



Verified Carbon Standard

AMBATOLAMPY SOLAR PV

Project title	<i>Ambatolampy Solar PV</i>
Project ID	<i>2307</i>
Monitoring period	<i>01-January-2024 to 31-March-2025 (both days included)</i>
Original date of issue	<i>02-May-2025</i>
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Prepared by	<i>Aera Group</i>

CONTENTS

PROJECT DETAILS	4
1.1 Summary Description of the Implementation Status of the Project	4
1.2 Audit History.....	4
1.3 Sectoral Scope and Project Type	5
1.4 Project Proponent	5
1.5 Other Entities Involved in the Project	5
1.6 Project Start Date	6
1.7 Project Crediting Period	6
1.8 Project Location	6
1.9 Title and Reference of Methodology	8
1.10 Double Counting and Participation under Other GHG Programs	8
1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions.....	8
1.12 Sustainable Development Contributions	9
1.13 Commercially Sensitive Information.....	12
2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT	12
2.1 Stakeholder Engagement and Consultation.....	12
2.2 Risks to Stakeholders and the Environment.....	19
2.3 Respect for Human Rights and Equity	22
2.4 Ecosystem Health	24
3 IMPLEMENTATION STATUS	26
3.1 Implementation Status of the Project Activity	26
3.2 Deviations	27
3.3 Grouped Projects	29
3.4 Baseline Reassessment.....	29
4 DATA AND PARAMETERS.....	30
4.1 Data and Parameters Available at Validation	30
4.2 Data and Parameters Monitored.....	32
4.3 Monitoring Plan.....	34
5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS	36
5.1 Baseline Emissions	36

5.2	Project Emissions	37
5.3	Leakage Emissions	38
5.4	GHG Emission Reductions and Carbon Dioxide Removals	38
APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION.....		39

PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Ambatolampy solar PV (“the project”) consists of the construction and operation of a greenfield 40 MW solar photovoltaic power plant by New Energy Africa Ambatolampy (“NEA Ambatolampy”, previously known as Green Yellow Madagascar) in Ambatolampy, in the South-East of Vakinankaratra region, Madagascar. It involves the setting up of photovoltaic (PV) panels which captures solar energy and convey such energy to the convertor station in order to produce electricity exported to the national grid. Besides the initial capacity of 20 MWp operating since 10-July-2018, the second phase of the Ambatolampy project was commissioned on 17-August-2022, bringing the total installed capacity to 40 MWp.

Electricity in Madagascar is currently heavily reliant on imported fossil fuels currently consumed by thermal power stations (514 MW) versus hydropower plants (162 MW)¹, thus a baseline scenario also considered as the scenario prior to the implementation of the project activity leading to considerable greenhouse gas (GHG) emissions. The project activity undertaken by project promoter NEA Ambatolampy therefore substitutes grid electricity by clean and renewable energy and cut down GHG emissions.

The project is the first large-scale solar PV power plant on the island is expected to generate approximately 36,362 tCO₂e emission reductions per year and 363,615 tCO₂e of emission reductions over the 10 years crediting period. During this monitoring period from 01-January-2024 to 31-March-2025, the project has operated satisfactorily and generated 70,206 MWh, resulting in emission reductions to 47,036 tCO₂e.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation	Validation date : 03-May-2019	CDM	TÜV NORD CERT GmbH	-
Validation	Validation date : 04-November2020	VCS	ESPL	-
Verification period n°1	10-July-2018 – 30-April-2020	VCS	ESPL	22 months (1 year, 10 months)

¹ IRENA, 2022. “Energy Profile : Madagascar” available online [here](#)

Verification period n°2	01-May-2020 – 31-December-2021	VCS	Carbon Check (India) Private Limited	20 months (1 year, 8 months)
Verification period n°3	01-January-2022 – 31-December-2023	VCS	LGAI Technological Center S.A. (Applus+ Certification)	24 months (2 years)
Verification period n°4	01-January-2024 – 31-March-2025	VCS	LGAI Technological Center S.A. (Applus+ Certification)	15 months (1 year, 3 months)

1.3 Sectoral Scope and Project Type

Sectoral scope²	Energy Industries (renewable/non-renewable)
Project activity type	Type 1. Renewable energies. Single project activity.

1.4 Project Proponent

Organization name	New Energy Africa Ambatolampy ³ (NEA Ambatolampy)
Contact person	Mairamou HAMAN ADJI
Title	Impact and Sustainability Manager
Address	Building Kube A Zone Galaxy Andraharo 101 Antananarivo Madagascar
Telephone	+ 261 34 00 308 69
Email	Mairamou.Hamanadji@axian-group.com

1.5 Other Entities Involved in the Project

Organization name	AERA Group
Role in the project	Carbon consultant
Contact person	Alexandre Dunod

² 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>

³ In 2020, the Malagascan company Axian Energy acquired the majority of the shares of Green Yellow Ambatolampy. On January 9, 2023, Green Yellow Ambatolampy, the sole shareholder of Green Yellow Madagascar, changed its corporate name to “New Energy Africa Ambatolampy (NEA Ambatolampy)”

Title	Chief Operating Officer
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1.6 Project Start Date

Project start date	10-July-2018
Justification	date of commissioning, synchronization and start of GHG emission reductions. The extension phase started invoicing production on 17-August-2022

1.7 Project Crediting Period

Crediting period	<input type="checkbox"/> <i>Seven years, twice renewable</i> <input checked="" type="checkbox"/> <i>Ten years, fixed</i> <input type="checkbox"/> <i>Other (state the selected crediting period and justify how it conforms with the VCS Program requirements)</i>
Start and end date of first or fixed crediting period	10-July-2018 – 9-July-2028

1.8 Project Location

Host Party: Madagascar

Region/State/Province: Region of Vakinankaratra, District of Ambatolampy

City/Town/Community: The site is located in Ambatolampy, 90km South of Antananarivo, Madagascar.

The project geo-coordinates are: Latitude: 19° 29'22"S; Longitude: 47° 26'42"E.

