



OFF GRID SOLAR PV PROJECT AT IAMGOLD ESSAKANE SA GOLD MINE

Project title	Off grid Solar PV project at IAMGOLD Essakane SA Gold Mine
Project ID	2434
Monitoring period	01-July-2022 to 31-December-2023
Original date of issue	07-March-2024.
Most recent date of issue	02-May-2024
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Prepared by	Aera Group

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PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

“Off-grid Solar PV project at IAMGOLD Essakane SA Gold Mine” (hereafter referred to as the “Project” or “Project Activity”) is a small-scale project activity, which involves the development, construction and operation by Essakane Solar S.A.S. of a greenfield solar PV plant with a total installed capacity of 14.928 MWp at the Essakane gold mine, which is in the Sahel region of Burkina Faso about 330 km North-East from Ouagadougou.

Jointly owned by IAMGOLD Corporation (90%) and the Government of Burkina Faso (10%), IAMGOLD Essakane SA, which owns and operates the Essakane gold mine, and produced 377,000 ounces of gold in 2016.

Being owned by Essakane Solar S.A.S. (hereinafter referred to as the “Project Implementer”), a specific purpose vehicle owned by Total Eren as a majority shareholder (>90%), the main objective of the project is to deliver clean, renewable energy based electricity to IAMGOLD Essakane SA. It does so by adding capacity to the 11 existing fuel-powered engines. The Project replaces fuel consumption of the technology in use.

The latitude of the Essakane gold mine offers very favourable radiation conditions throughout the year, with an average of 2,150 - 2,250 kWh / m² per year. This allows an estimated electricity generation of approximately 28,868 MWh for the first full year and 24,881 MWh on a yearly average over the 7-year crediting period. The Project will result in 19,904 tCO₂e of emission reductions per year or 139,329 tCO₂e over a 7-year crediting period.

Implementation timeline

Date	Event
17-March-2017	Signature of the EPC contractor's contract
26-May-2017	Start of construction of power plant
01-May to 13-May-2018	Performance tests under EPC contract & power purchase agreement
01-June-2018	Effective start date of electricity production
01-June-2018 – 31-May-2019	First verification (CDM)
01-June-2019 – 31-December-2020	Joint validation and second verification (VCS)
01-January-2021 – 30-June-2022	Third monitoring period verification (VCS)
01-July-2022 – 31-December-2023	Fourth monitoring period verification (VCS)

During this fourth monitoring period, the project reduced emissions by 27,179 tCO₂e.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
<i>Validation</i>	05-May-2018	CDM	KBS certification	-
<i>Verification</i>	01-June-2018 – 31-May-2019	CDM	Applus	One year
<i>Verification</i>	01-June-2019 – 31-December-2020	VCS	Applus	18 month
<i>Verification</i>	01-January-2021 – 30-June-2022	VCS	4Kearthscience	18 month
<i>verification</i>	01-July-2022 – 31-December-2023	VCS	4Kearthscience	18 month

1.3 Sectoral Scope and Project Type

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Sectoral scope¹	1 - Energy industries (renewable sources)
Project activity type	Renewable energies

1.4 Project Proponent

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Organization name	Essakane Solar S.A.S.
Contact person	Mrs Emma KANTIONO
Title	Managing director
Address	06 BP 9302 Zogona 06 Secteur 13, Zone du bois Avenue Babanguida, Rue Kindfu

¹ Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: <https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes>

Telephone	+33 1 58 97 26 21
Email	emma.kantiono@totalEnergies.com

1.5 Other Entities Involved in the Project

Organization name	AERA GROUP SAS
Role in the project	Carbon consultant
Contact person	Alexandre Dunod
Title	Head, Certification & Deliveries
Address	28 cours Albert Ier 75008 Paris
Telephone	+33 1 42 18 02 02
Email	a.dunod@aera-group.fr

1.6 Project Start Date

Project start date	01-June-2018
Justification	The project started producing electricity at this date thus reducing emissions, in line with VCS Standard. It's also the start date of the CDM crediting period.

