



Monitoring report form for CDM project activity
(Version 07.0)

MONITORING REPORT

Title of the project activity	10MW Solar Power Project (EnvironmentFirst-213)	
UNFCCC reference number of the project activity	10238 ¹	
Version number of the PDD applicable to this monitoring report	02	
Version number of this monitoring report	01	
Completion date of this monitoring report	31/07/2019	
Monitoring period number	01	
Duration of this monitoring period	31/01/2016 to 01/07/2019 (Inclusive of both days)	
Monitoring report number for this monitoring period	NA	
Project participants	M/s Jakson Power Private Ltd.	
Host Party	India	
Applied methodologies and standardized baselines	Methodology : AMS.ID Version 18	
Sectoral scopes	Sectoral Scope:01-Energy Industries (renewable-/non-renewable sources)	
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013
	0 tCO ₂	57,741 tCO ₂
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	60,129 tCO ₂	

¹ <https://cdm.unfccc.int/Projects/DB/Applus1451318295.42/view>

SECTION A. Description of project activity

A.1. General description of project activity

The project activity uses renewable energy (solar) as a clean fuel to generate electrical energy. The total installed capacity of the project is 10² MW. During this monitoring period 51,900.90 MWh of solar power displaced from INDIAN grid, which otherwise been produced through fossil fuels based power plant, connected to the grid. The project activity is a green field project activity & generates electricity using solar energy which displaces approximately 57,741 tonnes of CO₂ over the current monitoring period.

The further information of the project is:-

Sr. No.	Investor's Name	Capacity in MW	Commissioning
1.	M/s Jakson Power Private Limited	10 MW	19/03/2015 ³

Purpose of the project activity:

The main purpose of the project activity is to generate electrical energy through sustainable means using solar power resources, to utilize the generated output for selling it to Electricity Board /concerned Discom which is Uttar Pradesh Power Corporation Limited (hereinafter referred as UPPCL) in this case and to contribute to climate change mitigation efforts.

Pre-project Scenario:

In the absence of the project activity, the equivalent amount of electricity would have been generated from the connected / new power plants in the NEWNE grid. The grid is predominantly coal based and therefore is a major source of carbon dioxide emissions in India⁴. The main emission source in the pre-project scenario is the power plants connected to the NEWNE grid and main GHG involved is CO₂.

Baseline scenario:

As the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following as per applied methodology: "Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

Hence, pre-project scenario and baseline scenario are the same.

Further, this is to confirm that the proposed CDM project activity is not a CPA that has been excluded from a registered CDM PoA as a result of erroneous inclusion of CPAs.

A.2. Location of project activity

Host Party : India
State : Uttar Pradesh
District : Lalitpur
Village : MahrauniKhurd

²This is net output AC Capacity, as per PPA signed with State Distribution Company, Uttar Pradesh Power Corporation Ltd. (UPPCL)

³The commissioning certificates have been submitted to validating DOE

⁴ http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver10.pdf

Taluka : Lalitpur

Physical/Geographical location

Investor's Name	Capacity	Latitude	Longitude
M/s Jakson Power Private Ltd.	10 MW	24° 47' 34.8354" N	78° 24' 44.6754" E



A.3. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
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Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (host)	M/s Jakson Power Private Ltd. (Private Entity)	No

A.4. References to applied methodologies and standardized baselines

Type I – Renewable energy projects

Category D – Electricity Generation for a System

Sectoral Scope: 1 Energy Industries (renewable-/non-renewable sources)⁵

Title: AMS I.D, Grid Connected Renewable Electricity Generation, Version 18, EB81⁶

Reference: Appendix B of the simplified modalities & procedures for small scale CDM project activities⁷

The methodology also refers to latest approved versions of,

- “Tool to calculate the emission factor for an electricity system, version 05.0⁸”
- “Tool to calculate project or leakage CO2 emission from fossil fuel combustion”, version 02⁹

A.5. Crediting period type and duration

Crediting period type : Renewable crediting period has been chosen, and this is the first Crediting Period.
Duration : 31/01/2016 to 30/01/2023 (07 Years 00Months)
Duration of the current Monitoring period : 31/01/2016 to 01/07/2019

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

The proposed PV project will use crystalline silicon based solar PV modules. Since the project activity is a Greenfield installation there was no electricity generation at the project site prior to its implementation. The whole installation will have a 25 years design life. Technical specifications of typical modules will be as follows:

Parameter	Value
Type of solar photovoltaic modules	Poly Crystalline PV
Make of solar photovoltaic modules	Jinko Solar
Module Peak Power	305Wp
Total Capacity of Solar Power Project	10 MW