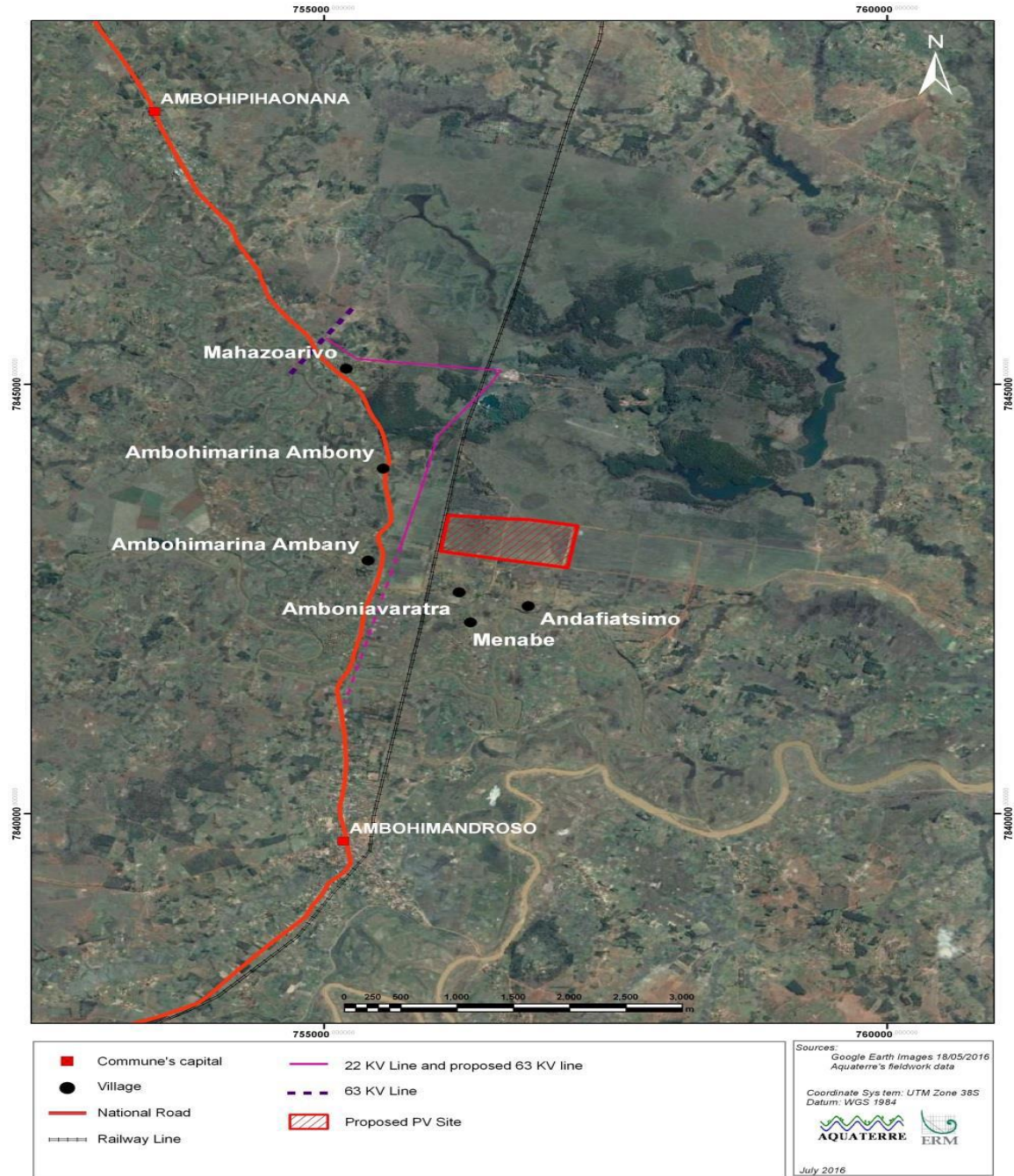


Figure 1: Location of project site

1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	ACM0002	Grid-connected electricity generation from renewable sources	22.0
Tool	01	Tool for the demonstration and assessment of additionality	07.0.0
Tool	23	Additionality of first-of-its-kind activities	3.0
Tool	07	Tool to calculate the emission factor for an electricity system	7.0

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

1.10.2 Registration in Other GHG Programs

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

Yes No

The project is registered under the Clean Development Mechanism⁴ (Project #10481) on 03-May-2019, although its GHG emission reduction will either be claimed under the VCS programme or the CDM programme, never both.

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

⁴ <https://cdm.unfccc.int/Projects/DB/RWTUV1556909746.23/view>

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

1.12 Sustainable Development Contributions

The project proponents are confident that the proposed project activity will make significant impact on Madagascar sustainable development, as also confirmed by the host country in its Letter of Approval of 21-January-2019.

Greenhouse Gas emissions reduction

The project will generate electricity from a renewable and clean energy source, thus avoiding the dispatch of the same amount of electricity produced by fossil-fueled power plants to Madagascar grid Besides, the SOx emissions from coal-fired power plants would also be reduced.

Development of renewable energy

The project will form a major part of the country's approach to sustainable development also in helping to diversify energy supply away from non-renewable sources, in line with the objectives of the Madagascar Action Plan⁵ launched in 2006 (see development of the infrastructure and the rural areas, protection of the environment), complemented by the New Energy Policy 2015-2030 vision. The project will improve energy self-sufficiency of the country, alleviating the associated risks of price variations.

Employment opportunities

The project contributes to the local employment throughout its building and operation phases, its workforce consisting of up to 80 workers at the peak of construction phase and approximately 6 workers in the operations phase. It will also induce indirect employment by increasing the competitiveness of local industry from reducing the country's dependency on fossil fuels.

Therefore, Madagascar Government is supportive of the project because the development of solar PV power is in accordance with the national criteria for sustainable development and

⁵ <https://www.imf.org/~media/Websites/IMF/imported-publications/external/pubs/ft/scr/2007/fra/ cr0759f.ashx>

national policies relating to energy resources and the environment, which will push forward the use of renewable and clean energy across the country – where less than one person out of five currently has access to electricity.

Technology transfer

This type of renewable energy project will assist building capacities in the country, through advanced technology transfer from industrialized countries. The project will introduce solar PV technology, methods and skills in the island and demonstrate its applicability and efficiency, thus widening its accessibility. The technology is manufactured by Jinko Solar and JA Solar. The technology for large scale solar PV power generation is still at starting stage of consideration in the country, Ambatolampy solar PV project being the first large-scale solar PV realization in Madagascar.

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	7.2	7.2.1 Renewable energy share in the total final energy consumption	Increase of renewable energy delivered to the Malagasy grid (RI-Tana grid) from the project activity	70,206 MWh net produced during this monitoring period	261,334 MWh produced since the start of the project activity MP1: 56,465 MP2: 47,392 MP3: 87,271 MP4: 70,206
2)	8.5	8.5.2 Unemployment rate, by sex, age, and persons with disabilities	Increase of employment due to implemented activities	NEA Ambatolampy employs 11 people in permanent positions for the operation and maintenance of the plant	80 workers were employed at the peak of the construction phase. During this monitoring period, there was 11 positions for the operation and maintenance cleaning of the plant (+ various employees for security and cleaning).
3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Increase in tonnes of greenhouse gas emissions avoided	47,036 tCO ₂ e avoided during this monitoring period	175,043 tCO ₂ e avoided since the start of the project activity MP1: 37,847 MP2: 31,766 MP3: 58,394 MP4: 47,036

1.13 Commercially Sensitive Information

There is no commercially sensitive information that has been excluded from the public version of the monitoring report.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification

In the context of the project capacity extension, additional consultations took place locally in order to obtain the public's opinion and create a climate of transparency and integration.