1.7 Project Crediting Period

Crediting period	☒ Seven years, twice renewable ☐ Ten years, fixed ☐ Other (state the selected crediting period and justify how it conforms with the VCS Program requirements)
Start and end date of first or fixed crediting period	01-June-2018 to 31-May-2025

1.8 Project Location

The Project is located in north-eastern Burkina Faso (host party), West Africa. It straddles the boundary of the Oudalan and Seno provinces in the Sahel region of Burkina Faso and is approximately 330 km

North-East of the capital, Ouagadougou. It is situated 42 km East of the nearest large town and the provincial capital of Oudalan, Gorom-Gorom.

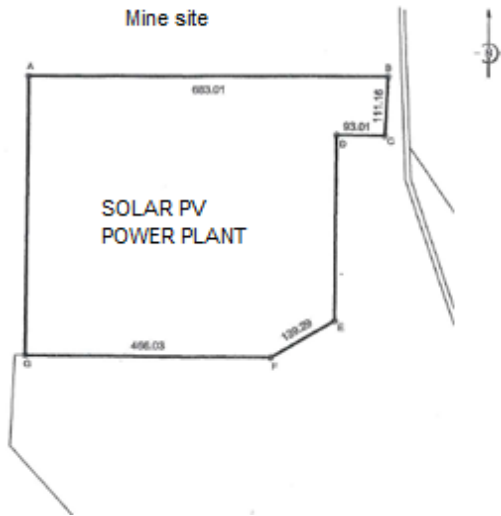


Figure 1: Project location in Burkina Faso

The six villages involved around the project site are:

- Essakane – site
- Essakane – village
- Falagountou
- Goulgountou
- Petabara – Seno
- Petabara - Oudalan

The diagram and map below reveal the exact geo-coordinates and situation of the Project site vis-a-vis the gold mine and the existing fossil fuel based power plants:



	Latitude	Longitude
A	14°21'29.3" N	0°4'30.1" E
B	14°21'59.5" N	0°4'52.9" E
C	14°21'55.9" N	0°4'52.8" E
D	14°21'55.9" N	0°4'49.7" E
E	14°21'44.5" N	0°4'49.7" E
F	14°21'42.2" N	0°4'45.7" E
G	14°21'42.2" N	0°4'30.1" E



Figure 2: Project borders and project location on goldmine site

1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	AMS-I-A	Electricity generation by the user	16.0
Tool		Tool to calculate baseline, project and/or leakage emissions from electricity consumption	3.0

Guidelines		General guidelines to small-scale (SSC) clean development mechanism (CDM) methodologies” (succeeded by “General guidelines for SSC CDM methodologies”	22.1
Guidelines		Guidelines on the demonstrating of additionality of SSC project activities (succeeded by “Methodological tool Demonstration of additionality of small-scale project activities”,	11.0

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

If yes, provide required evidence of no double issuance as outlined by the VCS Standard.

1.10.2 Registration in Other GHG Programs

Is the project registered or seeking registration under any other GHG programs?

☒ Yes ☐ No

The project is registered under the Clean Development Mechanism (Project #10398) on 05 May 2018, although its GHG emission reduction will either be claimed under the VCS programme or the CDM programme, never both.

CDM Monitoring period : 01-June-2018 – 31-May-2019, CER issued : 19,119 :

https://cdm.unfccc.int/Projects/DB/KBS_Cert1502356514.63/iProcess/Applus1565174567.59/view

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the VCS Program Definitions for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

If yes:

Is the project proponent(s) or authorized representative a buyer or seller of the product(s) (goods or services) that are part of a supply chain?

☐ Yes ☐ No

If yes:

Has the project proponent(s) or authorized representative posted a public statement on their website saying, "Carbon credits may be issued through the Verified Carbon Standard project [project ID] for the greenhouse gas emission reductions or removals associated with [project proponent or authorized representative organization name(s)] [name of product(s) whose emissions footprint is changed by the project activities]."

