (traffic, electricity) for safety of workers and the community	Substation Access roads / road easements affected by delivery of equipment and construction material	Ocular inspection / spot checks	Weekly	Supervision by PIC/SEPROPMO/EDC Implementation: Contractor C-EHS
Information Disclosure, Participation and Consultation – Distribution of FAQs/ PIB – Community Awareness Program on safety issues / Training in Emergency Response Plan (ERPs) Grievances received / resolution, if any	Communities in and around the Substation	Consultation log book	Once during civil works	Supervision by PIC/SEPROPMO/EDC Implementation: Contractor C-EHS
Loss of habitat	Substation Transmission line alignment Temporary access roads / road easements affected by	Ocular inspection	Once before the start of site preparation and civil works, and once after	Supervision by PIC/SEPROPMO/EDC Implementation: Contractor

Environmental Issue Monitored	Location	Parameters/Method	Frequency	Responsible Organisation
	delivery of equipment and construction material		completion of civil works	C-EHS
Erosion, spoil control measures such as silt traps, planting and/or sowing soil binding grass	Substation Transmission line alignment Temporary access roads / road easements affected by delivery of equipment and construction material	Ocular inspection	Weekly, and once after completion of spoil disposal	Supervision by PIC/SEPROPMO/ED C Implementation: Contractor C-EHS
Air Quality and fugitive dust Spraying of water to opened land areas and before movement of construction vehicles	Substation Transmission line alignment Temporary access roads / road easements affected by delivery of equipment and construction material	<ul style="list-style-type: none"> Hand held/ portable air monitoring devices Ocular inspection/spot checks Parameters as CO, NO2, SO2, O3, TSP, Pb, PM10, PM2.5 need to be tested every six months in construction stage, especially at the new substation.	Bi-monthly during civil works and once after completion of civil works Every day at substation, along transmission line alignment during dry season and weekly during wet season Every semester in construction stage	Supervision by PIC/SEPROPMO/ED C Implementation: Contractor C-EHS, cooperated with third party or laboratory
Noise and vibration level	Substation Transmission line alignment Temporary access roads / road easements affected by delivery of equipment and construction material	<ul style="list-style-type: none"> Noise monitoring using hand-held/portable devices Ocular inspection/ spot checks 	Bi-monthly during civil works and once after completion of civil works (only upon commissioning of the substation) Weekly	Supervision by PIC/SEPROPMO/ED C Implementation: Contractor C-EHS, cooperated with third party or laboratory

Environmental Issue Monitored	Location	Parameters/Method	Frequency	Responsible Organisation
			The results shall be compared with result tested by tool of laboratory of MoE once in construction stage	
Smoke belching construction vehicles (emissions)	Substation Transmission line alignment Temporary access roads / road easements affected by delivery of equipment and construction material	Ocular inspection / spot checking	Weekly	Supervision by PIC/SEPROPMO/EDC Implementation: Contractor C-EHS
Qualitative surface water; Qualitative turbidity levels	Substation Transmission line alignment Temporary access roads / road easements affected by delivery of equipment and construction material	Surface water parameters pH , TDS, TSS, DO, BOD5, COD, Oil and Grease, Detergent, SO4, TN, TP, Pb, As, Cd, Fe, Hg, Total Coliform	Every 6 months for results from laboratory Continuously daily observations recorded in site diary	Supervision by PIC/SEPROPMO/EDC Implementation: Contractor C-EHS, cooperated with third party or laboratory
Quality of transformer oil	Substation	Material Safety Data Sheet (MSDSs) – compliance to IS: 1866: Code of Practice for Electrical Maintenance and Supervision of Mineral Insulating Oil in Equipment	Once	Supervision by PIC/SEPROPMO/EDC Implementation: Contractor C-EHS
Waste management	Transmission alignment Workers' camps, Sorting and Recycling area Controlled Area set up for Hazardous	Ocular inspection / spot checks Public complaint, grievance case	Weekly	Supervision by PIC/SEPROPMO/EDC Implementation: Contractor C-EHS

Environmental Issue Monitored	Location	Parameters/Method	Frequency	Responsible Organisation
	Material storage area Qualitative level of unmanaged and uncontained worker (domestic) and construction solid waste for all construction places			
All equipment used is PCB free	Substation	Certification checks	Bi-annually	Supervision by PIC/SEPROPMO/ED C Implementation: Contractor C-EHS
Occupational Health and Safety (OHS) Training	Substation	OHS training log book	Monthly during civil works	Supervision by PIC/SEPROPMO/ED C Implementation: Contractor C-EHS
Provision of sanitary facilities and wash areas, safe drinking water and garbage bins	Substation	Ocular inspection / spot checks	Once	Supervision by PIC/SEPROPMO/ED C Implementation: Contractor C-EHS
Danger and warning signs (traffic, electricity) for safety of workers and the community	Substation Access roads / road easements affected by delivery of equipment and construction material	Ocular inspection / spot checks	Weekly	Supervision by PIC/SEPROPMO/ED C Implementation: Contractor C-EHS
Information Disclosure, Participation and Consultation – Distribution of FAQs/ PIB	Communities in and around Substation	Consultation log book	Once during civil works	Supervision by PIC/SEPROPMO/ED C Implementation: Contractor

