



**Verified Carbon
Standard**

RENEWABLE SOLAR POWER PROJECT BY ADANI



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Summary:

Verification purpose: The main purpose of this project activity is to generate clean form of electricity through Solar power source. Adani Renewable Energy (RJ) Limited has set up a 200 MW solar power project in the state of Rajasthan of India. The electricity generated from the project activity is supplied to the Indian electricity grid as per Power Purchase Agreement signed with the Adani Renewable Energy (RJ) Limited.

Start date of the project activity is 02/08/2019. This is the day on which 100 MW solar project out of total 200 MW was commissioned and next 100 MW commissioned on 21/08/2019. An undertaking has been submitted by PP for double counting confirming that no GHG reduction will be claimed in any other GHG mechanism for current monitoring period. Project activity undergoes continued operation and no major breakdown had taken place except routine maintenance.

This is 2nd monitoring under VCS and covers this activity from 01/12/2019 to 31/12/2020 (inclusive both days). During the Current Monitoring Period the project activity has supplied 529,161.67 MWh of electricity to the national grid, and thus contributing to the GHG reductions 495,718 tCO_{2e}.

Thus, VCS crediting period is of 10 years. The start date of crediting period is 02/08/2019 and 01/08/2029 is the end date of the crediting period.

A risk-based approach has been followed to perform this verification activity. In the course of verification, 05 Corrective Action requests (CAR), 01 Clarification Requests (CLs) and 00 Forward action requests (FARs) were raised and successfully closed. The review of the Monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and PP have provided VVB with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by “EKI Energy Service Limited” to perform the 2nd periodic verification of the “Renewable Solar Power Project by Adani” under VCS standard version 4.1 and guideline version 4.0. The objective of this verification activity is to have an independent third party for the assessment of the project design, monitoring report and Final Verification report and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. In particular;

- the project's baseline is assessed against “Grid-connected electricity generation from renewable sources ACM0002- Version 19.0”

- the project's monitoring plan is assessed against "Grid-connected electricity generation from renewable sources ACM0002- Version 19.0"
- the projects compliance with, the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS guideline and standard, version 4.1
- CDM Validation and Verification Standard for project activities, version 02.0
- CDM Project Standard for project activities, version 02.0
- CDM project cycle procedure for project activities, version 02.0
- VCS standard, version 4.1
- VCS guideline, version 4.0

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of verified emission reductions (VERs).

The scope of the verification is the independent and objective review of the monitoring report (MR). The MR is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The verification was based on the guidance given in the CDM Validation and Verification Standard for the project activities, version 02.0, review against registered PD and Final Validation report, CDM Project Standard for project activities, version 02.0; CDM Project Cycle Procedure for project activities, version 02.0 and VCS standard version 4.1 and VCS program guideline.

The assessment team has employed a risk-based approach to assess the completeness and accuracy of the claims and conservativeness of the assumptions in the MR. The main focus of the assessment team is to identify the significant risks for the project implementation and the generation of VERs. The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring report combined.

The only purpose of the verification is its usage during the issuance process as part of the VCS project cycle. Therefore, LGAI Technological Center S.A. (Applus+ Certification) can't be held liable by any party for decisions made or not made based on the verification opinion, which will go beyond that purpose.

The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for site visit or document verifications. The entire documents checked/plant verification conducted to arrive at positive verification conclusions.

1 INTRODUCTION	6
1.1 Objective.....	6
1.2 Scope and Criteria	6
1.3 Level of Assurance.....	7
1.4 Summary Description of the Project	7
2 Verification Process.....	8
2.1 Method and Criteria.....	8
2.2 Document Review	10
2.3 Interviews.....	10
2.4 Site Inspections.....	12
2.5 Resolution of Findings	12
2.5.1 Forward Action Requests.....	13
2.6 Eligibility for Validation Activities	13
3 Validation Findings.....	14
3.1 Participation under Other GHG Programs	14
3.2 Methodology Deviations.....	14
3.3 Project Description Deviations.....	14
3.4 Grouped Project	14
4 Verification Findings.....	15
4.1 Project Implementation Status	15
4.2 Safeguards	18
4.2.1 No Net Harm	18
4.2.2 Local Stakeholder Consultation.....	20
4.3 AFOLU-Specific Safeguards	20
4.4 Accuracy of GHG Emission Reduction and Removal Calculations	20
4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals	22
4.6 Non-Permanence Risk Analysis.....	23
5 Verification CONCLUSIONS.....	23
APPENDIX I: DOCUMENTS REVIEWED DURING VERIFICATION	25
APPENDIX 2: corrective action requests, Clarification requests AND FORWARD action requests (CAR/CL/FAR)	27

APPENDIX 3: Competence of team members and technical reviewers.....	30
APPENDIX 4: Abbreviations.....	33
APPENDIX 5: Calibration details	34