☐ Yes ☐ No

1.12 Sustainable Development Contributions

The Project contributes to Burkina Faso's sustainable development policy as follows:

- Access to electricity as a production factor and resource management:

The Project reduces the country's dependency on imported fossil fuel and its price fluctuations. By making use of a local energy source, which is well suited to the local climate conditions, the project reduces fuel logistics for the largest private company in Burkina Faso located in a remote area, attracts foreign direct investment and increases national energy security/self-sufficiency. During this fourth monitoring period, the project produced 33,974 MWh

- Access to technologies and development of human capital (through employment and training):

The Project constitutes a significant step forward in the promotion of solar technology in Burkina Faso². It provides an opportunity of knowledge transfer through training and employment of local staff during the operation and construction phases of the Project. The Project has set an example for technology diffusion and CDM reference for stakeholders who plan to implement similar technologies in the region. Up to 100 jobs were created during construction phase, while project operations employs about 40 people on the long term, most of them originating from the 6 nearby locations

² Since 2015 installed capacity of about 325 MW which consisted exclusively of thermal and hydro power plants (cf. <http://sonabel.bf/index.php/nous-connaitre/metiers/production>), the largest solar power plant in West Africa has been partially commissioned as CDM-CPA 10320-0003 in September 2017 (33.7 MW Zagtouli)

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime	
Sequential row number	SDG Target number	Number and text of SDG indicator or, if no official SDG indicator is applicable, user-defined indicator	Indicate the project's contribution to the SDG Indicator (implemented activities to increase or decrease)	Brief description of the quantifiable impact of the project's activities related to the SDG indicator, during the monitoring period.	Brief description of the cumulative quantifiable impact of the project's activities related to the SDG indicator, over the project lifetime.	
1)	7.2	7.2.1 Renewable energy share in the total final energy consumption	Implemented activities to increase	The project added 33,974 MWh to the total energy mix of solar energy	The project has produced130,181 MWh since COD	
					01-July-2022 – 31-December-2023	33,974
					01-January-2021 – 30 June 2022	35,083
					01-July-2019 – 31-December -2020	37,217
					01-July-2018 – 30 June-2019	23,907

2)	8.5	8.5.2 Unemployment rate	Implemented activities to decrease	The project employed 45 people in 2022-2023.	Since the start of construction, the project has employed 145 different people (including short term contracts). Around 100 jobs for construction and 45 since start of operation	
3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	By producing renewable energy, the project has saved GHG emission, 27,179 tCO _{2e} for the current monitoring period.	The project has saved 104,128tCO _{2e} since COD	
					01-July-2022 – 31-December-2023	27,179
					01-January-2021 – 30 June 2022	28,066
					01-July-2019 – 31-December -2020	29,764
					01-July-2018 – 30 June-2019	19,119

1.13 Commercially Sensitive Information

No commercially sensitive information thus not applicable

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	<i>All stakeholders were identified at validation</i>
Legal or customary tenure/access rights	<i>N/A identified at validation</i>
Stakeholder diversity and changes over time	<i>N/A identified at validation</i>
Expected changes in well-being	<i>N/A identified at validation</i>
Location of stakeholders	<i>N/A identified at validation</i>
Location of resources	<i>N/A identified at validation</i>

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	<i>Given the security situation in the region, no stakeholders meetings were organized during this monitoring period.</i>
Date(s) of stakeholder consultation	01/06/2016 18/07/2016 15/09/2016 15/10/2016

	2,3,11,13,17/11/2016 17 /12/2016
Communication of monitored results	During the stakeholders meetings
Consultation records	Stakeholder Engagement plan dated June 2017.
Stakeholder input	

