Monitoring Report

CARBON OFFSET UNIT (CoU) PROJECT

Title: Negative Carbon by AXS: 13.5 MW Solar Power Project in Brazil

Version 3.0

Date 22/ 03/ 2024

First CoU Issuance Period: 21 months

Monitoring Period: 25/03/2022 to 31/12/2023

Monitoring Report (MR)
CARBON OFFSET UNIT (CoU) PROJECT

Monitoring Report	
Title of the project activity	Negative Carbon by AXS: 13.5 MW Solar Power Project in Brazil
UCR Project Registration Number	331
Version	3
Completion date of the MR	22/ 03/ 2024
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 1 Duration of this monitoring Period: (first and last days included (25/03/ 2022 to 31/12/2023)
Project participants	**Project Owner**: AXS ENERGIA S/A **Project Aggregator**: Kosher Climate India Private Limited
Host Party	Brazil
Applied methodologies and standardized baselines	Applied Baseline Methodology: AMS-I.D.: "Grid connected renewable electricity generation", version 18 Standardized Methodology: Not Applicable
Sectoral scopes	01 Energy industries (Renewable/NonRenewable Sources)
Estimated amount of GHG emission reductions for this monitoring period in the registered PCN	2022: 1315 CoUs (1315 tCO2eq)
	2023: 7349 CoUs (7349 tCO2eq)
Total:	**8665 CoUs** (8665 tCO2eq)

SECTION A. Description of project activity

A.1. Purpose and general description of project activity >>

a) Purpose of the project activity and the measures taken for GHG emission reductions >>

The project **Negative Carbon by AXS: 13.5 MW Solar Power Project in Brazil** consists of several project activities installed in Brazil, located in the state of Minas Gerais, at the villages São Gonçalo do Sapucaí, Passos, Carmo Do Paranaíba, and Itatiaiuçu. The promoter of the project is AXS ENERGIA S/A, a company which has the full ownership of the project activity.

The purpose of the project activity is to generate electricity by harnessing the solar energy, making use of solar photovoltaic technology. The proposed project activity involves installation of Solar photovoltaic power generation projects at different locations, with a total capacity of 13.5 MW.

Project Activity	Power Plant Name	Village/State	Energy Source	Installed capacity in MW	Commissioning date	Net Energy (MWh)
1	Paulo Valias	São Gonçalo do Sapucaí (MG)	Solar PV	2.5	25/03/2022	9,688.1
2	Harmonia I	Passos (MG)	Solar PV	2.5	24/06/2022	6,467.3
3	Harmonia II	Passos (MG)	Solar PV	1.5	12/07/2022	3,876.5
4	Boa Vista I	Carmo Do Paranaíba (MG)	Solar PV	2.5	11/01/2023	4,020.8
5	Boa Vista II	Carmo Do Paranaíba (MG)	Solar PV	2.5	20/12/2022	3,963.9
6	Itatiaiuçu	Itatiaiuçu (MG)	Solar PV	2.0	31/03/2023	3,041.5

Having each power plant an installed capacity equal or under 5 MW, they are classified as *mini-generation* units under the *electricity compensation system* regulated by Brazil's ANEEL (National Electric Energy Agency), in accordance with normative resolutions n. 482/2012, n. 687/2015, and federal law n. 14.300/2022. Under the electricity compensation system, the active energy injected by a consumer unit with distributed mini-generation is transferred, through a free loan, to the local distributor and then subsequently compensated with consumption offsetting.

By installing solar plants to offset the consumption of businesses, Project Owner is able to provide them with energy from the Solar Plants within the energy compensation scheme: the generated electricity is injected into the national grid, whereas customers receive credits that are offset in their

monthly energy bill. Therefore, the project activity has the purpose of contributing to the transformation of the Brazilian energy matrix through the economic incentives of a clean, renewable, and also cheaper energy source.

b) Brief description of the installed technology and equipment>>

Project activity consists of 6 solar photovoltaic installations – already installed, commissioned and under operation. The installed technologies convert the solar radiation into electrical energy through photovoltaic (PV) panels. This energy is further inverted into electricity.