1 INTRODUCTION

1.1 Objective

LGAI Technological Center S.A. (Hereinafter referred as Applus+ Certification) has been appointed by “EKI Energy Service Limited” to perform the 2nd periodic verification of the project entitled “Renewable Solar Power Project by Adani” under VCS standard version 4.1 and guideline version 4.0. The objective of this verification activity is to have an independent third party for the assessment of the project design, monitoring report and final verification report and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. In particular;

- the project's baseline is assessed against “Grid-connected electricity generation from renewable sources ACM0002- Version 19.0”
- the project's monitoring plan is assessed against “Grid-connected electricity generation from renewable sources ACM0002- Version 19.0”
- the project's compliance with the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS guideline version 4.0 and standard version 4.1
- CDM Validation and Verification Standard for project activities, version 02.0
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- CDM project cycle procedure for project activities, version 02.0
- VCS standard, version 4.1
- VCS guideline, version 4.0

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of estimated verified emission reductions (VERs).

1.2 Scope and Criteria

The scope is defined as an independent and objective review of the Monitoring report (MR) prepared as per the registered PD and registered approved methodology Grid-connected electricity generation from renewable sources ACM0002- Version 19.0. The MR is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board and VCS standard version 4.1 and guideline version 4.0, including the approved baseline and monitoring methodology Grid-connected electricity generation from renewable sources ACM0002- Version 19.0. The verification was based on the requirements in the CDM validation and verification standard for project activities, Version 02.0, CDM Project

Standard for project activities, version 02.0, CDM project cycle procedure for project activities, version 02.0 and VCS program guideline and standard version 4.1

The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the Monitoring report. In line with Guidelines for Application of materiality in verifications, the verification team has conducted a complete verification of all the information presented in the monitoring report and data monitored as presented in the emission reduction calculation spread sheet. It invoices follows the paper trail back to the raw data such as meter reading records and invoices. There are no material errors, overestimation of ER, omission or misstatement. The verification team has reviewed all the documents like commissioning certificates, Joint Balance Sheet, invoices etc.

1.3 Level of Assurance

The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. The entire documents checked/Power plant verification conducted to arrive at positive verification conclusions

1.4 Summary Description of the Project

The main purpose of this project activity is to generate clean form of electricity through Solar power source. Adani Renewable Energy (RJ) Limited has set up 200 MW of solar power project in Rajasthan, India. The electricity generated from the project activity is supplied to Indian electricity grid. The project activity was commissioned on 02/08/2019. The Power house of the project activity lies between Lat. 27° 23' 51.20" N and Long. 72° 13' 47.59" E.

The Project activity is a Solar power energy, a renewable energy generation and the electricity generated by the project activity is exported to the Indian electricity grid. The project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The PP has entered into long term power purchase agreement with the Maharashtra State Electricity Distribution Co. Ltd. and Adani Renewable Energy (RJ). The electricity generated by the project activity is supplied to the Indian electricity grid.

During the Current Monitoring Period from 01/12/2019 to 31/12/2020 (First and last date included) the project activity has supplied 529,161 MWh of electricity, and thus contributing to the GHG reductions 495,718 tCO₂e.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification Process: The project assessment is based on the Clean Development Mechanism Validation and Verification Standard for project activities, version 02.0 and VCS standard version 4.1 and guideline version 4.0 and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the VCS project activity are appointed.

Once the project is received by the assessment team, the members of the assessment team carried out:

- I. A desk review of the monitoring Report against the registered PD;
- II. Follow-up interviews with project participant;
- III. The resolution of outstanding issues and the issuance of the final verification report and opinion.

The prepared verification report and other supporting documents then undergo an internal quality control at the HQ (Accredited office) before being submitted to the VCS executive board.

In order to ensure transparency, assumptions must be clear and stated explicitly and background material must also be referenced. LGAI Technological Center, S.A. (Applus+ Certification) has developed a specific checklist customized for the project. The checklist demonstrates, in a transparent manner, the project criteria (requirements), discussion on each criterion by the assessment team, and the results from verifying the identified criteria.

Appointment of the assessment team

According to the sectoral scope / technical area and experience in the sectoral or national business environment, LGAI Technological Center S.A. (Applus+ Certification) has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of LGAI Technological Center S.A. (Applus+ Certification).

The composition of audit team shall be approved by the LGAI Technological Center S.A. (Applus+ Certification) ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience
Pankaj Kumar	LA/TE	YES	YES	NA	YES
Mr. Simon Shen	TR	YES	YES	NA	NA

The complete list of CVs is included as Appendix 3 of this report.

Document review

The Monitoring Report version 1 submitted by the PP was reviewed against the approved methodology, registered PD, final validation report and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources has been done. A complete list of all documents and evidence material reviewed is included in this report below in appendix 1.