⁵<http://cdm.unfccc.int/DOE/scopelst.pdf>

⁶http://cdm.unfccc.int/filestorage/2/P/7/2P7FS6ZQAR84LG3NMKYUH50WI9ODBC/EB81_repan24_AMSI.D_ver18.pdf?t=bld8bmo4eTJhfDAVAm8jOj4GR77Y9PNmoDns

⁷<http://cdm.unfccc.int/Projects/pac/ssclistmeth.pdf>

⁸<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf>

⁹<http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf>

Power evacuation infrastructure will be set up as per the guidelines of Uttar Pradesh Electricity Regulatory Commissions (UPERC), Central Electricity Regulatory Commission (CERC) and the respective Distribution Company (DISCOM). The proposed project will be connected to the nearby 11/33 kV grid substation. The grid connection unit will continuously synchronize the incoming solar power with the available grid for safe and efficient operation. The metering of net electricity generated will be undertaken at the grid interconnection point.

The technology for the project is environmentally safe and sound. Further, there is no technology transfer associated with the project activity.

B.2. Post-registration changes**B.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents**

There is no request for deviation applied during this monitoring period.

B.2.2. Corrections

There have not been any corrections to project information or parameters fixed at validation during the current monitoring period.

B.2.3. Changes to the start date of the crediting period

There is no change in the start date of the crediting period, considering the monitoring plan has been implemented

B.2.4. Inclusion of monitoring plan

There has not been any change in the monitoring plan during the current monitoring period.

B.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

Not Applicable

B.2.6. Changes to project design

There has not been any change in the PDD during the current monitoring period

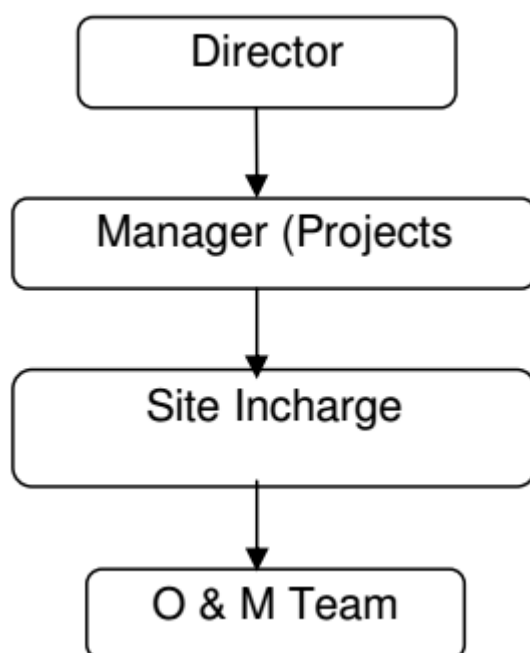
B.2.7. Changes specific to afforestation or reforestation project activity

This project activity is not an afforestation or reforestation activity.

SECTION C. Description of monitoring system

In Monitoring & Verification protocol, the objective is to have clear, credible and accurate monitoring, evaluation and verification procedures. This involves recording, data collection, metering of electricity generated at substation, on daily basis as well as on monthly basis. The general conditions for metering, recording, meter readings, meter inspections, Test & Checking and communication shall be as per the Power Purchase Agreement with the state utility.

The project participant proposes following arrangements in order to carry out metering and O & M activities:



SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

Data/Parameter	$EF_{grid,y}$
Unit	tCO ₂ /MWh
Description	Combined margin CO ₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the mission factor for an electricity system” (t CO ₂ /MWh).
Source of data	CO ₂ Baseline Database for the Indian Power Sector, Version 10, CEA, Published on 06th Dec’14.
Value(s) applied	0.9770
Choice of data or measurement methods and procedures	The Combined Margin Emission Factor has been calculated as a weighted sum of Operating Margin emission factor and Build Margin emission factor taking the weightage value as 0.75 and 0.25 respectively as per the “Tool to calculate the emission factor for an electricity system” and on the basis of the data available at the time of PDD submission from the publicly available official database on emission factors for all regional grids in India.
Purpose of data/parameter	Calculation of baseline emission.
Additional comments	This value is fixed ex-ante.

Data/Parameter	$EF_{grid,OM,y}$
Unit	tCO ₂ /MWh
Description	Operating margin CO ₂ emission factor in year y (tCO ₂ /MWh)
Source of data	CO ₂ Baseline Database for the Indian Power Sector, Version 10, CEA, Published on 06th Dec’14.
Value(s) applied	0.9862
Choice of data or measurement methods and procedures	The data has been sourced from the Central Electricity Authority (CEA) Carbon Dioxide database. The link to the database is provided below: http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver10.pdf
Purpose of data/parameter	Calculation of baseline emission.
Additional comments	This value is fixed ex-ante.