Environmental Issue Monitored	Location	Parameters/Method	Frequency	Responsible Organisation
– Community Awareness Program on safety issues / Training in ERPs Grievances received / resolution, if any				C-EHS
Orientation of Project Staff, Contractors / Sub-contractor(s), Workers, Facility Operators	Project area of influence	<ul style="list-style-type: none"> • Number of participants • Duration of briefing and orientation exercise 	Once	PIC
Maintenance of Sanitary facilities and wash areas, safe drinking water and garbage bins	Substation	Ocular inspection / spot checks	Monthly	Facility Operator / Contractor / C-EHS PIC ¹
Maintenance of water retention pond, drainage lines	Substation	Operation & Maintenance log sheet	Monthly	Facility Operator / Contractor / C-EHS PIC
Waste management collection, transport and disposal	Substation	<ul style="list-style-type: none"> • Operation & Maintenance log sheet • Spot checks 	Monthly	Facility Operator / Contractor / C-EHS PIC
Maintenance of SOP e.g. for hazardous materials and register of activities involving hazardous materials Maintenance of MSDSs	Substation	Operation & Maintenance log sheet	Monthly	Facility Operator / Contractor / C-EHS PIC
Occupational health, and safety	Substation	Number of incidents/ accidents /near-miss / fatalities	Semi-annually	Facility Operator / Contractor / C-EHS PIC
Community health and Safety Community Awareness Program on safety issues / Training in	Communities in and around the solar park	<ul style="list-style-type: none"> • Consultation • Log book 	Once at commencement of operation	Facility Operator / Contractor / C-EHS / C-GRM PIC

¹PIC role in implementation activities during operation phase will be limited to its contract duration.

Environmental Issue Monitored	Location	Parameters/Method	Frequency	Responsible Organisation
Emergency Response Plan (ERPs) Grievances received / resolution, if any				
Vegetation planting, maintenance of hedge growth and field margins, re-seeding of site	Substation, Access roads	Ocular inspection	Quarterly	Facility Operator / Contractor / C-EHS PIC
Bird /Bat collision /electrocution	In and around the Substation/solar park	<ul style="list-style-type: none"> Spot checks / observation Log sheet (carcass counts with taxonomic composition) Operation & Maintenance log sheet	Monthly	Facility Operator / Contractor / C-EHS PIC
Orientation of Project Staff, Contractors / Sub-contractor(s), Workers	Project area of influence	<ul style="list-style-type: none"> Number of participants Duration of briefing and orientation exercise	Once	PIC
Failure of transmission towers	Along the transmission line alignment	Operation & Maintenance log sheet	Monthly	Facility (power system) operator / Contractor / C-EHS
Occupational health, and safety	Along the transmission line alignment	Number of incidents/ accidents /near-miss / fatalities	Semi-annually	Facility (power system) operator / Contractor / C-EHS
Community health and Safety – Community Awareness Program on safety issues / Training in Emergency Response Plan (ERPs) Grievances received / resolution, if any	Communities located along the transmission line alignment	<ul style="list-style-type: none"> Consultation log book 	Once at commencement of operation	Facility (power system) operator / Contractor / C-EHS
Electro-magnetic field (EMF ²)	Along the transmission line alignment Substation	Hand held EMF field meters	Annually	Facility (power system) operator / Contractor / C-EHS

² EMF Electro-magnetic field

Environmental Issue Monitored	Location	Parameters/Method	Frequency	Responsible Organisation
Vegetation planting, maintenance of hedges and field margins, re-seeding of sites	Along the transmission line alignment	Ocular inspection	Quarterly	Facility (power system) operator / Contractor / C-EHS
Bird /Bat collision /electrocution	Along the transmission alignment	Spot checks / observation Log sheet (carcass counts with taxonomic composition)	Monthly	Facility (power system) operator / Contractor / C-EHS
Pilferage of cables	Along the transmission alignment	Ocular inspection Operation & Maintenance log sheet	Quarterly	Facility (power system) operator / Contractor / C-EHS

38. The above table gives information on the environmental quality monitoring to be implemented by Xian Electric Engineer Co. Ltd. This contractor just started their works at substation in April 2021, while transmission line was in the middle of June 2021. Environmental Quality Monitoring (analysis / sampling) has not been conducted by contractor, Xian Electric Engineer Co. Ltd during this reporting period; however, project has conducted analysis and sampling for air quality, noise and vibration in September 2020 for the IESIA. However, there is no any negative matter that recommended to test air or measure the noise and vibration due to the site observation for report period number 4 of semi-annual monitoring of environment from July to December 2022.