Follow-up interviews

A site visit was conducted by LGAI Technological Center S.A. (Applus+ Certification) who performed interviews, telephone conferences with project stakeholders to confirm selected information and to resolve issues identified in the document review. The detail is provided in this report in the below sections.

Resolution of Clarification and Corrective Action Request

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for Applus+ Certification positive conclusion on the Monitoring report. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the verification process, the concerns raised and responses given are summarized below in the Appendix 2.

The final MR Version 02 submitted by PP on 22/04/2021 serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country

Internal quality control

As final step of a verification of the final documentation including the final verification report and the checklist have to undergo an internal quality control by the technical review committee, i.e. each report has to be finally approved either by the head of the technical review committee

or the deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one to avoid any conflict of Interest.

After confirmation of the project owners the positive verification opinion and relevant documents are submitted to the VCS secretariat through the VCS web-platform.

2.2 Document Review

The details of the document observed during the verification process are listed below in appendix 1 of this report.

2.3 Interviews

A site visit was conducted for the project activity on 13/04/2021 and 14/04/2021.

Technical details & metering/monitoring arrangement verified through onsite photographs/name plates and calibration certificates shared by PP. All the documents were cross checked to ensure conservative estimation of emission reduction.

During the site visit, the PP representatives were questioned about the implementation of the project activity. Several topics like the verification of commissioning date of meters, the generation, recording, and monitoring of the data and the error accountability were discussed. To cross check the information provided by PP, various documents like technical specifications, commissioning certificates, PPA, JMR sheets, invoice, calibration certificates, etc. were also verified. The names of the persons interviewed during remote audit through Skype/9/telephonic interview is given below;

Organization	Name of Persons/Designation	Topics discussed	Team Member
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Organization	Name of Persons/Designation	Topics discussed	Team Member
M/s Adani Green Energy Limited	Mr. Alpesh Gedia	Project activity implementation Operation, Calibration, O&M practices, JMR etc. LSC mechanism Mechanical maintenance Electrical maintenance Project description Invoicing practices	Pankaj Kumar
EKI Energy	Ms. Ishani Sinha, Consultant	MR, ER calculations etc.	
	Mr. Supratik Dutta, Consultant	MR, ER calculations etc.	

2.4 Site Inspections

Duration of Site visit: 13/04/2021-14/04/2021				
No.	Activity performed on-site	Site location	Date	Team member
1.	Assessment team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring. Assessment team also checked that whether the monitoring plan as described in the VCS PD is actually practised onsite. Also assessment team checked any change in host country criteria which may affect the baseline of the project activity.	Rajasthan	13/04/2021-14/04/2021	Pankaj Kumar

2.5 Resolution of Findings

The objective of this phase of the verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for LGAI Technological Center S.A. (Applus+ Certification)'s positive conclusion on the project design and Monitoring report. The Corrective Action Requests and Clarification Requests raised by LGAI Technological Center S.A. (Applus+ Certification) were resolved during communications between the Client and LGAI Technological Center S.A. (Applus+ Certification) to guarantee the transparency of the validation process, the concerns raised and responses given are summarized below in the appendix 2.

The final MR Version 02 submitted by project owners on 22/04/2021 serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Project design document and Monitoring report	01	01	00
Description of project activity	00	00	00
Application of selected baseline and monitoring methodology and selected standardized baseline			
- Applicability of methodology and standardized baseline	00	00	00
- Deviation from methodology	00	00	00
- Clarification on applicability of methodology, tool and/or standardized baseline	00	00	00
Project boundary	00	00	00
Establishment and description of baseline scenario	00	00	00

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Demonstration of additionality	00	00	00
Emission reductions	00	00	00
Calibration details	00	01	
Monitoring plan	00	00	00
No Net harm assessment	00	00	
Local stakeholder consultation	00	01	
Others (please specify)- Declaration of no double counting - Documents of Consents from State Pollution control Board	00	02	00
Total	01	05	00

The list of findings and their resolution is presented in appendix 2 of this report.

2.5.1 Forward Action Requests

This is 2nd periodic verification of the project activity and no FAR was raised from previous and during this verification process.

2.6 Eligibility for Validation Activities

This section is not applicable for present verification, as Applus+ Certification holds the accreditation for Validation of projects under this Sectoral Scope.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project activity was registered under VERRA (<https://registry.verra.org/app/projectDetail/VCS/2043>) and VERs were issued from the monitoring period of 02/08/2019 to 30/11/2019 under VCS mechanism. As per MR and undertaking provided, PP would not consider the credit from any other mechanism for the current monitoring plan. The undertaking is provided to confirm that there is no any double accounting for current monitoring period. Further, Assessment team confirms that the project activity is not participating in any other form of environmental credits.

3.2 Methodology Deviations

The project activity used Grid-connected electricity generation from renewable source ACM0002- Version 19.0 which is as per the registered VCS PD and thus no deviation is sought regarding the methodology. The project complies with all the requirement of the methodology and thus deviation to the methodology is not a requirement for the present project activity.