2.1.3 Free, Prior, and Informed Consent

Consent	<i>The stakeholders were provided with complete, accurate and understandable information allowing meaningful participation.</i> <i>Much attention was paid to the capacity of the stakeholders to understand ongoing discussions, and therefore language was of key importance: to this date, discussions were held in English or French upon request of the relevant stakeholder.</i> <i>When discussing with affected communities in particular, Essakane Solar always put a great deal of attention to transparency and fairness of the discussions to ensure equal capacity to understand, speak out and negotiate a good deal. As such, when needed, affected communities were assisted by interpreters of their choice during discussions.</i> <i>The design and timeline of the Project were explicated to all relevant stakeholders, and they have been kept informed of all changes regarding the Project (for instance regarding the Project Site's size or the timing of execution). (extract of ESP, June 2017)</i>
Outcome of FPIC	The use of interpreters, and the number of stakeholders meetings, ensure free, prior and informed consent.

2.1.4 Grievance Redress Procedure

Grievances received	Resolution and outcome
<i>No grievances received</i>	<i>N/A</i>

2.1.5 Public Comments

Summary of comments received	Actions taken
<i>No comment received</i>	

2.2 Risks to Stakeholders and the Environment

	Risk identified	Mitigation or preventative measure taken
Risks to stakeholder participation	none	Grievance mechanism: 1. Reception: Applications are received either at the headquarters in the Zogona district of Ouagadougou or in the Ouagadougou, or at the information centers of the Health, Safety and Sustainable Development Development Department. Depending on the geographical location of the request, mail is forwarded either to the Corporate Affairs Department (requests at the national level), or to the SSDD Department (requests at the regional level) 2. Processing: once received, the requests are recorded in a follow-up table (model in annex 2) and are analyzed every week by the department concerned, especially during team meetings. Validation

		is done by the head of the department or his representative. 3. Result: once the request has been processed, the results of the analysis are communicated to the applicant
Working conditions	none	Formation of the staff on the fire hazards and the means to prevent or treat them. Equipping employees of PPE. Respect for instructions for security of the mine.
Safety of women and girls	none	The project is within a closed project area, no un-authorized person can come in
Safety of minority and marginalized groups, including children	none	The project is within a closed project area, no un-authorized person can come in
Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials)	none	Soil pollution: regular inspections Water resources: Formation of the staff on the management of liquid waste Training on techniques for decontamination of contaminated sites

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

Discrimination and sexual harassment	<i>No grievances from workers.</i>
Management experience	<i>General manager of Essakane Solar is a woman.</i>
Gender equity in labor and work	<i>There are 14 women employed in the project (sub contractors included)</i>

Human trafficking,
forced labor, and child
labor

Forbidden under burkinabese law

2.3.2 Human Rights

All workers are declared to competent authorities.

2.3.3 Indigenous Peoples and Cultural Heritage

No indigenous people is affected by the project

2.3.4 Property Rights

Disputes over rights to
territories and resources

N/A

Respect for property rights

N/A

2.3.5 Benefit Sharing

Summary of the benefit sharing
plan

N/A

Benefit sharing during the
monitoring period

N/A

2.4 Ecosystem Health

	Risk identified	Mitigation or preventative measure taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk identified in ESIA	n/a as finished before this monitoring period
Soil degradation and soil erosion	No risk identified	n/a

Water consumption and stress	Risk of accidental spills of hydrocarbures	Training sessions.
Usage of fertilizers	N/A as no fertilizer used	n/a

2.4.1 Rare, Threatened, and Endangered species

.

Species or habitat	Not identified by ESIA
...	...

2.4.2 Introduction of species

Not applicable

Species introduced	Classification	Justification for use	Adverse effects and mitigation

Where invasive species exist in the project area, list such species in the table below and demonstrate that the project activity will not allow the species to thrive.