The identification of such stakeholders was done in collaboration with the local authorities, especially the fokontany of Antevana and Menabe that are situated nearby the project site (a fokontany was originally a traditional Malagasy village. Today, according to the 2010 constitution, "fokontany officials participate in drawing up their commune's development program"). The local authorities were informed of the extension project from the start, and when contact was established; they expressed their willingness to work with GreenYellow Madagascar to develop the project. The local authorities facilitated the identification of vulnerable people and other local stakeholders interested in the project. The stakeholders were invited orally by the project developers, during visits to the fokontany and town, and also by the local authorities.

List of stakeholders included in meetings and discussions regarding the extension :

- Mayor
- Client (JIRAMA)
- District chief
- Local population

	<p>- Representatives of vulnerable people</p> <p>Since the additional consultations that took place in the context of the extension, no other stakeholders were identified.</p>
<p>Legal or customary tenure/access rights</p>	<p><i>N/A as the land acquisition was made before validation of initial PD</i></p>
<p>Stakeholder diversity and changes over time</p>	<p>Two lists of stakeholders have been elaborated, first in the context of the initial phase, then in the extension phase. In both lists, most stakeholders were the same categories (local/regional/national authorities, JIRAMA, locals etc) although a few differences can be found: for instances, a brick factory owner was engaged in initial phase and not in extension; while subcontractors and medias were engaged in extension and not during initial phase.</p>
<p>Expected changes in well-being</p>	<p>Access to social well-being is one of the vulnerable groups expectations. Deterioration of the local stakeholders wellbeing was identified in the initial EIA as a potential impact, due to the physical presence of the project site and the change in landscape. The limited built environment (the PV power plant site is only visible from the roads and areas in its immediate vicinity) made this impact identified as negligible. No impact on wellbeing was identified in the extension EIA.</p>
<p>Location of stakeholders</p>	<p>The majority of the stakeholders included are living in the nearby communities of the project site</p>
<p>Location of resources</p>	<p>Local communities use of the PV power plant site is limited to pasture for their livestock and access road to the forest resources located north of the PV power plant site. Local communities land use of the PV power plant site is not based on formal or traditional rights and local communities are aware that their land use of the site is forbidden. The initial EIA mentioned the relevance to arrange alternative access road outside of the Project site to maintain communities' access to natural resources north of the PV power plant site.</p>

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation

Stakeholder engagement activities undertaken for the initial phase include meetings held during the site visit between the 5th and the 8th of July 2016. Stakeholder engagement involved face to face meetings and consultations with local authorities, key informants and group meetings with local communities. Information regarding technical characteristics of the project, indicative location and indicative duration was disclosed. Stakeholders commented and gave their concerns and expectations, as related in the 2016 EIA.

GreenYellow, as part of the conception phase of the Project, has engaged extensively with various stakeholders at the national and regional level including JIRAMA, the government of Madagascar, etc.

In the context of the extension, field investigations were carried out in order to agree individual and public consultations with all project stakeholders, with two missions :

- Mission 1: meeting with internal stakeholders, the Fokontany chief and subcontractors (held in the offices of GreenYellow)

- Mission 2: meetings with the mayor, the client, the district chief, the local population and representatives of vulnerable groups. (held in the municipal premises of the fokontany Lovahinjafy)

In the first mission, the main objectives were the identification of the major environmental and social issues of PPs activities, the expectations and concerns of the local population, PPs environmental commitment programme and explaining the project progress including the extension project. In the second mission, face-to-face interviews on the same themes that were mentioned during the first mission were carried out. A formal public hearing, chaired by local authorities, was organized to share general information with the local population and gather their opinions.

	<p>Regarding ongoing communication during monitoring period, there are annual meetings with the community in order to consider the community expectations from the project. This will continue in the future, and will be useful for the selection of projects for NEA Ambatolampy's environmental and social program.</p> <p>Ongoing communication also include the presence of grievance logbooks in the plant and also in the 2 fokontany and townhall, which are checked once per month (once per week since autumn 2024). Finally, contact information (mail and phone number) from two resource persons acting as relays from project developers and proponents NEA Ambatolampy are communicated with stakeholders :</p> <ul style="list-style-type: none"> • Hery TIANA RASOLOARIVELO (QHSES supervisor) • Jeremie Harison TATA (Operations Manager Ambatolampy)
<p>Date(s) of stakeholder consultation</p>	<p>Initial phase :</p> <ul style="list-style-type: none"> • Several face to face meetings and focus group meetings held between the 05 and 08-July-2016 <p>Extension phase :</p> <ul style="list-style-type: none"> • Mission 1 from 03 to 07-December-2019 • Mission 2 from 10 January to mid-March 2020
<p>Communication of monitored results</p>	<p>Results of the initial project consultations can be read in the EIA where the key concerns and expectations are summarized. Also, minutes of these various consultations were compiled in annexes at the end of the report.</p> <p>Key concerns and feedback from the stakeholders include :</p> <ul style="list-style-type: none"> • transparency, trust, be informed of environmental and social policies (from Jirama) • social peace and consideration of community's social concerns (from local, regional and national authorities) • Identification of priority sectors to support local development, and access to jobs (from public authorities) • Access to health, educational and social well-being (from vulnerable groups)

	<p>As a response to these concerns, the participation of the local population in the extension project is achieved through local recruitment and the social actions that the project will bring. A list of the fokontany's expectations has been drawn up, and a report has been produced to this effect, in order to substantiate the Environmental and Social Action Plan (ESAP).</p> <p>Expectations range from health and education actions from the vulnerable people representants, to social peace, formulated by the local authorities. A table of all the stakeholders, with entities and expectations identified can be seen on table 16 of the PREE, provided to the VVB. Since the start of the extension phase, the RSE actions taken by GreenYellow and afterwards, NEA Ambatolampy, occurred in this regard. The choice of community projects supported by NEA Ambatolampy are directly decided with the local community, during public consultations, in order to take their concerns and priorities into consideration.</p>
<p>Consultation records</p>	<p>Environmental and Social Action Plan (ESAP)</p>
<p>Stakeholder input</p>	<p>The comments received were duly considered in the project's development and preparation of its Environmental and Social Action Plan (ESAP), which objective is to set out the key actions that need to be undertaken by the Project in order to achieve compliance with the applicable environmental and social standards, and in particular those from the IFC⁶:</p> <ul style="list-style-type: none"> • IFC Performance Standards 1 - Assessment and Management of Environmental and Social Risks and Impacts • IFC Performance Standard 2 - Labor and Working Conditions • IFC Performance Standard 3 - Resource Efficiency and Pollution Prevention • IFC Performance Standard 4 - Community Health, Safety, and Security • IFC Performance Standard 5 - Land Acquisition and Involuntary Resettlement