The different components of a solar photovoltaic plant are:

1. Photovoltaic (PV) modules,
2. Central Inverters,
3. Transformers,
4. Other relay and protection systems.

Parameter/ Project Activity	**1**	**2**	**3**	**4**	**5**	**6**
Number of **PV Modules**	7280	7280	4368	5600	5600	4480
Capacity of **PV Modules**	445/450 Wp	445/450 Wp	445/450 Wp	590 Wp	595 Wp	2520 x 590 Wp 1960 x 595 Wp
Manufacturer/ Model of **PV Modules**	Trina Solar/ TSM-DEG17MC.20(II)	Trina Solar/ TSM-DEG17MC.20(II)	Trina Solar/ TSM-DEG17MC.20(II)	Canadian Solar/ BiHiKu7	Canadian Solar/ BiHiKu7	Canadian Solar/ BiHiKu7
Number of **Inverters**	20	20	12	20	20	16
Capacity of **Inverters**	125 kW	125 kW	125 kW	125 kW	125 kW	125 kW
Manufacturer/ Model of **Inverters**	Sungrow/SG125HV	Sungrow/ SG125HV	Sungrow/ SG125HV	Sungrow/ SG125HV	Sungrow/ SG125HV	Sungrow/ SG125HV
Number of **Transformers**	3	3	2	3	3	2
Capacity of **Transformers**	2x 1000 kVA 1x 500 kVA	2x 1000 kVA 1x 500 kVA	1000 kVA	2x 1000 kVA 1x 500 kVA	2x 1000 kVA 1x 500 kVA	1000 kVA

c) Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.)>>

UCR Project ID or Date of Authorization: 331
Start Date of Crediting Period: 25/03/2022 to 31/12/2023
Project Commissioned:

Project Activity	**Commissioning date**
1	25/03/2022
2	24/06/2022
3	12/07/2022
4	11/01/2023
5	20/12/2022
6	31/03/2023

d) Total GHG emission reductions achieved or net anthropogenic GHG removals by sinks achieved in this monitoring period>>

The total GHG emission reductions achieved in this monitoring period is as follows:

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	25/03/ 2022
Carbon credits claimed up to	31/12/2023
Total ERs generated (tCO_{2eq})	8665 **tCO2eq**
Leakage	0

e) Baseline Scenario>>

The baseline scenario identified at the PCN stage of the project activity is:

As per the approved consolidated methodology AMS-I.D. Version 18, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

"The baseline scenario is that the 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 into the grid".

The project activity involves setting up new solar power plants to harness the power of solar energy and inject electricity into the Brazilian regional grid. In the absence of the project activity, the equivalent amount of power would have been generated by the operation and/or insertion of more-GHG-intensive grid-connected power plants. Hence, the baseline for the project activity is the equivalent amount of power produced at the Brazilian grid.

A.2. Location of project activity>>

Project activity consists of 6 Solar photovoltaic power generation plants installed at different locations in Brazil:

Project Activity	Country	State	Village	Latitude	Longitude
1	Brazil	Minas Gerais	São Gonçalo do Sapucaí	21°53'50.2"S	45°34'30.7"W
2	Brazil	Minas Gerais	Passos	20°40'35.4"S	46°35'50.2"W
3	Brazil	Minas Gerais	Passos	20°40'26.8"S	46°35'43.4"W
4	Brazil	Minas Gerais	Carmo Do Paranaíba	18°58'48.7"S	46°18'29.0"W
5	Brazil	Minas Gerais	Carmo Do Paranaíba	18°58'48.8"S	46°18'37.8"W
6	Brazil	Minas Gerais	Itatiaiuçu	20°11'26.8"S	44°25'40.6"W

A.3. Parties and project participants >>

Party (Host)	Participants
Brazil	**Project Owner:** AXS ENERGIA S/A Address: R. Cruz e Souza, 57 - office 601 - Centro, Florianópolis - SC, 88020-700, Brazil
India	**Project Aggregator:** KOSHER CLIMATE INDIA (P) LTD. Address: Zee Plaza, No. 1678, 27th Main Rd Bangalore, Karnataka, India Code 560102 Email: narendra@kosherclimate.com

A.4. References to methodologies and standardized baselines >>

SECTORAL SCOPE – 01, Energy industries (Renewable/Non-renewable sources)