3.3 Project Description Deviations

VVB Confirmed that there was no deviation in the project description and project description is same as approved PDD.

3.4 Grouped Project

The project do not involve any addition of new project activity and thus the project do not falls under grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the site visit, it was concluded that the project is implemented as per the instruction of the VCS PD and this is verified from the commissioning certificate. During the current monitoring period it was observed that no unforeseen situation evolved which can impact the operation of the project activity. The same was verified through the breakdown summary sheet of the project activity. Scheduled maintenance was carried out as per the instruction of the manufacturer and the same is acceptable to the assessment team.

Project location is confirmed by the assessment team through interview with PP during site visit and assessment of monitoring report. Assessment team also checked the technical details of the project site containing latitude and longitude of the project site and confirmed that the details as mentioned in the registered PD are correct. The latitude and longitude of the project activity is given below;

District	State	Latitude (N)	Longitude (E)
Jodhpur	Rajasthan	27° 23" 51.20"	72° 13" 47.59"

The technical specifications have been verified during site visit as well as with the technical specifications of solar PV and also cross checked from the technical manual of the Manufactures. The technical specification the project activity is given below:

Sl. No.	Technical details of the equipment	Description
1	Technology Used	Solar PV technology (Poly-Crystalline)
2	Module Make, Number of modules and their capacity	Module Make- JA Solar Co. Ltd & Jolywood (Taizohou) Solar Technology Co. No. of Modules- 851424 Model capacity- 330 Wp, 350 Wp
3	Inverter Make, Number of Inverters & Capacity	Inverter Make- Huawei Technologies No. of Inverters- 2,223

		Inverter capacity- 90 KW
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The start date of the project activity (date on which the 100 MW solar PV project was commissioned) i.e. 02/08/2019. This is connected to Indian grid) in line with the approved VCS PD and VCS Standard version 4.1.

Assessment team checked the commissioning certificate of all units and confirms that the commissioning dates are correct.

The assessment team confirmed through interview with O & M personal during site visit that there are no changes in to the project design during this monitoring period. It was found that the monitoring plan was implemented as per the requirement of the VCS PD & approved monitoring Plan and applied methodology ACM0002: Grid-connected electricity generation from renewable sources –Version 19.0. The organisational role and responsibility as mentioned in the registered VCS PD is followed onsite. The calibration of energy meter is done as per the required frequency mentioned in the VCS PD. All the emergency preparedness as mentioned in the registered VCS PD is followed onsite and no discrepancies were found regarding the same.

The Project participant contribution from the project activity towards sustainable development in accordance to host country as explained below:

Social well-being:

- The project would help in generating employment opportunities during the construction and operation phases. The project activity will lead to development in infrastructure in the region like development of roads and also may promote business with improved power generation.

Economic well-being:

- The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity will also help to reduce the demand supply gap in the state.

The project is not involved in any other form of GHG emission program and VERs generated from this verification will not be used for other trading program to avoid any kind of double counting. The same is confirmed by the PP during the verification remote audit. Assessment team also conducted independent review regarding the same and found that the statement of the PP is accurate and project is not involved in any other kind of GHG trading for the present verifications/monitoring period.

The assessment team observed that the project is in line with the registered PD and applied methodology and thus no clarification/deviation is sought. CAR 01 and CAR02 were raised during the verification process and closed successfully. Please refer below Appendix 2 for the detail closure of the CAR

Assessment team confirms following during the verification site visit:

1. Start date of the project is 02/08/2019 (as per VCS PD).

2. An undertaking letter dated: 20/04/2021 has been submitted by PP for double counting with any other GHG program. PP also has given a written declaration that project has not claimed other form of GHG credit for the concerned monitoring period.
3. Assessment team confirms that this is the 2nd monitoring under VCS and covers the activity from 01/12/2019 to 31/12/2020 (inclusive of both dates). Thus, VCS crediting period should be maximum of 10 years and renewed twice till end date of VCS crediting period. 02/08/2019 is the start date and crediting period ended on 01/08/2029.
The GHG credits from 01/12/2019 to 31/12/2020 will be claimed under VCS only. At any point of time during the crediting period, the project proponent will abide by the “Double Counting”.
4. Assessment team checked and found that the Project proponent of the project activity is as below for the current monitoring period:

Organization name	M/s Adani Green Services Limited
Contact person	Mr. Alpesh Gedia
Title	General Manager
Address	4 th Floor- South wing Adani House, Shantigram, SG Highway, Ahmedabad, India
Telephone	+919907534900
Email	alpeshk.gedia@adani.com

VVB confirmed that EKI Energy Services Limited as other entity involved in the project which was checked by referring VERRA website.