⁶ <https://www.ifc.org/content/dam/ifc/doc/2010/2012-ifc-performance-standards-en.pdf>

	<ul style="list-style-type: none"> • IFC Performance Standard 6 - Biodiversity Conservation and Sustainable Management of Living Natural Resources • IFC Performance Standard 8- Cultural Heritage
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2.1.3 Free, Prior, and Informed Consent

Consent	<p>Since 2016, GREENYELLOW MADAGASCAR has acquired 53 hectares of the "1000 ha" estate through a lease. Prior to the project implantation, the land belonged to the state.</p> <p>Although various activities were carried out by the local habitants on the phase 2 site prior to the construction, agreements were concluded and no conflict emerged from the land use, past or current.</p>
Outcome of FPIC	<p>During the operational phase, which began in June 2018, agreements have been reached with local population for the use of land belonging to GYM, in particular for grazing of livestock and cutting/collecting of grass inside the site.</p> <p>An agreement had been signed between the local population through the Fokontany and GREENYELLOW MADAGASCAR on the recognition of the land as belonging to the developer, and the provisional use of the land by the local communities pending construction work on the extension site. No conflict emerged following the start of construction of the extension site.</p> <p>No displacement of population occurred as part of this extension since the phase 2 site was already owned by GYM (now NEA Ambatolampy).</p>

2.1.4 Grievance Redress Procedure

During this monitoring period 01-January-2024 to 31-March-2025, there were two distinct grievance logbooks made available at the plant for any comments or grievance. One involving grievances for internal stakeholders (NEA employees and local community), and one for external companies like security and other subcontractors. No entry was written in the internal logbook, while one was made in the external logbook, regarding late salary payments for the security employees. The presence of comments on grievance logbooks in the plant and also in the 2 fokontany and townhall are checked once per month (once per week since autumn 2024), in order to be quickly reviewed and addressed by NEA Ambatolampy.

Grievances received	Resolution and outcome
<p>Delayed payment of December 2024 salaries to SECUR-PRO, the company responsible for site security and guarding. (15/01/2025)</p>	<p>As a response, PPs have entered contact with the company responsible for site security. This specific subject was raised, and they got a response explaining the payment was issued since then, and that the delay situation was due to a delay in payment from several customers simultaneously, which had temporarily impacted their cash position.</p> <p>The closing of this grievance on December 2024 payroll was followed with confirmation of payroll issuance in the following months. Copies of the logbooks as well as the mail exchange and grief closing are provided to VVB.</p>
<p>2024: The neighbouring community mentioned a grievance concerning the upgrading of a stretch of road in the vicinity of the power plant that they said had been degraded by the plant's activity, but after investigation this was not the case, and this was passed on as a request</p>	<p>The request was duly recorded but, after analysis, it was not originally classified as a grievance but reclassified as a request. Nevertheless, it was not included in the CSR projects, as these had been defined in advance with the CSR committee, that includes local stakeholders, according to the priorities identified and the budgets allocated. It should also be noted that the section of road mentioned has been in poor condition for more than five years and has not been used as the main access route to the site since the plant began operating.</p>

2.1.5 Public Comments

This project was open for public comment from 29/06/2020 to 29/07/2020 on the Verra website, although no comment was raised. Comments during the stakeholder consultations were raised however, and they are listed in the table below:

Summary of comments received	Actions taken
<p>(stakeholder engagement, phase 1) Meeting minutes with stakeholders groups reported the following comments⁷ :</p> <ul style="list-style-type: none"> • Unawareness of the project by commune representatives prior to the meetings • The mayor expects no negative impacts and only benefits 	<p>Local employment opportunities have been created by the project</p> <p>No conflict was raised regarding land use. However, due to the potential resource on the acquired land, during the operational phase, which began in June 2018, agreements have been reached with local population for the use of land belonging to GYM, in particular for grazing</p>

⁷ Complete meeting minutes are available in the annex A of the EIA

<ul style="list-style-type: none"> • The commune representatives expect no conflict over the PV site with any communal, regional or national projects • Interest from the local inhabitants regarding the employment opportunities • Absence of conflict regarding the land use, since the local inhabitants said they did not use it beforehand 	<p>of livestock and cutting/collecting of grass inside the site.</p>
<p>(stakeholder engagement, phase 2) Mission 1 and mission 2 reported various expectations from the stakeholders, including:</p> <ul style="list-style-type: none"> • From national, regional and local authorities: law enforcement and social peace, conflict resolution, prioritizing local employment • From vulnerable groups and population: access to health, education and social wellbeing, access to employment 	<ul style="list-style-type: none"> • Project activities comply with all laws applicable to the project • No conflict emerged since the start of the project activity. • Local employment opportunities have been created by the project • Most of the Project developers area of actions in terms of CSR activities concern improvement of health, education and social wellbeing, as it can be seen reported on the CSR activities report. Examples of activities in the rural community of Ambohipihaonana, in 2022 / 2023: 1) provision of table-benches for school equipments; 2) deployment of mobile clinics for health access, with 357 medical consultations including 340 women and children.

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

NEA Ambatolampy, a member of the Axian Energy cluster, benefits from the group's expertise in developing clean, sustainable, and accessible energy solutions, contributing to inclusion and energy transition in Madagascar. Its ambition lies in its commitment to providing as many people as possible with access to clean, inclusive, and affordable energy. Axian Energy designs, produces, and distributes hybrid, hydroelectric, and solar solutions tailored to the needs of local communities. For example, AE, through its subsidiary Welight, has installed mini solar power plants in 173 remote villages in Madagascar and Mali, and operates four additional hybrid power plants in Madagascar. The group is also present in other countries on the continent with large-scale projects such as: MINERSOL (Senegal) – 15 MWp, SPESO Nagreongo (Burkina Faso) – 30 MWp, and Gigaawatt Global (Rwanda) – 8.5 MWp. Axian Energy and its entities, including NEA Ambatolampy, place positive impact at the heart of their mission, integrating the socio-economic and environmental

challenges of the territories in which they operate. This vision is reflected in responsible and sustainable governance, embodied in high-impact projects and CSR initiatives aligned with its values and strategic objectives.