TYPE – I - Renewable Energy Projects

CATEGORY – AMS. I.D. (Title: "Grid connected renewable electricity generation", version 18)

A.5. Crediting period of project activity >>

Length of the crediting period corresponding to this monitoring period: 21 months – 25/03/2022 - 31/12/2023

A.6. Contact information of responsible persons/entities >>

UCR ID – 331
Kosher Climate India Private Limited
Name: Narendra Kumar
Email ID – narendra@kosherclimate.com

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity >>

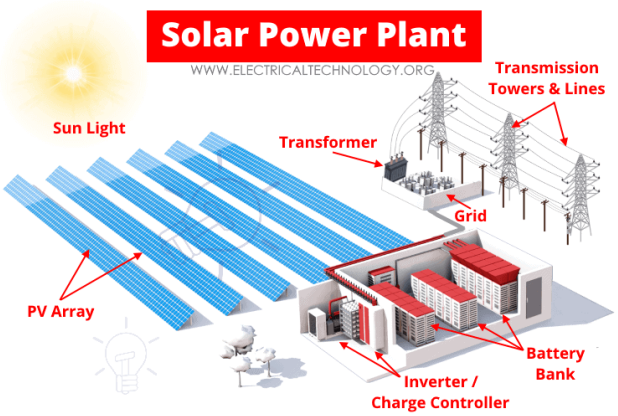
a) Provide information on the implementation status of the project activity during this monitoring period in accordance with UCR PCN>>

Project activity consists of 6 solar photovoltaic installations, already installed and commissioned, whose technology converts the solar radiation into electricity. The solar PV plant is composed of PV modules, Central Inverters, Transformers and other relay and protection systems.

Project activity presents the following features of technology and measures:

Parameter/ Project Activity	**1**	**2**	**3**	**4**	**5**	**6**
Number of **PV Modules**	7280	7280	4368	5600	5600	4480
Capacity of **PV Modules**	445/450 Wp	445/450 Wp	445/450 Wp	590 Wp	595 Wp	2520 x 590 Wp 1960 x 595 Wp
Manufacturer/ Model of **PV Modules**	Trina Solar/ TSM-DEG17MC.20(II)	Trina Solar/ TSM-DEG17MC.20(II)	Trina Solar/ TSM-DEG17MC.20(II)	Canadian Solar/ BiHiKu7	Canadian Solar/ BiHiKu7	Canadian Solar/ BiHiKu7
Number of **Inverters**	20	20	12	20	20	16
Capacity of **Inverters**	125 kW	125 kW	125 kW	125 kW	125 kW	125 kW
Manufacturer/ Model of **Inverters**	Sungrow/SG125HV	Sungrow/ SG125HV	Sungrow/ SG125HV	Sungrow/ SG125HV	Sungrow/ SG125HV	Sungrow/ SG125HV
Number of **Transformers**	3	3	2	3	3	2
Capacity of **Transformers**	2x 1000 kVA 1x 500 kVA	2x 1000 kVA 1x 500 kVA	1000 kVA	2x 1000 kVA 1x 500 kVA	2x 1000 kVA 1x 500 kVA	1000 kVA

b) For the description of the installed technology(ies), technical process and equipment, include diagrams, where appropriate>>



Source: Electrical Technology

B.2 Do no harm or Impact test of the project activity>>

There is no harm associated with project activity, and hence an environmental impact assessment study is not required by Brazilian regulations: according to the National Environment Council's (CONAMA) Resolution nº 1/1986[1] , electricity generation plants under 10 MW are exempted from preparing an environmental impact study to be submitted for approval by the competent state body. Thus, no mitigation measures are applicable.

Instead, there are social, environmental, economic and technological benefits which contribute to sustainable development, as described:

Social benefits:

- Employment opportunities created for the local workforce during project's construction and implementation phases;
- Employment opportunities to be created throughout the lifetime of the project activity;
- Development of rural and remote regions around the project activity.

- **Environmental benefits:**
- Use of solar energy - a clean energy source - for generating electricity;
- Power generation with zero emission of GHG gases or specific pollutants like SOx, NOx, and SPM;
- Effort to minimize the dependence of the Brazilian energy matrix on fossil fuels;
- Minimum impact on land, water and soil at project surroundings.