5. The quantified emission reduction calculation for the monitoring period is correct and conservative. Assessment team also compared actual VER with the estimated VER and found that the actual VER is 495,718 tCO₂e which is 4.1% more than the estimated emission reduction 476,209 tCO₂e during this monitoring period which is due to climatic conditions and high PLF attained by the solar power plant during the current monitoring period.

4.2 Safeguards

4.2.1 No Net Harm

No potential environment or socio-economic matter was found during the discussion with PP during site visit. The project is renewable energy project and thus no negative impact observed onsite as confirmed by PP during site visit.

The project activity promotes environmental and socio-economic well-being as it results in zero GHG emissions due to installation and operation of clean, renewable energy technology for

electricity generation. The report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013. This report clearly mentioned that solar power project activity operations do not result in direct air pollution, noise pollution.

However, assessment team still conducted the No net harm assessment for some of the parameters and the result is described below:

SL.NO	Indicator	Assessment team opinion
1	Air quality	The project generates clean energy which replaces the fossil fuel intensive electricity generation. Also report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013. This report clearly mentioned that solar plant operations do not result in direct air pollution. Adequate measures were taken to mitigate the envisaged impacts like spraying water on the road side to reduce dust level, etc. This was confirmed by the local stakeholders. Therefore, it is validated that mitigation measures were robustly implemented on ground for air quality issues project will have a positive impact on air quality.
3	Soil condition	There are negligible impacts envisaged during operation of the project activity being run of river project. For mitigating the impacts during construction, various mitigation measures were taken which is validated from the plant records of PP and the interview with local villagers. It was also confirmed that, the vegetation done at site helps for soil erosion. The same is confirmed during the discussion with stakeholders during remote audit. Therefore, it can be concluded that the project has no effect on soil conditions during its operation because it has no waste coming out.
4	Biodiversity	During the validation site visit it was observed that the condition of ground vegetation will be gradually improved; No rare species has been found in the around area. The project site is not on the migration route of migratory bird. As Such large solar plant do not have any obstruction in the path of migratory birds. Nor project is affecting aquatic life. With the implementation of Project, the greening water will be increased significantly; the biodiversity in the vicinity will be improved with the vegetation improvement. No negative impact envisaged.
5	Employment	The project activity employed local population as skilled workers

SL.NO	Indicator	Assessment team opinion
	Generation	as well as security guards which were envisaged during the validation site visit. The personnel employed by the project activity are also provided trainings and exposed to various awareness programs therefore a positive indicator has been accepted.
6	Livelihood of the poor	The project is associated with infrastructure development like roads in the nearby areas and promoting economic activities like grants to local school and communities temples etc. Also, project employed local villagers as guards for the security of power project. Positive impact envisaged.

4.2.2 Local Stakeholder Consultation

All the stakeholders are happy with the implementation and operation of the project activity and no negative comments envisaged for the project activity. There was no change in project description from the VCS PD. Complaint/suggestion/feedback register is maintained at site as a part of ongoing communication with stakeholders in line with clause 3.16.17 of VCS Standard, ver. 4.1 and appropriate actions taken time to time by PP. Assessment team confirmed the same during the remote audit and document review i.e. grievance register etc.

4.3 AFOLU-Specific Safeguards

Not applicable

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the MR. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the VCS PD and MR.
Findings	No CAR was raised.
Conclusion	<u>Baseline emission:</u> The baseline Emissions for a given year is calculated by multiplying the energy baseline (EB) with the regional grid emission factor of the grid. Formula Used:- $BE_y = EGPJ_y \times EF_{grid,CM,y}$ $BE_y = \text{Baseline emissions in year } y \text{ (t CO}_2\text{/yr)}$