AERA Group has 10+ years of experience in carbon projects on the African continent, with more than 200 successful certifications and verifications under CDM, GS and VCS standards, including 100+ on solar technology.

2.2.2 Risk assessment

	Risk identified	Mitigation or preventative measure(s) taken
Natural and human-induced risks to stakeholders' wellbeing	Deterioration of the local stakeholders wellbeing was identified in the initial EIA as a potential impact, due to the physical presence of the project site and the change in landscape. The limited built environment (the PV power plant site is only visible from the roads and areas in its immediate vicinity) made this impact identified as negligible. No impact on wellbeing was identified in the extension EIA	N/A as reflected in the EIA, no other than negligible impact on wellbeing have been identified.
Risks to stakeholder participation	No risk related to stakeholder engagement was identified	N/A as reflected in the EIA where risk assessments have been conducted
Working conditions	Risks on occupational health and safety was considered moderate at construction phase for workers. During operational phase, it is considered negligible.	<ul style="list-style-type: none"> Mitigation & management measure taken such as provision of appropriate PPE to workforce and ensure their consistent use throughout the operational phase.
Safety of women and girls	No risk related to women and girls were identified at the validation, nor during this verification period with employees.	N/A as reflected in the EIA where risk assessments have been conducted
Safety of minority and marginalized groups, including children	The major risk identified related to safety of marginalized groups is the increased traffic in the Project Area with associated risk of accident. Such accident between Project's vehicles and other road users and pedestrians was a risk identified with	<ul style="list-style-type: none"> Development and implementation of specific road traffic management procedures and plan

	<p>a major impact significance for construction phase, but negligible for operational phase</p>	<ul style="list-style-type: none"> • Strictly implement speed limitations including within settlements. • Limit Project's vehicles speed on unpaved road to ensure safe operations.
<p>Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)</p>	<p>Non-hazardous waste generated during construction activities have the potential to generate pollutions. The risk is identified at all phases of the project, at minor impact. With mitigation and management measures, the risk becomes negligible for all phases.</p> <p>Project construction phase carbon emissions have been estimated by GreenYellow at 36 tonnes of CO₂. Overall air quality risk has been assessed as 'negligible' during construction phase, as well as operational phase. Noise and vibrations have been assessed as a minor impact significance during construction, and negligible with mitigation measures (such as grievance process for noise complaint). It is also negligible for operational phase.</p> <p>Hydrology and water consumption is estimated of minor impact during construction, becoming negligible with appropriate mitigation measure. This implies careful management of water consumption, and good design of on-site well.</p> <p>No other risk related to pollutants other than negligible are identified during the operational phase.</p>	<ul style="list-style-type: none"> • Waste Management Plan (WMP) following the principles of waste minimisation at source, segregation for reuse, recycling, and disposal of waste. • Making suitable facilities available for the collection of, segregation and safe disposal of waste. • Creating waste collection area with clearly marked facilities such as colour coded bins and equipment for handling the waste. • Ensure all wastes are managed by a licensed contractor.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

	Risks identified ⁸	Mitigation or preventative measure(s) taken
Discrimination	No discrimination risk or event was reported, including in the grievance logbook. Project developers were interviewed about such and confirmed that no such event occurred during the monitoring period.	Non-discrimination and equal opportunity in labour and work conditions is one of the performance standard of the NEA Ambatolampy structure, reported in their Environmental and Social Reports (see ESAP report 2024 and ESAP report Q1 2025)
Sexual harassment	No sexual harassment risk or event was reported, including in the grievance logbook. Project developers were interviewed about such and confirmed that no such event occurred during the monitoring period.	Sexual harassment is also monitored on site by NEA Ambatolampy as confirmed by project developers.
Gender equity in labor and work	No specific risk identified as per E&S reports	The project is located in Madagascar, which is an ILO member state since 01/11/1960, and which ratified the following conventions: C100 - Equal Remuneration Convention, 1951 (No. 100), since 10 August 1962 ⁹ C111 – Discrimination (Employment and Occupation) Convention, 1958 (No. 111) since 11 August 1961. ¹⁰
Forced labor	No specific risk or event identified. In the extension E&S study report, the elimination of all forms of forced or compulsory labor is reminded to the company	The project aligns with the labour convention and labour rights of Madagascar, which is a member of the International Labour Organisation (ILO). Forced labour is one of the performance standard of the NEA Ambatolampy structure, reported in their Environmental and Social Reports (see ESAP report 2024 and ESAP report Q1 2025)
Child labor	No specific risk or event identified. In the extension E&S study report, the elimination of all forms of	The project aligns with the labour convention and labour rights of Madagascar, which is a member of the International Labour Organisation (ILO). Child labour is one of the performance

⁸ The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

⁹ https://normlex.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO:12100:P12100_INSTRUMENT_ID:312245:NO

¹⁰ https://normlex.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO:12100:P12100_INSTRUMENT_ID:312256:NO

	forced or compulsory labor is reminded to the company	standard of the NEA Ambatolampy structure, reported in their Environmental and Social Reports (see ESAP report 2024 and ESAP report Q1 2025)
Human trafficking	No specific risk identified related to human trafficking	The project aligns with the labour convention and labour rights of Madagascar, which is a member of the International Labour Organisation (ILO).

2.3.2 Human Rights

The project is operated in Madagascar, which is an ILO member state since 01/11/1960, and which ratified the following conventions:

- C029 - Forced Labour Convention, 1930 (No. 29) P029 - Protocol of 2014 to the Forced Labour Convention, 1930 ratified on 06 Nov 2017 (In Force) since 01 Nov 1960
- C087 - Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87) since 01 Nov 1960
- C098 - Right to Organise and Collective Bargaining Convention, 1949 (No. 98) since 03 Jun 1998
- C100 - Equal Remuneration Convention, 1951 (No. 100) since 10 Aug 1962
- C105 - Abolition of Forced Labour Convention, 1957 (No. 105), since 06 Jun 2007
- C111 - Discrimination (Employment and Occupation) Convention, 1958 (No. 111), since 11 Aug 1961
- C138 - Minimum Age Convention, 1973 (No. 138) Minimum age specified: 14 years, since 31 May 2000
- C182 - Worst Forms of Child Labour Convention, 1999 (No. 182), since 04 Oct 2001

Risks identified	Mitigation or preventative measure(s) taken
N/A as no specific risk identified	Although no specific risk on human rights was identified in regard to the project, the AXIAN group does include a human right training policy

2.3.3 Indigenous Peoples and Cultural Heritage

Risks identified	Mitigation(s) or preventative measure taken
N/A as no risk identified	N/A: as per ESIA, no indigenous people were identified. Also, no impact on cultural heritage was identified during the operational phase.