Existing invasive species	Mitigation measures to prevent spread or continued existence of invasive species

2.4.3 Ecosystem conversion

Not applicable.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

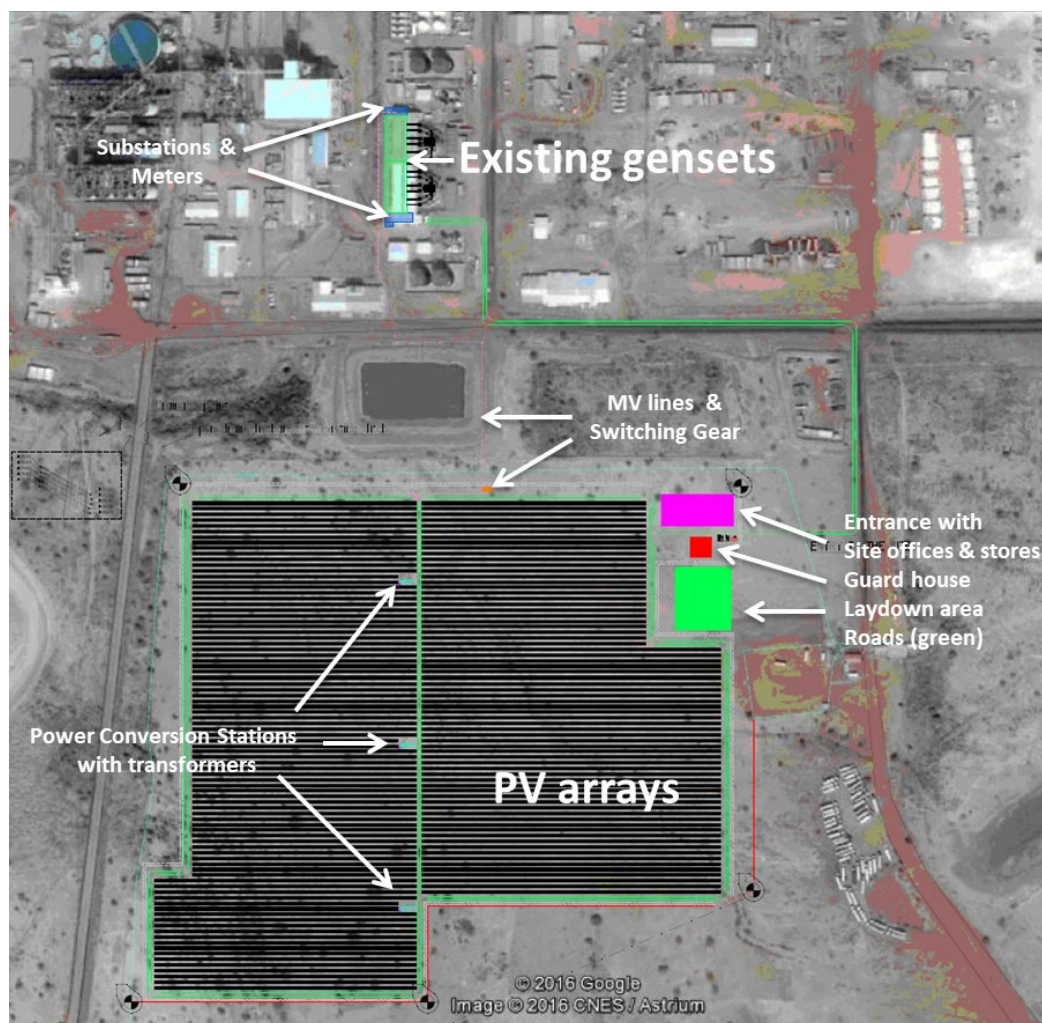
During this fourth monitoring period, the project operated normally and no changes occurred. The Project consists in the installation of a greenfield renewable power plant. The Project relies on solar power source through photovoltaic conversion technology to produce electricity, which is delivered to IAMGOLD Essakane SA.

The PV array consists of 128,880 thin film (CdTe) photovoltaic modules, including 42,840 of 117.5 W (FS-4117-3 of First Solar Series 4™) and 86,040 of 115 W (FS-4115-3) for a total installed capacity of 14.928 MW provided by First Solar manufacturer through Wärtsilä EPC services.