3.5 Construction Phase Affected People Consultation

39. Consultation with affected people were not conducted during the SEMR reporting Period because NO complaint was reported either verbally or recorded in the GRM records regarding environmental issues during this SEMR reporting period. PIC-Environment have only conducted consultation and interview with villagers, workers and contractor's manager.

4 COMPLAINTS, ISSUES, CORRECTIVE ACTION

4.1 Information Disclosure

40. The following table 15 gives information form on any information disclosure activities undertaken. The subproject components were introduced to the public and key stakeholders during initial consultation meetings for the transmission line designs and substation, and then again for the DED for project which included verbal and visual presentations of all components of project.
41. The series of consultative meetings for environment for the DED of the project was conducted in March and June 2021 with villagers, villages, Sangkat/communes along the ROW and Substation. Project Information Booklet (PIB) has been prepared and distributed to the communities and local authority.
42. The following table 15 gives information form on any information disclosure activities undertaken before construction works started.

Table 14: Form for Information Disclosure

To PMO/SEPRO/EDC/ Reason for Information	Disclosure Date	Method of Disclosure	Outcome / Results

4.2 Grievance Redress Mechanism

43. Due to the procedures defined for grievance redress in EMP are:

- A project specific GRM is established as part of this EMP to receive and manage any public concerns or issues that may arise due to the project. The GRM comprises: (i) a set of clear procedures developed by the PMO to receive, record and address any concerns which are raised; (ii) specific contact details for individuals at the PMO / SEPRO and contractors.
- The GRC is expected to: (i) resolve issues on land acquisition (if any), compensation to temporary damages to crops, orchards, trees and other use of land such as temporary / permanent areas for transmission towers / ROW; (ii) resolve issues on dust, noise, vibration, construction related nuisances to APs, households or public; (iii) convene once a month to review complaints lodged (if any); (iv) record the grievances and resolve the issues within the stipulated time from the date the grievance was filed; and (v) report to the complainant(s)/APs the status of grievance resolution and the decisions made or action taken. All contractors including contractor appointed GRM focal person ("C-GRM") and work staff will be briefed by the PIC on GRM.
- The grievance redress process applies to environmental issues and includes four steps may be elevated to the ADB as a last resort, as follows:

Step 1

Any complaints by an AP / complainant can be presented to the Contractor, commune council via village or commune chief, either verbally in person or in writing. The Contractor, village or commune chief will be obliged to provide immediate written receipt of the complaint and take it forward in a written format and share with PMO. The contractor will resolve the issue within one week through negotiation.

Step 2

If or when the AP / complainant is not satisfied with the action or decision of the contractor, the AP / complainant will take the issue to PMO / SEPRO via the commune council. In all cases, the grievances will be recorded in writing and then forwarded to the PMO/SEPRO. SEPRO will have 15 days to resolve the complaint through negotiation. If the issue is not handled within 15 days, or if the complainant is not satisfied with the result, he/she can bring the issue to the District office.

Step 3

The district office has 15 days to negotiate the complaint and bring it into a resolution. If the complaint cannot be resolved in a way that is satisfactory to all parties, the District office will bring the issue to the provincial GRC.

Step 4

The Provincial GRC will meet the AP/ complainant and try to resolve the issue. Within 30 days of the submission of the complaint to the GRC, it has to take a decision and inform in written both the AP/ complainant and PMO / SEPRO of the decision

44. Based on site inspection and the contractor's monthly progress reports from Jan-June 2022, there were no complaint from villagers.

45. Summary:

- Number of new grievances, if any, since last monitoring period: 0
- Number of grievances resolved: not applicable
- Number of outstanding grievances: N/A

Table 15: Type of grievances by the relevant stakeholders within the project areas

Type of Grievance	Details (Date, person, address, contact details, etc.)	Required Action, Responsibility and Timing	Resolution
Old Issues from Previous Reports			
None			
New Issues from This Report			
None			

5 CONCLUSIONS & RECOMMENDATIONS

5.1 Conclusions

46. In general, the implementation of environmental management measures during pre-construction and construction phases as in the EMP are currently taken into account and assessed to be compliant. Environmental Safeguard document such as the IEE and EMP has been updated based on the DED documents. Environmental mitigation measures have progressed and maintained momentum, recognizing the implementation of the Project in line with the Environmental Safeguard’s requirements. Contractor/subcontractors are required to mitigate environmental impact and the monitoring is being conducted by environmental consultants of PIC and PMO/SEPRO of EDC. For this period (from January– June 2023), the GS6 substation, the transmission line and access road are completed 60% (in total of all components). The progress of the Solar Park and GS6 substation, the transmission line and access road are completed 90% (in average of all components). Details of the construction progress are: (i) National Solar Park Substation is completed 98%; (ii) GS6 substation is completed 98%; (iii) Transmission line is completed 100%; and (iv) access road including the bridge is completed 60% (bridge 40%).
47. As showed in the Table 9 above, the contractor provided PPEs including hard hat, jacket, face-mask and boot including safety belt for working at height to all worker and also found the first aid kit available at the construction and campsite. But there were some workers did not use the PPE well that needs to teach them before starting the work at site
48. COVID 19 measures implemented in the project site. Contractor provided a face-mask and alcohol to workers and all workers got 3 and 4 doses of the Covid-19 vaccine due to interview with site manager for period report #5 of Semi-Annual of Environment Report. No worker infected Covid-19 during this reporting period. While in this period for January to June 2023 Royal Government continues to give further vaccine Covid-19 for dose number 5 and 6. So, some workers already got vaccine number 5 and some got number 6.
- 49.