	EGPJ,y = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr) EFgrid,CM,y = Combined margin CO2 emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (t CO2/MWh) Ex-ante parameters” The grid emission factor i.e. 0.9368 tCO2/MWh is sourced from the VCS registered PDD. The same is used for calculation of emission reductions. In addition to this, other ex-ante parameters which are sourced from the VCS registered PDD are provide below: EFgrid,OM,y - Operating Margin CO2 emission factor in year y. The value monitored is 0.9610 tCO2/MWh. EFgrid,BM,y - Build Margin CO2 emission factor in year y. The value monitored is 0.8644 tCO2/MWh. EFgrid,CM,y - Combined Margin CO₂ emission factor in year y. The value monitored is 0.9368tCO2/MWh. EGPJ, y- Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh. The value monitored is 529,161.67tCO2/MWh. The verification team has checked the entire monthly Joint metering report applicable for the monitoring period as per the project activity applied for verifications and found the monitoring parameters are monitored and recorded as per the monitoring plan in the registered VCS PD. Electricity supplied to the grid by the project activity during the year y (EGBL,y) by the project activity during the current monitoring period 529,161.67 MWh. The net electricity supplied by project activity to grid is calculated by subtracting total electricity imported by project from grid from total electricity delivered by project to grid. The verification team has crosschecked the emission reduction sheet and monitoring report data with the Joint balance sheet and sales invoice bills and found all the values are matching. <u>Leakage:</u> As per registered PDD the leakage is zero. Thus, Emission Reductions are: The emission reductions (ER_y) by the Project activity during a given year y is the difference between baseline emissions (BE_y), project activity emissions (PE_y) and leakage, as follows
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	$ER_y = BE_y - PE_y - L_y$ VVB confirmed that GHG reductions and removals has been quantified correctly and in line with monitoring procedure in VCS PS and applied methodology.
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4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	The verification team checked the break down log for the monitoring period. During the verification of site visit, the energy meters are also checked. The Calibration details of the monitoring meters are also checked with calibration certificates.
Findings	CAR 04 was raised on this section and closed successfully. Please refer Appendix 2 for further details
Conclusion	The project activity has installed a special energy meters sealed by the Power Grid Corporation of India . The metering system includes the main system and a back-up system that measure, record and control the various monitoring parameters. The back-up system would be used in case of failing of the main meter. latest state -of art monitoring and control equipment that measure, record and control the various monitoring parameters. These meters record parameters including electricity exported & imported. Moreover, the meters are located at the grid connected point are of accuracy class of 0.2 s for project activity applied for verification. These electricity meters are being used by Power grid corporation of india for preparing electricity generation statements. The Net electricity supplied to the grid is then calculated from export and import values. The electricity Export, Import and Net electricity exported to the grid are cross checked from the sales invoices raised to MSEDCL which is in line with Methodology requirement for large scale project activity. Hence assessment team confirmed that the value of net electricity exported to the grid as used in emission reduction calculation is correct. The main meter reading is taken jointly on a fixed day of every month for the preceding month at the delivery point and signed by the representatives of DISCOM and PP representative. In the event of failure of main meter, the check meter will be used in monitoring the electricity data. Calibration of all the meters is done as per the VCS PD. Assessment team has checked the calibration certificate and found that meters are calibrated as per calibration frequency mentioned in VCS PD.

	It is reported that the data will be kept for 2 years following the end of the crediting period or till the last issuance of VERs for the project activity whichever occurs later. The responsibilities and authorities of project management, data handling and recording, measurement methods and QA/QC procedure have been systematically established and formalized and the same was verified during the remote audit. Site visit and interview with site personnel also confirms that the operational and organizational chart as mentioned in VCS PD is as per the site practice and thus assessment team confirms that the details are correct. The break down log is checked and found that the plant undergone scheduled maintenance and break down. VVB checked the breakdown and routine maintenance log book which also provided in appendix 1 of MR and confirmed that it does not have any impact on project design and monitoring procedures. No unforced error observed. VVB confirmed that data/ information used for determining GHG reductions and removals was sufficient in quantity and of appropriate quality. Calibration certificates of meters/ QA/QC procedure checked and found to be appropriate.
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4.6 Non-Permanence Risk Analysis

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Not applicable	Not applicable	Not applicable	Not applicable

5 VERIFICATION CONCLUSIONS

Applus+ Certification has been engaged by Adani Renewable Energy (RJ) Limited to perform the verification of the “Renewable Solar Power Project by Adani”

The management of the project participant/owner is responsible for the preparation of the GHG emissions data and the reported/estimated GHG emissions reductions on the basis set out within the project’s Monitoring Plan in the VCS PD and MR and the approved methodology ACM0002: Grid-connected electricity generation from renewable sources –Version 19.0

Our Verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board and VCS Standard version 4.1. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

- the project is operated as planned and described in the project document;
- the monitoring plan is as per the applied methodology;
- the monitoring process in Monitoring Report is as per the PD
- the development and maintenance of records and reporting procedures are in accordance with the monitoring plan
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.
- A reasonable level of assurance was achieved during the verification.
- No limitation observed for the present verification

Verification period: From 01/12/2019 to 31/12/2020 (first and last date included).

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net emission reductions or removals (tCO ₂ e)
2019	34,199	0	0	34,199
2020	461,519	0	0	461,519
Total	495,718	0	0	495,718

The estimated emission reduction achieved from the project activity for the current monitoring period is 476,209 tCO₂e¹, whereas actual emission reductions achieved are 4,95,718 tCO₂e, which is 4.1% more than the estimated emission reductions. This is due to climatic conditions and more PLF attained by the plant during the current monitoring period.

¹ This estimation is based on annual (365 days) estimation of ER and current monitoring period days i.e.397 days.