The photovoltaic panels are arranged in line and fixed on galvanized steel support structures that are nailed into the ground minimizing the occurrence of shadows or a variation in their orientation and inclination (15°).

The Project also includes 6 inverters and 3 transformers located in powerhouses wired to the modules through buried cables. Two medium voltage overhead MV lines (6.6 kV) then connect the project to the offtaker's busbar, which is connected to two existing fuel oil based electrical generator sets in the baseline scenario of a total capacity of 58.24 MW. They consist of a total of 11 electrical generator units (5 x 5,256 kW and 6 x 5,327.2 kW) of which 2 spare units (1 for maintenance, 1 for emergency spare).

A hybrid automation system (Wärtsilä Supervisory Control and Data Acquisition (SCADA) system, real-time controllers and photovoltaic combining switchgear) synchronizes the project plant with the existing fossil fuel-based power plant and allows the whole PV facilities to be manually or automatically controlled and monitored.



The technical characteristics of the modules, inverters and transformers installed are those in the tables below:

Table 1: Electrical and mechanical characteristics of the modules (Standard Test Conditions)

Peak Power (W)	115 W	117.5 W
Type of cells	Thin-film CdTe semiconductor	
Rated voltage (V_{mpp}) (V)	69.3	70.1
Rated current (I_{mpp}) (A)	1.66	1.68
Efficiency (%)	16.0	16.3
Length (mm)	1,200	
Width (mm)	600	
Thickness (mm)	6.8	

Table 2: Technical data of the inverters

Parameter	Unit	Description
Manufacturer		ABB
Model		PVS980, -1909kVA-J
Maximum DC input power ($P_{PV,max}$)	kWp	3,055
Nominal AC output power (SN(AC))	kVA	1,909
Maximum AC output power (Smax (AC))	kVA	2,100
Output frequency range	Hz	50/60
Nominal output voltage	V	630
Maximum efficiency	%	98.8
Own consumption in operation	W	2,500
Own consumption in standby	W	225

Table 3: Technical data of transformers

Parameter	Unit	Description
Manufacturer	-	ABB
Rated power	kVA	3818
High voltage	V	6600
Low voltage (no load)	V	630 (630)
Rated frequency	Hz	50

Relevant implementation dates during operation are described in the table below.

Table 4: Relevant implementation dates

Date	Event
17/03/2017	Signature of the EPC contractor's contract
26/05/2017	Start of construction of power plant
01/05/2018 - 13/05/2018	Performance tests under EPC contract & power purchase agreement
01/06/2018	Effective start date of electricity production
01/06/2018 - 31/05/2019	First monitoring period, CDM
01/06/2019 - 31/12/2020	Second monitoring period, VCS (and VCS registration)
01/01/2021 - 30/06/2022	Third monitoring period, VCS

01/07/2022 – 31/12/2023

Fourth monitoring period, VCS

3.2 Deviations

3.2.1 Methodology Deviations

No methodology deviation has occurred during this monitoring period nor previous one.

3.2.2 Project Description Deviations

No project description deviation has occurred during this monitoring period nor previous one.

3.3 Grouped Projects

N/A as not a grouped project.

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes

☒ No

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	EF _{CO2, default}
Data unit	kg CO ₂ /kWh
Description	CO ₂ emission factor
Source of data	AMS-I.A, Version 16
Value applied	0.8
Justification of choice of data or description of measurement methods and procedures applied	Default emission factor, derived from diesel generation units.
Purpose of data	Calculation of baseline emissions
Comments	-

Data / Parameter	I
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Data unit	-
Description	Average technical distribution losses
Source of data	AMS-I.A, Version 16
Value applied	0
Justification of choice of data or description of measurement methods and procedures applied	Reasonable default value if very few distribution losses on low voltage distribution grid are expected.
Purpose of data	Calculation of baseline emissions
Comments	-