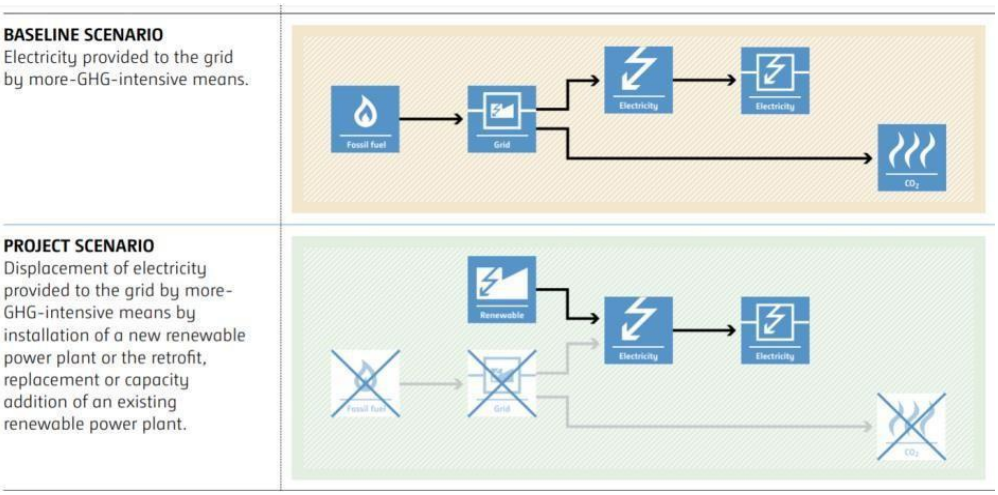
- **Economic benefits:**
- It fosters clean technology and clean energy investments in Brazil;
- It fosters the business development of local service providers in Brazil;
- Project activity can also provide new opportunities for industries and economic activities to be set in the area around the projects, developing rural and remote regions;
- It promotes energy cost reduction to consumers;
- Success of these kinds of projects will pave the way for the expansion of the shared distribution generation model in the national scenario, and therefore the consolidation of solar photovoltaic energy generation as one of the main sources in Brazil.

[1] The referred Resolution has been provided with translation in the folder > 6.Additional Documents > CONAMA Resolution.

B.3. Baseline Emissions>>

Project activity involves harnessing the power of solar energy to produce electricity and to supply it to the local distributor utility, subsequently offsetting the energy consumption of the customers. The baseline scenarios identified at the PCN stage of the project activity is:

In the absence of the project, the equivalent amount of power would have been supplied by the operation of grid-connected power plants and by the addition of other-more-GHG-intensive generation sources. Therefore, the baseline scenario for the project activity, as per methodology AMS.I-D, is the equivalent amount of electricity generated from the Brazilian national grid.



B.4. Debundling>>

Project activity is not de-bundled component of any larger project.

SECTION C. Application of methodologies and standardized baselines

C.1. References to methodologies and standardized baselines >>

SECTORAL SCOPE – 01, Energy industries (Renewable/Non-renewable sources)

TYPE – I - Renewable Energy Projects

CATEGORY – AMS. I.D. (Title: "Grid connected renewable electricity generation", version 18)

C.2. Applicability of methodologies and standardized baselines >>

Applicability Criterion	Project Case
1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: a. Supplying electricity to a national or a regional grid; or b. Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	All the project activities involve setting up of a renewable energy (photovoltaic) generation plant that injects electricity to the Brazilian regional grid system. Thus, the project meets applicability conditions (a).
2. This methodology is applicable to project activities that: a. Install a Greenfield plant; b. Involve a capacity addition in (an) existing plant(s); c. Involve a retrofit of (an) existing plant(s); d. Involve a rehabilitation of (an) existing plant(s); or e. Involve a replacement of (an) existing plant(s)	Project activity is a Greenfield plant and satisfies this applicability condition (a), since it involves the installation of new solar photovoltaic power plants in Brazil.
3. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: a. The project activity is implemented in existing reservoir, with no change in the volume of the reservoir; or b. The project activity is implemented in existing reservoir, where the volume of the reservoir(s) is increased and the power density as per definitions given in the project emissions section, is greater than 4 W/m^2. c. The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project	The project activity involves the installation of Solar photovoltaic plants. Hence, this criterion is not applicable.