5.2 Recommendation and next activities

50. Active areas for improvement and continuation of good practice over the next six months include the following:

- Overall improvement of contractor's performance needs to be monitored.
- Work further with the contractor for environmental and safety work for access road, and the bird deflector to minimize risks to birds.
- Ensuring public awareness of the GRM is provided to all affected people, community and local authority. Ensuring a training on EMP and GRM, including a monitoring system, will be provided as planned. Ensuring the simple Environmental GRM signboard with contact details is disclosed at all active construction and worker's campsites.
- The PIC's environmental consultants supervise the monitoring of implementing mitigation measures during this construction stage.
- Ensuring that the contractor complies with CEMP and all safety training requirements for all construction sites to ensure workers are equipped with the knowledge and PPE to safely undertake the work.
- Ensuring contractor carries out the good practice of Covid-19 following the MoH's and EMP guidance;
- Ensuring safety signs in areas of public access in order to protect community health and safety.
- For measurement of Covid-19, contractor shall try the best to explain all workers to understand and let them inform to site engineer immediately whenever they have the symptoms of Covid-19.
- Submitting next SEMR-July- December 2023 to ADB by 15 January 2024.

6 Annex:

Annex 1: Approval License from MoE



ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

សូមគោរពជូន
ឯកឧត្តមរដ្ឋមន្ត្រីប្រតិភូអមនាយករដ្ឋមន្ត្រី
អនុនាយកអគ្គិសនីកម្ពុជា

កម្មវត្ថុ ៖ ការណែនាំ និងផ្តល់យោបល់លើរបាយការណ៍វាយតម្លៃហេតុប៉ះពាល់បរិស្ថាន និងសង្គមដំបូង (IESIA) សម្រាប់គម្រោងខ្សែបញ្ជូនអគ្គិសនីតង់ស្យុង ២៣០គីឡូវ៉ុល ពីអនុស្តានីយអគ្គិសនីខាងជើងរាជធានីភ្នំពេញ (GS6) ទៅអនុស្តានីយអគ្គិសនីថាមពលព្រះអាទិត្យ នៅស្រុកទឹកផុស ខេត្តកំពង់ឆ្នាំង នៅខេត្តកំពង់ស្ពឺ និងខេត្តកំពង់ឆ្នាំង របស់អគ្គិសនីកម្ពុជា

យោង ៖

- ព្រះរាជក្រមលេខ នស/រកម/១២៩៦/៣៦ ចុះថ្ងៃទី២៤ ខែធ្នូ ឆ្នាំ១៩៩៦ ដែលប្រកាសឱ្យប្រើច្បាប់ស្តីពីកិច្ចការពារបរិស្ថាន និងការគ្រប់គ្រងធនធានធម្មជាតិ
- អនុក្រឹត្យលេខ៧២ អនក្រ.បក ចុះថ្ងៃទី១១ ខែសីហា ឆ្នាំ១៩៩៩ ស្តីពីកិច្ចដំណើរការវាយតម្លៃហេតុប៉ះពាល់បរិស្ថាន
- លិខិតលេខ៦៦៦ សជណ ប.ស្ត ចុះថ្ងៃទី១៩ ខែឧសភា ឆ្នាំ២០២១ របស់ក្រសួងបរិស្ថាន
- លិខិតលេខ៥៥៤៦ លស.អក.ផយត ចុះថ្ងៃទី១៨ ខែសីហា ឆ្នាំ២០២១ របស់អគ្គិសនីកម្ពុជា
- លិខិតលេខ០៩៤១ លស.អក.ផយក ចុះថ្ងៃទី៨ ខែកុម្ភៈ ឆ្នាំ២០២១ របស់អគ្គិសនីកម្ពុជា
- លិខិតលេខ៤៦៤៩ លស.អក.ផយក ចុះថ្ងៃទី១៩ ខែវិច្ឆិកា ឆ្នាំ២០២០ របស់អគ្គិសនីកម្ពុជា
- លិខិតលេខ១៨៦៤ I.ហ.ប.ស្ត ចុះថ្ងៃទី៣០ ខែធ្នូ ឆ្នាំ២០២០ របស់នាយកដ្ឋានវាយតម្លៃហេតុប៉ះពាល់បរិស្ថាននៃក្រសួងបរិស្ថាន