4.2 Data and Parameters Monitored

Data / Parameter	EG_y	
Data unit	MWh/monitoring period	
Description	Annual net output of the solar photovoltaic power plant	
Source of data	Electricity meters	
Description of measurement methods and procedures to be applied	Measured continuously by electricity meters and recorded at least once per day. Auxiliary consumption deducted through bi-directional metering.	
Frequency of monitoring/recording	Continuously, aggregated at least annually	
Value monitored	2022	2023
	11,415	22,559
Monitoring equipment	The PowerLogic PM8420 digital meters installed at IAMGOLD power station's feed-in points (Wärtsilä 1 & Wärtsilä 2) have an accuracy of class 0.2S (active energy) and class 0.5S (reactive energy) at the two delivery points. ID of the meters : BA0904 Meter 1 : ME-1706B040-02 (Iamgold, buyer : main) Meter 2: ME1706B060-02 (Essakane Solar, seller : check) BA0911 Meter 1 : ME1706B032-02 (Essakane Solar) Meter 2: ME/1706B257-02 (IamGold)	
QA/QC procedures to be applied	As per PowerLogic PM8000 Series manual, "all meters are tested and verified at the factory in accordance with International	

	Electrotechnical Commission (IEC) and American National Standards Institute (ANSI) standards. [These] digital power meters typically do not require re-calibration". Besides the installation of a main & back-up meter at each feed-in point, reconciliation of measurement results between Essakane Solar and IAMGOLD will occur monthly before electricity invoicing takes place. Furthermore, Essakane Solar has installed its own meters at the transformer's point for transmission losses assessment.
Purpose of the data	Calculation of baseline emissions
Calculation method	N/A
Comments	Invoices to the mine serve as a cross-check basis

4.3 Monitoring Plan

The net electricity generated by the project activity is monitored continuously by at least two electronic electricity meters at the solar PV plant installed by the project implementer and IAMGOLD ESSAKANE S.A. Measurements are carried out on the project implementer's meter.

The metered PV Energy is calculated as the sum of net active energy deliveries by the project plant to IAMGOLD ESSAKANE S.A., less the metered auxiliary energy calculated as the sum of net active energy deliveries from IAMGOLD ESSAKANE S.A. to the project plant measured in kWh at the Wärtsilä 1 & Wärtsilä 2 feed-in points meters.

In practice, it is the technical officer of the Solar PV plants who reports to a Project Monitoring Officer. The project monitoring officer then compiles the recorded data into monthly and annual report. He further keeps a log of the meter readings in the electronic data monitoring panel WISE and in the project implementer's offices at the PV Power Plant during the crediting period and two years after the end of the last crediting period. The monitoring officer will then report this data to electricity off-taker and the CDM Project Manager who will compile the CDM monitoring report.

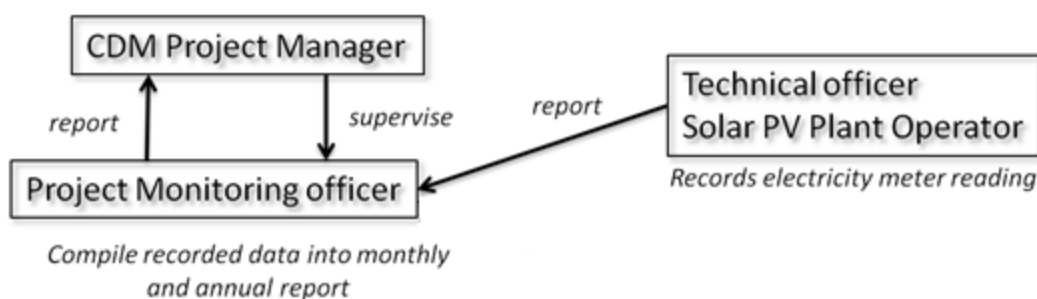


Figure 3 : Monitoring Organisation

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The baseline is described by Paragraph 8 of AMS-I.A., Version 16 as “...the fuel consumption of the technology in use or that would have been used in the absence of the project activity to generate the equivalent quantity of energy...”, estimated using one of three possible options.