emissions section, is greater than 4 W/m2.	
4. If the new unit has both renewable and non-renewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	The proposed project is a 13.5 MW solar power project, with no non-renewable components involved in the project. The criterion is therefore not applicable.
5. Combined heat and power (co-generation) systems are not eligible under this category.	Not relevant to the project activity, since it involves only solar photovoltaic power generating units.
6. In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	There is no other existing renewable energy power generation facility at the project site. Therefore, this criterion is not applicable.
7. In the case of retrofit or replacement, to qualify as a small- scale project, the total output of the retrofitted or replacement power plant/unit shall not exceed the limit of 15 MW.	The project activity is a new installation, it does not involve any retrofit measures nor any replacement and hence is not applicable.
8. In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid, then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as "AMS I. C.: Thermal energy production with or without electricity" shall be explored.	Not relevant to the project activity as it involves only solar photovoltaic power generating units.
9. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	Not relevant to the project activity as it involves only solar photovoltaic power generating units.

C.3 Applicability of double counting emission reductions >>

There is no double counting of emission reductions for the project activities due to the following reasons:

- Installations are uniquely identifiable based on its location coordinates;
- Project has dedicated commissioning certificates and connection points;
- Project is associated with energy meters which are dedicated to the consumption point for project developers;
- Project is not registered at any other GHG program.

C.4. Project boundary, sources and greenhouse gases (GHGs)>>

As per applicable methodology AMS-I.D., version 18:

"The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the project power plant is connected to."

Thus, the project boundary includes the solar photovoltaic modules and the respective Brazilian grid system, as per the following scenario:

Scenario	Source	GHG	Included?	Justification/Explanatio n
Baseline	Electricity generation in fossil fuel fired power that is dispatched due to the project activity	CO_2	Yes	Main emission source
		CH_4	No	Not identified in the baseline methodology
		N_2O	No	Not identified in the baseline methodology
Project Activity	Electricity generation in the project activity	CO_2	No	Zero-emissions grid connected electricity generation from renewable energy
		CH_4	No	Zero-emissions grid connected electricity generation from renewable energy
		N_2 O	No	Zero-emissions grid connected electricity generation from renewable energy

C.5. Establishment and description of baseline scenario (UCR Protocol) >>

As per paragraph 19 of the approved consolidated methodology AMS-I.D., version 18, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

"*The baseline scenario is that the 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 into the grid.*"

The project activity involves setting up new solar power plants to harness the power of solar energy and inject electricity into the Brazilian regional grid. In the absence of the project activity, the equivalent amount of power would have been generated by the operation and/or insertion of more- GHG-intensive grid-connected power plants. Hence, the baseline for the project activity is the equivalent amount of power produced at the Brazilian grid.

A "grid emission factor" refers to a CO_2 emission factor (tCO_2/MWh) which will be associated with each unit of electricity provided by an electricity system. As per the most recent data from Brazil's Ministry of Science and Technology (data of 2022) and the proper calculation methodology, the grid emission factor of Brazil is **0.279 tCO_2/MWh**.

Net GHG Emission Reductions and Removals:

$$ER^y = BE^y – PE^y – LE^y$$

Where:
ER^y = Emission reductions in year y (tCO_2/y) BE^y = Baseline Emissions in year y (tCO_2/y) PE^y = Project emissions in year y (tCO_2/y) LE^y = Leakage emissions in year y (tCO_2/y)

Baseline Emissions:

Baseline emissions include only CO_2 emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants.

The baseline emissions are to be calculated as follows:

$$BE^y = EG^{PJ,y} \times EF^{grid,y}$$

Where:

BE^y = Baseline emissions in year y (tCO_2)
$EG^{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of this project activity in year y (MWh)
$EF^{grid,y}$ = Brazilian Ministry of Science and Technology recommends an emission factor of 0.279 tCO_2/MWh.