សេចក្តីដូចមានចែងក្នុងកម្មវត្ថុ និងយោងខាងលើ ខ្ញុំសូមគោរពជម្រាបជូន ឯកឧត្តមរដ្ឋមន្ត្រីប្រតិភូអមនាយករដ្ឋមន្ត្រី មេត្តាជ្រាបថា ក្រសួងបរិស្ថានឯកភាពលើរបាយការណ៍វាយតម្លៃហេតុប៉ះពាល់បរិស្ថាន និងសង្គមដំបូង (IESIA) សម្រាប់គម្រោងខ្សែបញ្ជូនអគ្គិសនីតង់ស្យុង ២៣០គីឡូវ៉ុល ពីអនុស្តានីយអគ្គិសនីខាងជើងរាជធានីភ្នំពេញ (GS6) ទៅអនុស្តានីយអគ្គិសនីថាមពលព្រះអាទិត្យ នៅស្រុកទឹកផុស ខេត្តកំពង់ឆ្នាំង មានទីតាំងស្ថិតនៅក្នុងភូមិសាស្ត្រខេត្តកំពង់ស្ពឺ និងខេត្តកំពង់ឆ្នាំង របស់អគ្គិសនីកម្ពុជា (ម្ចាស់គម្រោង) ដោយម្ចាស់គម្រោងត្រូវគោរពតាមកិច្ចសន្យាការពារបរិស្ថានលេខ៦០១១ អក.ផយត ចុះថ្ងៃទី៧ ខែកញ្ញា ឆ្នាំ២០២១ របស់អគ្គិសនីកម្ពុជា។

អាស្រ័យដូចបានគោរពជម្រាបជូនខាងលើ សូម ឯកឧត្តមរដ្ឋមន្ត្រីប្រតិភូអមនាយករដ្ឋមន្ត្រី មេត្តាជ្រាប និងចាត់ចែងដោយក្តីអនុគ្រោះ។

សូម ឯកឧត្តមរដ្ឋមន្ត្រីប្រតិភូអមនាយករដ្ឋមន្ត្រី មេត្តាទទួលនូវសេចក្តីគោរពពីខ្ញុំ។

ថ្ងៃ: ១២/១០/២០២១ ខែ: ១០/២០២១ ឆ្នាំ: ឆ្នាំ ក្រសួង ប.ស. ២៤៦៤
រាជធានីភ្នំពេញ ថ្ងៃទី ១៦ ខែ កញ្ញា ឆ្នាំ ២០២១

ឈ្មោះ:

- ទីស្តីការគណៈរដ្ឋមន្ត្រី
- ប្រធានសម្ព័ន្ធទិស្ត ខិតិណ្ឌូ
- ក្រសួងរៀបចំដែនដី នគរូបនីយកម្ម និងសំណង់
- ក្រសួងសាធារណៈ និងដឹកជញ្ជូន
- ក្រសួង និងថវិកា
- ក្រសួងសិប្បកម្ម រុក្ខាប្រមាញ់ និងនេសាទ
- អង្គការសហប្រជាជាតិ និងសហគមន៍
- អង្គការសហប្រជាជាតិ និងសហគមន៍
- ឯកសារ កាលប្បវត្តិ

ឯកឧត្តមរដ្ឋមន្ត្រី
អនុនាយកអគ្គិសនីកម្ពុជា

ស៊ីហ្វូ - វណ្ណារ៉ាណូ

Annex 2: Bird Deflector approved by ADB

KINGDOM OF CAMBODIA

NATION RELIGION KING



ELECTRICITÉ DU CAMBODGE

Ref: 1956 EDC CAPD

Phnom Penh, Date: 08 April 2022

To : XIAN ELECTRIC ENGINEERING CO., LTD (XD)
Attention : **Mr. Liu Qi**
Block C, No.7 Tangxing Road, Xi'an, R.P. of China
Tel: +86 29 88312666; Fax: +86 29 88832200

Project : Solar Park Infrastructure Procurement of Plant - Design, Supply, and Installation
Contract No. ADB-EDC-EPC-SOLARPARK2020 (Dated on March 04th, 2018)
ADB Loan N°. 3789-CAM (COL)

Subject : **Bird deflectors confirmed by ADB**

Dear Mr. Lui Qi,

This letter refers to the ADB letter, dated 16 March, 2022 and ADB Quarterly Progress Meeting on 04 April, 2022 attended by the representatives of ADB, EDC, PIC and the Contractor.

According to the ADB letter including the drawing and route map attached, the Bird Deflectors shall be placed from Tower 12/03 to Tower 11/05.

EDC recommended the Contractor to work with the PIC to make a schedule about this Bird deflectors work to achieve the completion work ready to energize within September, 2022. The schedule shall be detailed about the detail design, submission of manufacturer technical specifications of equipment, procurement and installation during the stringing work from the Tower 12/03 to Tower 11/05.

Your urgent action for this project would be highly appreciated.