For the project activity, Option 2 is applied, such that the energy baseline is calculated based on annual electricity generation from project renewable energy technologies as per the below:

$$E_{BL,y} = \sum_i EG_{i,y} / (1 - I)$$

Where:

$E_{BL,y}$ Annual energy baseline; kWh

$\sum_i$ The sum over the group of i renewable energy technologies (e.g. renewable energy technologies for solar home systems, solar pumps) implemented as part of the project activity.

$EG_{i,y}$ The estimated annual output of the renewable energy technologies of the group of i renewable energy technologies installed; kWh

I Average technical and distribution losses that would have been observed in diesel powered minigrids installed by public programmes or distribution companies in isolated areas, expressed as a fraction.

The emission baseline is the energy baseline calculated in accordance with Paragraph 8(b) of AMS-I.A. times a default emission factor:

$$BE_{CO2,y} = E_{BL,y} * EF_{CO2}$$

Where:

$BE_{CO2,y}$ Emissions in the baseline in year, y ; tCO₂

$E_{BL,y}$ Annual energy baseline in year, y ; kWh

EF_{CO2} CO₂ emission factor; tCO₂/kWh

For EF_{CO2} , default value of 0.8 t CO₂-e/MWh, which is derived from diesel generation units, is used.

Month	BE _y	E _{BL,y}	EF _{CO2}
	t CO ₂	MWh	tCO ₂ /MWh
July 22	1 484	1 855	0,8000

August 22	1 411	1 764	0,8000
September 22	1 559	1 949	0,8000
October 22	1 505	1 881	0,8000
November 22	1 505	1 881	0,8000
December 22	1 668	2 085	0,8000
January 23	1 756	2 195	0,8000
February 23	1 160	1 450	0,8000
March 23	1 600	2 000	0,8000
April 23	1 570	1 962	0,8000
May 23	1 490	1 862	0,8000
June 23	1 410	1 762	0,8000
July 23	1 431	1 789	0,8000
August 23	1 373	1 716	0,8000
September 23	1 513	1 892	0,8000
October 23	1 548	1 935	0,8000
November 23	1 548	1 935	0,8000
December 23	1 648	2 061	0,8000
TOTAL	27 179	33 974	

Thus, $BE_{CO_2,y} = 33,974 \text{ kWh} * 0.8 \text{ tCO}_2/\text{MWh} = \mathbf{27,179 \text{ tCO}_2}$.

5.2 Project Emissions

The project activity is a solar PV project and auxiliary consumption is taken account in the net electricity off-taken by the mine. Therefore, as per the applied methodology AMS-I.A., the GHG emission from the project activity is considered as zero

5.3 Leakage Emissions

No leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

5.4 GHG Emission Reductions and Carbon Dioxide Removals

Vintage period	Baseline emissions (tCO _{2e})	Project emissions (tCO _{2e})	Leakage emissions (tCO _{2e})	Reduction VCUs (tCO _{2e})	Removal VCUs (tCO _{2e})	Total VCUs (tCO _{2e})
01-Jul-2022 to 31-Dec-2022	9,132	0	0	9,132	0	9,132
01-Jan-2023 to 31-Dec-2023	18,047	0	0	18,047	0	18,047

Total	27,179	0	0	27,179	0	27,179
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Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-Jul-2022 to 31-Dec-2022	9,611	9,132	-5%	Difference very small due to theoretical calculation vs real conditions
01-Jan-2023 to 31-Dec-2023	18,261	18,047	-2%	Difference very small due to theoretical calculation vs real conditions. Less than estimated.
Total	27,872	27,179		

APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

Use the table below to describe the commercially sensitive information included in the monitoring report to be excluded in the public version.

Section	Information	Justification

APPENDIX X: <TITLE OF APPENDIX>

Use appendices for supporting information. Delete this appendix (title and instructions) where no appendix is required.