2.3.4 Property Rights

Risks identified	Mitigation or preventative measure(s) taken
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N/A as no risk identified	N/A as prior to the project implementation, the land belonged to the state and use was forbidden. Also, no agreement has been signed on property rights. No conflict emerged during this monitoring period.
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2.3.5 Benefit Sharing

Summary of the benefit sharing plan	No agreement has been signed in the past, nor is currently in use since the start of construction and operation of the project phase 2.
Benefit sharing during the monitoring period	N/A as no agreement was in effect during the monitoring period.

2.4 Ecosystem Health

	Risk identified	Mitigation or preventative measure(s) taken during the monitoring period
Impacts on biodiversity and ecosystems	According to the Environmental and Social Impact Assessment (ESIA), the habitats on the project site are of little interest in terms of biodiversity. As a consequence, biodiversity loss is identified as a negligible risk, whether for construction phase increased human activity, noise, etc. or operational phase (physical barrier).	N/A during monitoring period, as per EIA no risk is identified during operational phase other than negligible.
Soil degradation and soil erosion	The only impact other than negligible identified on geology and soils concerns the decommissioning phase: a minor significance related to potential land contamination in case of waste storage not managed properly or accidental events.	<i>N/A during monitoring period, as per EIA no risk is identified during operational phase.</i>
Water consumption and stress	<ul style="list-style-type: none"> Impact of minor significance identified regarding the potential decreased amount of 	<ul style="list-style-type: none"> N/A <i>Data is collected as KPI since 2023 for good practices and</i>

	<p>groundwater during construction phase.</p> <ul style="list-style-type: none"> Water is consumed during monitoring periods as part of the periodical cleaning of the solar panels. Water is sourced from a well which is on site (inside the premises of the project site, next to the offices as seen during the previous OSV) which is then loaded on a truck and used for cleaning. The high-pressure device for water cleaning is powered by a small petrol generator unit. 	<p><i>limitation of volumes consumed (including water, waste and fuel consumption)</i></p>
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2.4.1 Rare, Threatened, and Endangered species

Species or habitat	<p>As per ESIA, the Project area is composed of modified habitats with no particular interest for biodiversity. The PV power plant site has been heavily modified for large scale farming by previous operators and there is no flora or fauna in the Project area known to have a specific conservation status.</p>
Areas needed for habitat connectivity	<p>As per ESIA reports, no risk to adversely impact areas needed for habitat connectivity were reported.</p>

	Risks identified	Mitigation or preventative measure(s) taken
Habitats for rare, threatened, and endangered species	N/A as no risk identified	According to the Environmental and Social Impact Assessment (ESIA), the habitats on the project site are of little interest in terms of biodiversity
Areas for habitat connectivity	N/A as no risk identified	As per ESIA reports, no risk to adversely impact areas needed for habitat connectivity were reported.

2.4.2 Introduction of species

N/A as the project does not do any planting or species introduction

2.4.3 Ecosystem conversion

N/A as not an ARR, ALM, WRC or ACoGS project

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

Technical specifications of the equipments :

	Phase 1 (initial)	Phase 2 (extension)
Inverter	INGECON SUN 1220TL (15 units)	SUNGROW SG250HX (77 units)
Solar PV	JKM 270 PP-60; JKM 275 PP-60 (73,008 units)	JAM72S30-540/MR; 540 [W] peak power (37,050 units)
Transformers	800[V]/20[kV]; 3,660 [kVA]; Dy11 (5 units)	<ul style="list-style-type: none"> • 800[V]/20[kV]; 3,750 [kVA]; Dyn (3 units) • 800[V]/20[kV]; 4,000 [kVA]; Dyn (2 units)
Substation	20[kV] substation equipped with 05 cells	20[kV] substation equipped with 06 cells
Energy delivery point transformers	type SFZ-20000/63; triphase; 63/20 [kV]; 20 [MVA]; 50 [Hz]; YNyn0 ; tap changer 63[kV], +/- 15 [%]; (1 unit)	type SFZ-20000/63; triphase; 63/20 [kV]; 20 [MVA]; 50 [Hz]; YNyn0 ; tap changer 63[kV], +/- 15 [%]; (1 unit)
Project Capacity delivered to Grid (MWC)	20 MWp	20 MWp

Battery Energy Storage System (BESS) :

Name of Project	GREEN YELLOW PHASE-I	NEA AMBATOLAMPY PHASE-II (Extension)
Manufacturer		SUNGROW
Energy Storage Technology	NA	LPF : Lithium Phosphate Fer
Battery Applications (<i>peak shaving/frequency regulation/inertial support etc.</i>)	NA	Peak shaving
Project Capacity (MW / MWh)	NA	- Battery: 2 x (2 x 1376 [kWh]) - PCS output: 2 x 2500 (kVA)
Equipment supplied	NA	- Battery: type M2L- - PCS (Power Conversion System): type SC1375UD; 550[Vac]/550[Vdc]; number: 04; - transformers PTR-BESS: type : 550[V]/20[kV]; 2500 [kVA]; Dyn0; number: 02; - transformers auxiliaries:

		550[V]/400[V]; 80 [kVA]; Dyn0; number: 02; - TGBT BESS: 550 [V]; number: 02; - TGBT auxiliaries: 400 [V]; number: 02;
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During the monitoring period 01/01/2024 –31/03/2025, the project has operated satisfactorily, generating a total net energy delivered to the grid equal to 70,206 MWh : 33,820 MWh from the initial phase and 36,386 MWh from the extension, respectively. The only noteworthy event is the unavailability of a protection cell on a transformer of the initial phase. This lasted from January until February 2024 and impacted the project production on that period. Other events of significance, are summarized in the following table:

January-February 2024	Default of a protection cell on the initial phase
April-May 2024	Multiple defaults of inverters on the extension phase
May-August 2024	Multiple defaults of inverters on the initial phase
May-August 2024	Multiple defaults of inverters on the initial phase
Sept-Oct 2024	Lack of capacitors harmonic filters (initial phase)
December 2024 – March 2025	Default of Batteries Rack (PCS 1) on extension phase

No changes in applicable legislation have occurred during this fourth monitoring period.

3.2 Deviations

3.2.1 Methodology Deviations

No methodology deviation has been applied for this monitoring period. Therefore, this section is not applicable to the project.

3.2.2 Project Description Deviations

No project Description deviation has been applied for this monitoring period.