Project Emissions:

As per paragraph 39 of AMS-I.D. (version 18, dated 28/11/2014), for most renewable energy project activities emission is zero. Since, all the projects are run of river project and does not involve any reservoir, the project emission is zero.

Hence, $PE^y = 0$

Leakage:

As per paragraph 22 of AMS-I.D. version-18, ‘If the energy generating equipment is transferred from another activity, leakage is to be considered.’ In the project activity, there is no transfer of energy generating equipment and therefore the leakage from the project activity is considered as zero.

Hence, $LE^y = 0$

The actual emission reduction achieved during the first CoU period shall be submitted as a part of first monitoring and verification. However, for the purpose of an ex-ante estimation, following calculation has been submitted:

Project Activity -1

Estimated annual baseline emission reductions (BE^y)

= 5681 MWh/year x 0.279 tCO_2/MWh
= 1584.99 tCO_2/year (i.e., 1584.99 CoUs/year)

Project Activity -2

Estimated annual baseline emission reductions (BE^y)

= 6174 MWh/year x 0.279 tCO_2/MWh
= 1722.54 tCO_2/year (i.e., 1722.54 CoUs/year)

Project Activity -3

Estimated annual baseline emission reductions (BE^y)

= 3731 MWh/year x 0.279 tCO_2/MWh
= 1040.94 tCO_2/year (i.e., 1040.94 CoUs/year)

Project Activity -4

Estimated annual baseline emission reductions (BE^y)

= 6434 MWh/year x 0.279 tCO_2/MWh
= 1795.08 tCO_2/year (i.e., 1795.08 CoUs/year)

Project Activity -5

Estimated annual baseline emission reductions (BE^y)

= 3731 MWh/year x 0.279 tCO_2/MWh
= 1040.94 tCO_2/year (i.e., 1040.94 CoUs/year)

Project Activity -6

Estimated annual baseline emission reductions (BE^y)

= 4731MWh/year x 0.279 tCO_2/MWh
= 1319.94 tCO_2/year (i.e., 1319.94 CoUs/year)

The E mission Reductions for the given monitoring period are summarized in the tables 1 and 2 below. The applicable emission reductions calculations can be found in the Emission

Reductions sheet attached to this Monitoring Report.

Table 1. Emission Reductions per Monitoring year:

Monitoring Period	Net Energy (MWh)							Grid Emission Factor	Emission Reduction (tCO2)
	Proj. Act. 1	Proj. Act. 2	Proj. Act. 3	Proj. Act. 4	Proj. Act. 5	Proj. Act. 6	**Total Net Energy (MWh)**		
25-03-2022 to 31-12-2022	3950	362	403	0	0	0	4714	0.279	1315,3176
01-01-2023 to 31-12-2023	5738	6106	3474	4021	3964	3042	26344	0.279	7349,8923
						Total	31058		**8665**

Table 2. Emission Reductions per Project Activity:

Project Activity	Net Energy (MWh)	Emission Factor	Emission Reduction (CoUs)
1	9688.1	0.279	2702.9799
2	6467.3	0.279	1804.3767
3	3876.5	0.279	1081.5435
4	4020.8	0.279	1121.8032
5	3963.9	0.279	1105.9281
6	3041.5	0.279	848.5785

As per the applicable calculations, the total Emission Reductions (CoUs) for the given project activity in the monitoring period are 8665 CoUs.

C.6. Prior History>>

The project activity has not applied to any other GHG program for generation or issuance of carbon offsets or credits for the said crediting period.

C.7. Monitoring period number and duration>>

First Issuance Period: 25/03/2022 – 31/12/2023.

C.8. Changes to start date of crediting period >>

There is no change in the start date of crediting period.

C.9. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

The present document is the Monitoring Report version 3.0, which presents no changes from the

PCN monitoring plan, applied methodology or applied standardized baseline.