APPENDIX I: DOCUMENTS REVIEWED DURING VERIFICATION

No.	Author	Title	References to the document	Provider
1.	NA	Commissioning certificate	Commissioning of the solar plants	Project participant
2.	NA	Contract of the other entity with the DOE	Contract of the other entity with the DOE	Project participant
3.	NA	Technical specifications	Technical specifications of turbines	Project participant
4.	NA	Power Purchase agreement for the project activity	Manufacturer technical specifications	Project participant
5.	NA	VCS Project Description	Dated:23/12/2019	Project participant
6.	NA	Initial Monitoring report Final Monitoring report	Version 01, dated 01/04/2021 Version 02, dated 22/04/2021	Project participant
7.	NA	Emission Calculation sheet	Version 1, dated 01/04/2021	Project participant
8.	NA	Emission Calculation sheet	Version 02, dated 22/04/2021	Project participant
9.	NA	Tools/ guidelines used in the project activity - UNFCCC Methodology: ACM0002 version 19 - VCS verification report template Version 4.0 - VCS Standard, version 4.1	UNFCCC CDM web site VERRA website	UNFCCC & VERRA
10.	NA	Calibration details of the project activity undergoing verification	Calibration certificates	Project participant
11.	NA	JMR records+ Invoices for the complete monitoring period	Joint balance sheet copies Sales Invoices for the complete Monitoring period	Project participant
12.	NA	PPA Agreement	Power purchase Agreement between Project	Project participant
13.	NA	Break down details of the complete monitoring period	Log Sheet	Project

No.	Author	Title	References to the document	Provider
				participant
14.	NA	VCS Declaration	Declaration dated 20/04/2021 from PP for Participation under Other GHG Programs	Project participant

APPENDIX 2: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS (CAR/CL/FAR)

Project Implementation Status

CL ID	01	Section no.	1.10	Date: 15/04/2021
Description of CL				
During the document review it was observed that				
1. In Section 1.1, PP has mentioned the plant location at Gujarat and Rajasthan whereas only Rajasthan's geo coordinates has been mentioned. Hence PP is requested to clarify.				
Project participant response				Date: 22/04/2021
<i>This was a typographical error, the Project activity is located only in the state of Rajasthan. The same has been corrected in VCM MR versión 02 now submitted to the DOE for further assessment.</i>				
Documentation provided by project participant				
1. VCS MR versión 02				
DOE assessment				Date: 27/04/2021
PP has now corrected the location of the plant, which is in Rajasthan only. Hence, Comment closed.				

CAR ID	01	Section no.	1.10	Date: 15/04/2021
Description of CAR				
1. In table, PP shall confirm plant location, capacity and their commissioning status				
2. Declaration from PP regarding participation in other trading / GHG programs, rejection under other GHG program etc. is missing. PP requested to submit the same.				
Project participant response				Date: 22/04/2021
1. <i>The plant location, capacity and their commissioning details have now been included in the VCS MR versión 02 now submitted to the DOE for further assessment.</i>				
2. <i>The Declaration from PP regarding participation in other trading / GHG programs, rejection under other GHG program etc. Is now submitted to the DOE for further assessment.</i>				
Documentation provided by project participant				

1. VCS MR versión 02 2. VCS Declaration	
DOE assessment	Date: 27/04/2021
1. PP has now mentioned plant's location, its capacity and the commissioning status in the revised MR, ver. 02 dated 22/04/2021. Hence, comment closed. 2. PP has submitted declaration certificate regarding participation in other trading/ GHG programs. Hence, Comment closed.	

CAR ID	02	Section no.	1.11	Date : 15/04/2021
Description of CAR				
1. PP shall provide evidence for Project start date. 2. In section 1.11, the name of the country's DNA is incorrect. Corrective action required.				
Project participant response				Date : 22/04/2021
1. The Commissioning Certificate issued by the State Utility is now provided to the DOE as evidence of Project start date for further assessment. 2. The name of country's DNA is now corrected in VCS MR versión 02 now submitted to the DOE for further assessment.				
Documentation provided by project participant				
1. Commissioning Certificate 2. VCS MR versión 02				
DOE assessment				Date: 27/04/2021
1. PP has submitted commissioning certificate to verify the start date of the project activity. Hence, comment closed. 2. PP has now corrected the name of the country's DNA in the revised MR, ver. 02 dated 22/04/2021. Hence, comment closed.				

CAR ID	03	Section no.	2.2	Date: 15/04/2021
Description of CAR				
PP is requested to provide supporting documentation for Local Stakeholders consultation conducted for all project activities (invitation/ public notice/ Summary of consultations/ agenda etc.) and also explain mechanism for ongoing communication with stakeholders to address their grievance.				
Project participant response				Date: 22/04/2021

Project participant response		Date: 22/04/2021
The DOE may please note that the aforesaid documents with regard to Local Stakeholders consultation conducted for all project activities (invitation/ public notice/ Summary of consultations/ agenda etc.) have been submitted at the time of Validation of Project activity. The PP also placed a grievance register onsite in where the stakeholder can put down his/her complain and the same if found genuine will be addressed immediately.		
DOE assessment		Date: 27/04/2021
Justification provided by PP regarding LSC and grievance redressal mechanism implemented at project site found to be appropriate and acceptable. Comment closed.		