[Deviations from monitoring period n °3, approved on 17/02/2025]¹¹

- a) *As a consequence to its capacity change, all mentions to “20 MW”, including in the former title of the project “Ambatolampy 20 MW solar PV” are removed or updated to display “40 MW” instead.*

¹¹ Full content and outcomes of the deviation is available on the following public link : <https://registry.verra.org/app/projectDetail/VCS/2307>

- b) On January 9th, 2023, PPs Green Yellow Madagascar changed its company name to “New Energy Africa Ambatolampy (NEA Ambatolampy)”, a subsidiary of the African company Axian. The same is reflected in the MR, section 1.4 ‘project proponent’.
- c) The project deviates in section 1.1 and 1.11 of the registered VCS-JPD-MR regarding the total capacity of the project. The capacity of the project changed from 20 MWp to 40 MWp as new panels have been added as a phase II to the project in order to increase electricity production. The commercial agreement for this extension was executed on November 27th, 2020, and the commercial operation date of the added capacity occurred during this monitoring period, on August 17th, 2022.
- d) The project deviates in section 1.11 regarding the equipment and technology description for the project activity. While the equipment of phase 1 remain unchanged, the description of the extension equipment, which involves solar PV modules of different models, is added.
 - The project’s phase 1 is composed of 14,832 modules JKM 270 PP-60 and 58,176 modules JKM 275 PP-60 that are connected in strings of 24 modules, split between 3 inverters/transformers packs located on 5 Ingeteam skids (PTR1 to PTR5).
 - The project’s phase 2, the extension, comprises 37,050 PV modules of type JAM72S30-540/MR that are connected in strings of 24 modules, split between 77 inverters of type SUNGROW SG250HX. These new panels were not in operation during previous monitoring periods. The project extension also features the installation of 5MW/5MWh storage system batteries associated with the RIA (Réseau Interconnecté d'Antananarivo - Antananarivo Interconnected Grid), which will provide sufficient smoothing of the new plant's daily PV output. The aim is to smooth out PV variations due to intermittency over the day.
 - Detailed characteristics of the extension solar PV modules:

Manufacturer	JA solar
Model	JAM72S30-540/MR
Quantity	37,050
Peak Power (W)	540
Type of cells	Mono
Rated voltage (Vmpp) (V)	41.64
Rated current (Impp) (A)	12.97
Efficiency (%)	20.9
Dimensions (mm)	2279 x 1134 x 35 mm
 - Updated single line diagram of the PV plant can be found in Annex of the monitoring report.
- e) The project updates its description of monitoring equipment in section 1.11 and 6.1 of the JPD-MR.
- f) The JPD-MR from VCS validation, dated 15-July-2020, is updated to include the above-mentioned deviations and is assessed by VVB. Such revised JPD-MR will be available on the project webpage of the VCS registry.

g) *Crediting period for the project activity is updated to 10 years with no option of renewal, in order to comply with conditions for First-of-its-kind project criteria in additionality tool 23.*

• *Outcomes of the deviations include impact on:*

- *Applicability of the methodology: In the context of this deviation, the project updates the version of the applied methodology ACM0002, from v20.0 to v22.0, in section 1.2 and 3.2 of the JPD-MR. The applicability against the additional applicability conditions of the methodology ACM0002, version 22.0 is demonstrated in the revised PD-MR.*
- *Project additionality: Additionality was re-assessed in the context of this deviation, using Tool 23, Version 03.0. Following requirements assessment, the project was identified as first-of-its-kind and thus additional, in line with Tool 01 version 07.0.*
- *Appropriateness of the baseline scenario : the original baseline context and emission factor still remains the same and applicable. The assessment team confirmed the absence of impact on baseline scenario of the project activity due to the project description deviations sought during the current verification.*

3.3 Grouped Projects

This is 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	$EF_{grid,CM,y}$
Data 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 emission factor for an electricity system”
Source of data	JIRAMA 2015-2017 data
Value applied	0.6703
Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of data	Calculation of baseline emissions
Comments	-

Data / Parameter	$EF_{grid,OM,y}$
Data unit	tCO ₂ /MWh
Description	Operating Margin CO ₂ 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”
Source of data	JIRAMA 2015-2017 data
Value applied	0.668
Justification of choice of data or description of measurement methods and procedures applied	-

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO ₂ /MWh
Description	Build Margin CO ₂ 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”
Source of data	JIRAMA 2015-2017 data

Value applied	0.677
Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of Data	Calculation of baseline emissions
Comments	-

Data / Parameter	The percentage share of total installed capacity of solar PV
Data unit	%
Description	The percentage share of total installed capacity of the solar PV in the total installed grid connected power generation capacity in the host country.
Source of data	https://www.africa-eu-renewables.org/marketinformation/madagascar/energy-sector/
Value applied	0.1
Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of Data	Additionality demonstration
Comments	-

Data / Parameter	The total installed capacity of solar PV
Data unit	MW
Description	The total installed capacity of the solar PV in the host country.
Source of data	-
Value applied	0.53
Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of Data	Additionality demonstration
Comments	-

4.2 Data and Parameters Monitored

Data / Parameter	EG _{facility,y}																			
Data unit	MWh																			
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y																			
Source of data	Measured directly with electricity meter(s) at JIRAMA sub-station																			
Description of measurement methods and procedures to be applied	Electricity outputs are electronically recorded, stored and invoiced monthly to JIRAMA by NEA Ambatolampy, based on main meter (or back-up in case of main meter unavailability or default).																			
Frequency of monitoring/recording	Continuous measurement and at least monthly recording																			
Value monitored		(01-January-2024 to 31-December-2024)	(01-January-2025 to 31-March-2025)	Total																
	Initial phase	27,111	6,709	33,820																
	Extension phase	29,466	6,920	36,386																
	Total	56,577	13,629	70,206																
Monitoring equipment	<p>There are 7 meters in total : 3 for each phase (1 main, 1 check and 1 back up), measuring the net electrical energy delivered to RI-Tana grid and located before 20/63kV transformer at JIRAMA substation. They also measure the consumption of the plant, including BESS charging from the grid. The 7th meter, measuring office consumption, including lights, cameras, etc. (labelled as 'invoiced imports' on the ER sheet), is located at the JIRAMA VIE base, next to the offices. They feature the following specifications:</p> <table border="1"> <thead> <tr> <th colspan="4"><i>Initial phase</i></th> </tr> </thead> <tbody> <tr> <td>Meter designation:</td> <td>Main</td> <td>Check</td> <td>Internal control¹²</td> </tr> <tr> <td>Meter ownership:</td> <td>NEA Ambatolampy</td> <td>JIRAMA</td> <td>NEA Ambatolampy</td> </tr> <tr> <td>Make:</td> <td>Landis+Gyr</td> <td>ZTE</td> <td>Phoenix contact</td> </tr> </tbody> </table>				<i>Initial phase</i>				Meter designation:	Main	Check	Internal control ¹²	Meter ownership:	NEA Ambatolampy	JIRAMA	NEA Ambatolampy	Make:	Landis+Gyr	ZTE	Phoenix contact
<i>Initial phase</i>																				
Meter designation:	Main	Check	Internal control ¹²																	
Meter ownership:	NEA Ambatolampy	JIRAMA	NEA Ambatolampy																	
Make:	Landis+Gyr	ZTE	Phoenix contact																	