Sincerely yours,



Dr. Praling Chulasa

Deputy Managing Director, EDC

Cc: - HE. Keo Rottanak Minister Attached to the Prime Minister. Managing Director of EDC
- ADB
- PIC Newjcc/CEC File

Electricité du Cambodge: # 2, St. Preah Yukunthor, Wat Phnom District, Khan Daun Penh, Phnom Penh

Phone/ Fax: (855) 23 426 018

Date: April 6, 2022

Ref. NSP/PIC/EDC/248

Dr. Praing Chulasa
Deputy Managing Director
ELECTRICITE DU CAMBODGE

Project: National Solar Park Project for the Transmission line and Substation
in the province of Kampong Chhnang, Kampong Speu,
ADB Loan N° 3789 -CAM (COL)

Subject: **Bird deflectors confirmed by ADB**

Dear Dr. Praing Chulasa,

We received the confirmation letter from ADB, dated 16 March, 2022 attached.

According to the ADB letter and the ADB Quarterly Progress Meeting on 04 April, 2022 attended by the representatives of ADB, EDC, PIC and the Contractor, PIC proposed EDC to send a letter to the Contractor to work with the PIC about this Bird deflectors work for making a schedule to achieve the completion work ready to energize within September, 2022.

The schedule shall be detailed about the detail design, submission of manufacturer technical specifications of equipment, procurement and installation during the stringing work from the Tower 12/03 to Tower 11/05.

Sincerely yours,



Seng Thaug Pascal
Deputy PIC Project Manager

c.c.: - Mr. Chhim Man, Director, CPPD
- Mr. Kong Puthy, Director of Transmission Dpt
- Mr. Rann Seihakkiry, Deputy Director of CPPD
- Mr. Im Songtech, Deputy Director of CPPD
- Mr. Sor Pengkhy, Head of PMO1 (Project Manager)
- Chief of Technical Office

16 March 2022

Dr. Praing Chulasa
Deputy Managing Director, Electricite du Cambodge
Project Director, National Solar Park Project
Royal Government of Cambodia

Dear Dr. Chulasa:

Subject: Loan 3789-CAM (COL)/Loan 8357-CAM (SCF)/Grant 0645-CAM (SCF): National Solar Park Project – Bird Deflectors

I refer to the numerous discussions over the last six months over the placement of bird deflectors on the transmission lines around the National Solar Park site. We have now finalized our deliberations and confirm that Bird Deflectors be placed from tower **12/03 to tower 11/05**. The bird deflectors should be of the nature and standard previously advised by ADB, that is the type that move in the breeze. The map of the area is attached for your information and reference.

The final Environment Management Plan and Initial Environment Examination remain outstanding due to resolution on the placement of bird deflectors and alignment of the access road. The incomplete Environment Management Plan is one item keeping the project designation as "for attention". If the road access alignment is not yet resolved, I recommend EDC to update the Environment Management Plan and Initial Environment Examination with details on the bird deflectors and submit them to ADB for approval and posting. The Environment Management Plan can be updated again once the road alignment is resolved.

Your staff may communicate with me directly at email: agill@adb.org should they need any clarification.

Thank you for your cooperation.