CAR ID	04	Section no.	3.1	Date : 15/04/2021
Description of CAR				
PP requested to provide commissioning certificates and technical specifications of all plant involved in the project activity.				
Project participant response				Date: 22/04/2021
The commissioning certificates and technical specifications are now provided to the DOE for further assessment.				
Documentation provided by project participant				
1. Commissioning certificates 2. Technical specifications				
DOE assessment				Date: 27/04/2021
PP has provided commissioning certificates and technical specification of the plant involved in the project activity. Hence, Comment closed.				

CAR ID	05	Section no.	5.2	Date: 15/04/2021
Description of CAR				
PP is requested to provide all relevant consents/ clearance needed from State				

pollution control Board and other statutory bodies.	
Project participant response	Date:22/04/2021
In reference to Section 1.11 of the VCS PD of the Project activity, there shall be no necessity of obtaining the Consent to Operate'' for White category of industries, an intimation to concerned SPCB / PCC shall suffice. The project activity falls under white category, and the non-polluting nature of project fulfils the compliance to the local laws and regulations.	
Documentation provided by project participant	
VCS PD versión 02	
DOE assessment	Date: 27/04/2021
In section 1.11 of the VCS PD of the Project activity, proper explanation has been given for the necessity of obtaining the Consent to operate for the White category of the industry, which is checked by the VVB and found correct. Hence, comment closed .	

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor/Technical Expert	OR	Kumar	Pankaj	TQC-Outsourced entity	Yes	Yes	Yes	Yes

Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer (TR)	EI	Shen	Simon	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustin	Applus+ Certification

Short CVs of the Team:

1. Pankaj Kumar worked as team leader – Bihar for South Asia Climate Proofing and Growth Development (CPGD) – Climate Change Innovation Programme (CCIP) supported by DFID that seeks to mainstream climate change resilience into planning and budgeting at the national and sub-national level in India, Pakistan, Nepal, and Afghanistan. Pankaj Kumar has worked previously with IL&FS Infrastructure Development Corporation and BUIDCO (Bihar Urban Infrastructure Development Corporation), Govt. Of Bihar as Environmental Specialist for WB & ADB funded projects. Prior to this, he worked with Carbon Check (UNFCCC accredited DoE), Johannesburg, RSA as Team Leader for validation, verification of around 100 GHG projects in Asia, Africa, USA, Asia Pacific & Americas. Pankaj is accredited Lead Auditor, Validator, Verifier and Technical Expert for Sectoral Scope/Technical Area – 1.1, 1.2, 3.1 & 13.1 by UNFCCC DoE (Designated Operational Entity), APPLUS, Spain. He is also member of task force on climate change & human health, Health Department, GoB and on roster of UNICEF's WASH experts.

He is an experienced, qualified and result oriented Environment Professional having more than 14 yrs. Of relevant experience in Climate Change (Mitigation & Adaptation), Environmental Due Diligence, Disaster Risk Reduction, Validation and Verification of GHG project under CDM, Verified Carbon Standard, Gold Standard & Social Carbon Standard, Brazil. He provides technical support for environmental investigative, consultative and remedial projects involving air, water and soil, Waste management, EIA, Environmental Compliance, ISO 14001, OHSAS 18001, GHG accounting (ISO 14064) and Carbon foot printing

Pankaj Kumar is Masters in Environment Management from Forest Research Institute (University), I.C.F.R.E, Dehradun, which is Centre of Excellence in South East Asia for Forestry education & research and PGDEL from National Law School of India University, Bangalore (India)

2. Mr. Simon Shen (Master's Degree in Thermal Energy Engineering, Bachelor's Degree in Environmental Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and review with Applus+, apart from the years of experience working as GHG Auditor and ISO 9001/14001 in TUV SUD for 5 years before he

joined Applus+. Mr. Simon Shen has extensive experience also as former Applus+ Shanghai CDM Technical Manager.

APPENDIX 4: ABBREVIATIONS

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CEA	Central Electricity Authority
CL	Clarification request
CM	Combined Margin
CMS	Central Monitoring system
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming potential
MSEDCL	Maharashtra State Electricity Distribution Company Limited
PP	Project Participant

APPENDIX 5: CALIBRATION DETAILS

Details of Meter Calibration:

Meter Details	Main Meter	Check Meter
Meter Serial No	05297957	05297966
Meter Make	Elster	Elster
Accuracy Class	0.2 s	0.2 s
Date of Calibration	27/07/2019 ²	27/07/2019
Due date of next calibration	26/07/2024	26/07/2024

² The Meters were calibrated on 27/07/2019. Since the calibration frequency of the meters are once in five year, the calibration is valid during the current monitoring period. Hence, no error factor has been applied due to delay