Data/Parameter	EF_{grid,BM,y}
Unit	tCO ₂ /MWh
Description	Build margin CO ₂ emission factor in year y (tCO ₂ /MWh)
Source of data	CO ₂ Baseline Database for the Indian Power Sector, Version 10, CEA, Published on 06th Dec'14.
Value(s) applied	0.9495
Choice of data or measurement methods and procedures	The data has been sourced from the Central Electricity Authority (CEA) Carbon Dioxide database. The link to the database is provided below: http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver10.pdf
Purpose of data/parameter	Calculation of baseline emission.
Additional comments	This value is fixed ex-ante.

D.2. Data and parameters monitored

Data/Parameter	EG_{PJ,y}
Unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid
Measured/calculated/default	Calculated
Source of data	Electricity meter(s)
Value(s) of monitored parameter	59100.90 MWh
Monitoring equipment	Electricity meter(s)
Measuring/reading/recording frequency	Continuous measurement and at least monthly recording
Calculation method (if applicable)	The Energy Meters are installed at the site for individual investors, so a loss has already been accumulated here. The net electricity supplied to the grid by the project activity will be calculated from the difference of the net energy exported to the grid and the net energy imported from the grid as measured by the bi-directional main energy meter at the grid inter-connection point. A check meter will also be installed as a backup at this point. The meters will be of accuracy class 0.2s. The monitoring will be on a continuous basis and monthly recording will be undertaken. The log-books will be maintained at the project site for this purpose.
QA/QC procedures	The calibration of all the meters will be undertaken once in three year in accordance with the General Guidelines to SSC CDM Methodologies. The meter readings will also be cross checked with records for sold electricity (invoices).
Purpose of data/parameter	Calculation of Baseline Emission
Additional comments	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

D.3. Implementation of sampling plan

This section is not applicable to the project activity, therefore left blank intentionally.

SECTION E. Calculation of emission reductions or net anthropogenic removals

E.1. Calculation of baseline emissions or baseline net removals

Formula used to calculate the net emission reduction for the project activity is

$$ER_Y = BE_Y - PE_Y$$

Where,

ER_y = Emission Reduction in tCO₂/year

BE_y = Baseline emission in tCO₂/year

PE_y = Project emissions in tCO₂/year

Baseline Emission: -

The baseline emissions are the product of electrical energy baseline $EG_{PJ,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where,

$EG_{PJ,y}$ = Total quantity of net electricity delivered to the INDIAN grid (now NEWNE Grid)

$EF_{grid,CM,y}$ = Baseline emission factor

$$= 0.9770 \text{ tCO}_2/\text{MWh}$$

$$BE_y = 59100.90 * 0.9770$$

$$= 57,741 \text{ tCO}_2/\text{year}$$

E.2. Calculation of project emissions or actual net removals

As the project activity is solar powered renewable energy project, project emissions are zero.

$$\begin{aligned} ER_y &= BE_y - PE_y \\ &= 57,741 - 0 \\ &= 57,741 \text{ tCO}_2\text{e} \end{aligned}$$

E.3. Calculation of leakage emissions

No leakage has been considered for the project activity.

E.4. Calculation of emission reductions or net anthropogenic removals

	Baseline GHG emissions or baseline net GHG removals (t CO ₂ e)	Project GHG emissions or actual net GHG removals (t CO ₂ e)	Leakage GHG emissions (t CO ₂ e)	GHG emission reductions or net anthropogenic GHG removals (t CO ₂ e)		
				Before 01/01/2013	From 01/01/2013	Total amount
Total	57,741	0	0	0	57,741	57,741

E.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the registered PDD

Amount achieved during this monitoring period (t CO ₂ e)	Amount estimated ex ante for this monitoring period in the PDD (t CO ₂ e)
57,741	60,129

E.5.1. Explanation of calculation of “amount estimated ex ante for this monitoring period in the PDD”

As per CDM registered PDD 17,586 tCO₂e is the amount of CERs generated annually. Therefore, following unitary method, the amount of estimated ex ante for this monitoring period is identified. The total number of days in this monitoring period is 1248.

$$= (17,586/365) * 1248$$

$$= 60,129 \text{ tCO}_2\text{e}$$

E.6. Remarks on increase in achieved emission reductions

Actual Emission reduction decreased by 3.97%.

E.7. Remarks on scale of small-scale project activity

The capacity of the project remained 10 MW during this crediting period which falls under the scale of small scale project activity.

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
07.0	31 May 2019	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 02.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); • Add a section on remarks on the observance of the scale limit of small-scale project activity during the crediting period; • Add "changes specific to afforestation or reforestation project activity" as a possible post-registration changes; • Clarify the reporting of net anthropogenic GHG removals for A/R project activities between two commitment periods; • Make editorial improvements.
06.0	7 June 2017	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 01.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); • Make editorial improvements.
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB 70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.

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