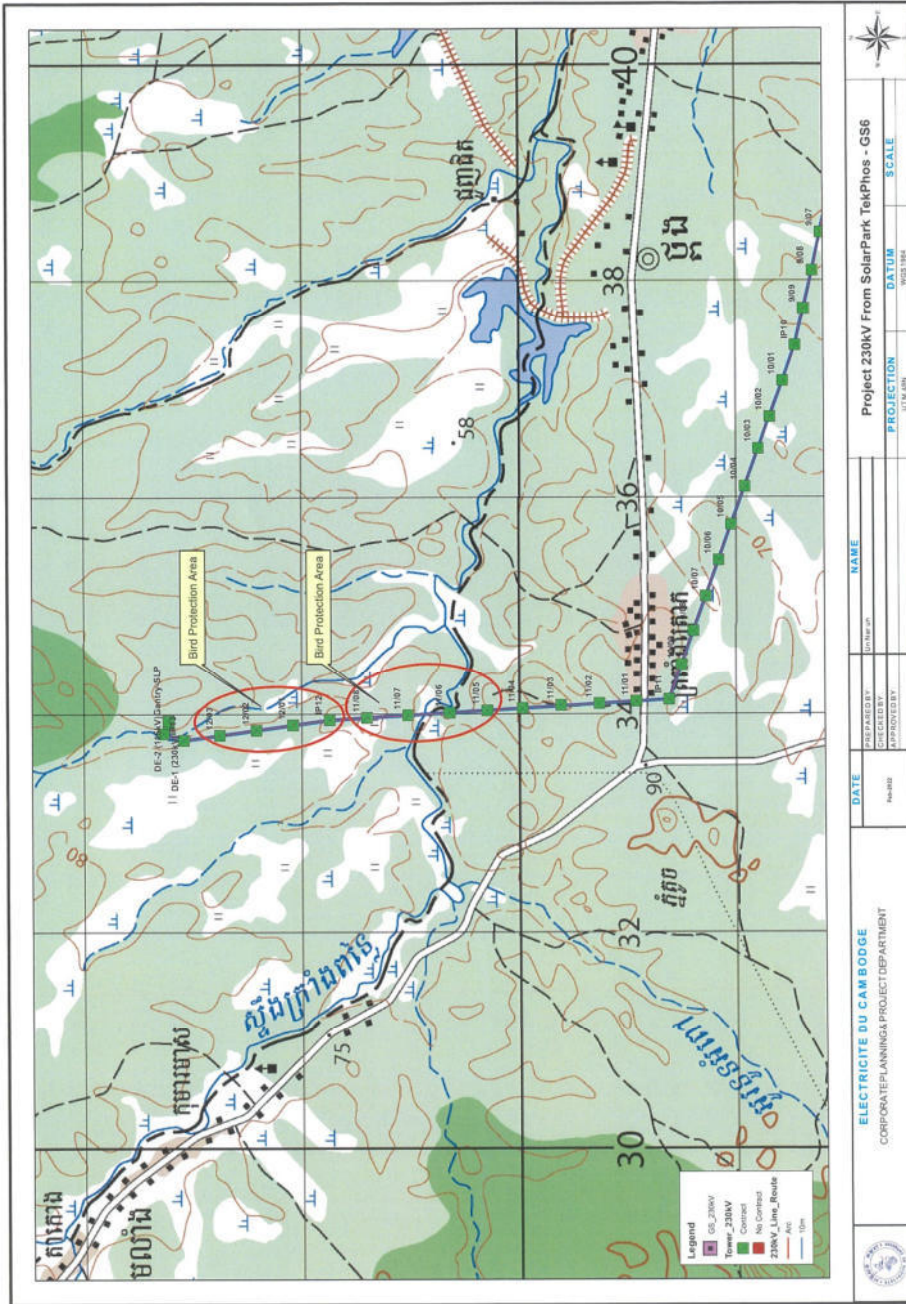
Sincerely

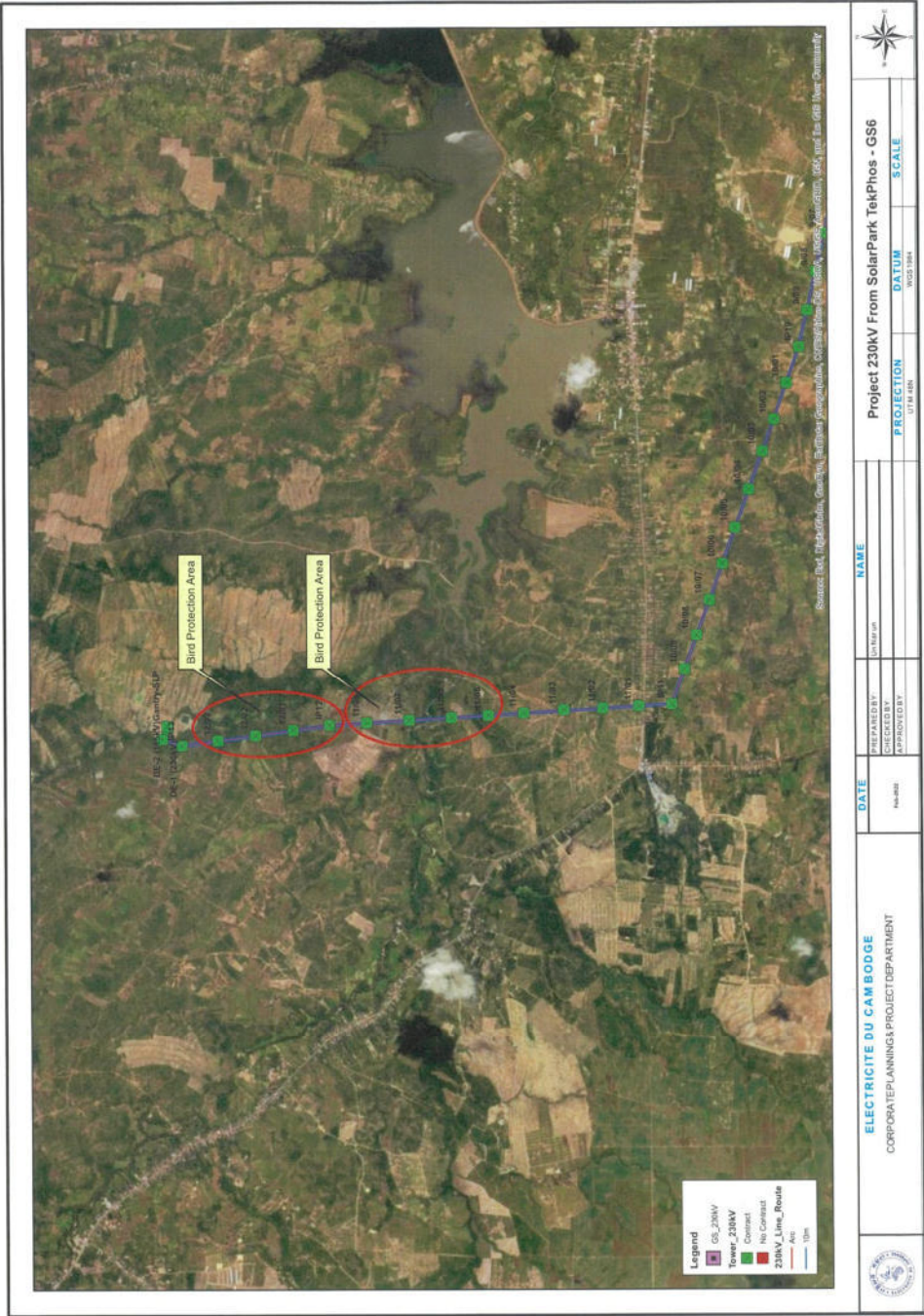


Anthony Gill
Acting Country Director

cc: Mr. Chhim Man/Mr. Rann Seihakkiry/Mr. Sor Pengkhy/Mr. Mao Visal/Mr. Nong Sovanneth, EDC
G. O'Farrell/S. Ouk/S. Sour/T. Lun/M. Ouk, CARM

ASIAN DEVELOPMENT BANK
CAMBODIA RESIDENT MISSION
29 Suramarit Blvd. (268/19)
Sangkat Chaktomuk, Khan Daun Penh
P.O. Box 2436, Phnom Penh, Cambodia
Tel +855 23 973 200
Fax +855 973 500
www.adb.org/cambodia





Annex 3: General view of the site of Transmission Line 230kV

1. CIVIL WORK at Solar Park Substation

- Civil and building works of the Solar Park Substation have almost been completed.



- A minor work such as gravel has been placing and spreading on the base layer.



May 2023

2. CIVIL WORK OF ACCESS ROAD

- Subgrade is being constructed in the north access road.



Base course and subbase course are being constructed in the south access road.



- Location of the bridge was confirmed at the site. The left and right photographs show locations at each end of the bridge.



- Base course has almost been completed and however works of slope and drainage have not been started.



Annex 4: Conditions at site



Site inspection by EDC and PIC
19 May 2023



First Aid Kit



Spraying water
(Picture 19 May 2023)



Site inspectors by PMO1 and PIC
(23 June 2023)



Pictures of safety belt for working at height including GRM signboard (Picture in July 2022)





Annex 5: Summary Table of Potential Environmental Impact

Summary of Potential Environmental Impact

Pre-construction Phase	
(i) Substation	<ol style="list-style-type: none"> 1) Land acquisition and resettlement, addressed by Resettlement Action Plan (RAP). 2) Land clearing. 3) Detailed Engineering Design (DED)-(Minimize negative environmental impacts)
(ii) Transmission line	<ol style="list-style-type: none"> 1) Land acquisition and resettlement, addressed by RAP. 2) Land clearing. 3) DED (Minimize negative environmental impacts)
Construction Phase	