C.10. Monitoring plan>>

Data and Parameters available at validation (ex-ante values):

Data/Parameter	Brazilian Government recommended emission factor
Data unit	tCO_2/MWh
Description	A "grid emission factor" refers to a CO_2 emission factor (tCO_2/MWh) which will be associated with each unit of electricity provided by an electricity system. The Brazilian Ministry of Science, Technology and Innovation publishes yearly emission factors for the energy generation. Applying the referred methodology calculations, the applicable estimated emission factor is 0.279 tCO_2/MWh.
Source of data	1. Official data: https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/dados-e-ferramentas/fatores-de-emissao 2. Calculated Emission Factor: in the folder 1.PCN, MR, ER > Emission Factor Calculation.
Value(s) applied	0.279 tCO_2/MWh.
Measurement methods and procedures	-
Monitoring frequency	Ex-ante fixed parameter
Purpose of data	Calculation of Emission Factor of the grid

Data and Parameters to be monitored (ex-post monitoring values):

Data / Parameter:	$EG^{PJ,y}$
Data unit:	MWh/year
Description:	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of this project activity in year y (MWh)
Source of data:	Monthly Joint Meter Readings (JMRs)
Value(s) applied	31058 MWh
Measurement procedures (if any):	The Net electricity generation by the Solar power plant is recorded by the project proponent in the record logs. At the end of every month, Energy bill is generated based on the total monthly electricity exported to the grid.
Monitoring frequency:	Monthly
QA/QC procedures:	Cross Checking: Quantity of net electricity supplied to the grid will be cross checked from the invoices raised by the project participant to the grid.
Any comment:	-

Small scale renewable energy generation in Brazil:
Small scale grid connected renewable energy generation was introduced in Brazil in 2012, by the regulation REN 482/2012, issued by the National Agency of Electrical Energy (ANEEL). It allowed the consumer from the Captive Market to become also an energy supplier to the grid and, with that, to benefit itself and other affiliates by reducing the energy consumed from the DisCo. The regulation comprised renewable energy generation systems installed close to the load centers, usually even at the same site of the loads (e.g. rooftop photovoltaic systems), thus using only the distribution grid (lower voltage and shorter distances) instead of the transmission grid (higher voltage and longer distances). Those systems are categorized as Distributed Generation (DG) and the maximum installed capacity per system is 5 MW.

There are currently 1.419.624 DG systems in operation, summing over 15 GW of installed capacity. About 99% of those

systems are from the Solar Photovoltaic source and have installed capacities lower than 100kW, which are mainly represented by solar rooftop grid-tie systems for local self-consumption. Less than 1% of the systems have installed capacity over 1 MW, which are mainly solar farms for energy grid export (ANEEL GD data from 11/2022).

Within the DG, the energy generated has to firstly fulfil the consumption of the site where it is installed, so only the surplus can be virtually either exported to other consumption affiliated site or stored in form of credits valid for up to 60 months. The DG energy generators are not like Independent Power Producers (IPP), but "Prosumers", which means a consumer that is additionally a producer for its own and affiliates. It is a much more simplified scheme than the IPPs one.

Metering in small scale renewable energy generation in Brazil:
As explained, the DG systems are installed in the consumer units supplied (in energy) by the DisCos within the Captive Market scheme. Therefore, the meters are installed, operated and maintained by the DisCos. The basic functioning of the metering procedure works as following: the meters measure both the energy that comes from the grid (consumption) and the energy that goes into the grid (surplus export). The DisCo meter is therefore capable of accounting for the energy generation in systems that generates energy for grid exporting purposes. On the other hand, it is not capable of accounting for the energy generation in systems that generates energy for local self-consumption, as a large portion of the energy generated is instantaneously consumed, without going to the grid and consequently without being registered by the DisCo meter. Due to this functioning and to the existence of these 2 different profiles of the DG units, 2 different energy metering situations can be identified. The applicable scenario for the Project Activities is the following:

DG profile that generates energy exclusively for grid export: this is the case of the **Solar Farms**.
As the energy generation is exclusively for grid export, the only energy that is not exported (thus not accounted as export by the meter) is a very low portion that refers to the power plant selfconsumption. Therefore, for this profile, the energy generation is well reflected by the DisCo meter (and by the DisCo monthly invoice data). In these cases, in arrangements similar to Power Purchase Agreements, the DisCo meter data (and DisCo monthly invoice data) are the source of data used for billing purposes; no meters calibration certificates are usually required as the providing and O&M of the meters are a legal responsibility of the DisCo with the national government, thus access to it is restricted to the DisCo.