(i) Substation	<ol style="list-style-type: none"> 1) Civil works (e.g., dust, air pollution, noise, solid & liquid waste, erosion, sedimentation, local flooding, land & surface water pollution). 2) Environment, Health and Safety (e.g., no safety vest, no traffic sign, no first aid kit, no PPE for workers use, and bad living environment, unsafe camp site, no clean water, and no bathroom or toilet for workers). 3) Civil work disturbance (e.g., increased traffic, reduced access, disrupted business and community activity, social issues from migrant workers, worker and public accidents). 4) Potential impacts including accident, disease transmission, bad living environment and other risk to workers and mechanical during construction.
(ii) Transmission line	<ol style="list-style-type: none"> 1) Increase in dust emissions from site construction, noise arising from construction of the site facilities. 2) Environment, Health and Safety (e.g., no safe belt, no safety vest, no traffic sign, no first aid kit, no PPE for workers use, and bad living environment, unsafe camp site, no clean water, and no bathroom or toilet for workers). 3) Worker camp (bad living environment, no safe clean water, illegal waste disposal, no waste bin, no sanitary toilet) 4) Civil work disturbance (e.g., increased traffic, reduced access, disrupted business and community activity, social issues from migrant workers, worker and public accidents). 5) Potential impacts including accident, disease transmission, illegal waste disposal and other risk to workers.
Post-Construction/Operation Phase	
(i) Substation	<ol style="list-style-type: none"> 1) Poor Maintenance and management the system 2) No or insufficient training program on maintenance and operation 3) Environment, Health and Safety (EHS): Potential impacts including accident, disease transmission, bad living environment and other risk to workers, technician and operator during operation.
(ii) Transmission line	

- 1) Environment, Health and Safety (EHS): cause of accident to local people and staffs because of miss of news about dangers of project and other risk to workers, technician and operator during operation.
- 2) Issues on maintenance and operation if insufficient training program on maintenance, operation and safety to workers and operational staffs, particularly working at high areas.