¹² These 'internal control' meters are not part of the PPA, they are for indicative purpose : they serve as internal control meters for NEA Ambatolampy

Model:	E650 ¹³	DTSD178-M ¹⁴	EEM-MA600 ¹⁵
Accuracy class:	0.2S (±0.2%)	0.5S (±0.5%)	0.2S (±0.2%)
Serial Number:	No. 3507387521272	No. 012000005221	No. 17512310044_T
Calibration date:	n/a ¹⁶	02/08/2021	n/a ¹⁷

<i>Extension phase</i>			
Meter designation:	Main	Check	Internal control ¹⁸
Meter ownership:	NEA Ambatolampy	JIRAMA	NEA Ambatolampy
Make:	Landis+Gyr	ZTE	Phoenix contact
Model:	E650 ¹⁹	DTSD178-M ²⁰	EEM-MA770 ²¹
Accuracy class:	0.2S (±0.2%)	0.5S (±0.5%)	0.2S (±0.2%)
Serial Number:	No. 3507576049226	No. 012000005522	No. 1127052
Calibration date:	n/a ²²	17/08/2022	n/a ²³

<i>JIRAMA VIE base meter:</i>	
Meter designation:	Main
Meter ownership:	JIRAMA
Make:	ZTE
Model:	DTSD178-M ²⁴
Accuracy class:	0.5S (±0.5%)
Serial Number:	No. 170164261685

¹³ <https://www.landisgyr.eu/product/landisgyr-e650/>

¹⁴ https://en.dongfang-wisdom.com/html/ProductDetail_302-0-nul.html#3

¹⁵ <https://www.phoenixcontact.com/fr-fr/produits/appareil-de-mesure-eem-ma600-2901366>

¹⁶ “As per manufacturer’s manual, meters are calibrated at the factory and do not require any further calibration during their entire service life.” Ambatolampy 20MW solar PV, PDD section B.7.1

¹⁷ Since these meters are for indicative purpose, and are not included in the PPA nor involved in any facturing/ER calculation purpose, no specific calibration requirements are needed

¹⁸ These ‘internal control’ meters are not part of the PPA, they are for indicative purpose: they serve as internal control meters for NEA Ambatolampy

¹⁹ <https://www.landisgyr.eu/product/landisgyr-e650/>

²⁰ https://en.dongfang-wisdom.com/html/ProductDetail_302-0-nul.html#3

²¹ <https://www.phoenixcontact.com/fr-fr/produits/appareil-de-mesure-d-energie-eem-ma770-2907945#downloads-link-target>

²² “As per manufacturer’s manual, meters are calibrated at the factory and do not require any further calibration during their entire service life.” Ambatolampy 20MW solar PV, PDD section B.7.1

²³ Since these meters are for indicative purpose, and are not included in the PPA nor involved in any facturing/ER calculation purpose, no specific calibration requirements are needed

²⁴ https://en.dongfang-wisdom.com/html/ProductDetail_302-0-nul.html#3

	Calibration date:	n/a
QA/QC procedures to be applied	Cross check of measurement results with records for sold electricity. As per PPA §9.3, meters’ testing, inspection, repairs, re-calibration or replacement will be ensured by the Parties according to best practices. Yet as per manufacturer’s manual, meters are calibrated at the factory and do not require any further calibration during their entire service life. Calibration by customer is, therefore, not necessary.	
Purpose of the data	Calculation of baseline emissions	
Calculation method	-	
Comments	Since no information regarding the check and internal control meters calibration requirements was available, a conservative factor was applied to the net electricity generation value, corresponding to the accuracy class of the check meters: 0.5S ($\pm 0.5\%$) for both phases	

4.3 Monitoring Plan

The proposed project activity monitoring plan complies with the methodology ACM0002 - Grid-connected electricity generation from renewable sources, whereby it is stated that: As per ACM0002 provisions for record handling, all data collected as part of monitoring is archived electronically and kept at least for 2 years after the end of the last crediting period.

All measurements are conducted with calibrated measurement equipment according to relevant industry standards. Indeed, the quantity of net electricity generation supplied by the project plant to the grid is reliably monitored through calibrated electricity meters and cross-checked with sales records as part of quality assurance/quality control measures on top of CEB diligence.

Monitoring organization:

The Country Manager of NEA Ambatolampy coordinates and endorses the overall responsibility for all CDM monitoring of the project, including:

- Develop, approve, execute, and improve the CDM Monitoring/Reporting Procedures;
- Organize in-house seminar to inform and train the company staff to the monitoring procedures;
- Ensure that instrumentations and devices are available and properly suited to efficiently perform the monitoring;
- Communicate and coordinate the monitoring work of all business units;
- Validate and electronically archive all monitoring data on a monthly basis throughout the crediting period (and conserve it at least for 2 further years);
- Calculate and report the emission reductions; and
- Coordinate the DOE work during the verification audit.

The Country Manager might appoint a CDM coordinator to delegate him the above specific tasks of monitoring supervision. The Technical/Engineering/Maintenance Department consisting of

plant technicians will undertake the technical actions required by the monitoring plan, under the Country Manager's authority, to collect and record related data.

The Accounting/Sales Department (Chief Financial Officer) will crosscheck, reconcile or consolidate data with multiple sources whenever possible. At minimum, data obtained from the electricity meters is to be crosschecked with the electricity sales receipts. This kind of reconciliation activity will be recorded properly as DOE may request for such information during the verification.

Monitoring team training and emergency preparedness

Data collection, consolidation and results analysis is undertaken by a dedicated team adequately trained, well aware of standard requirements. O&M workflow manual enforced on-site further includes all updated procedures in case of mistake/break-downs, emergency disconnections and cyclone warnings.

In addition to the VCS carbon audit of monitoring period n°3, 2 audits took place in 2024: 1 internal and 1 external. The purpose of the internal audit was to ensure 5S and HSSSES compliance (internal), and the external audit was for iso 9001 certification, which was validated by the auditors. No non-conformities were raised during the audits, applicable to the site, as confirmed by Project Developers.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The monitoring period for which GHG emission reductions were achieved spans from 01/01/2024 to 31/03/2025. Baseline emissions are calculated according to the methodology as the product of (i) the quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year y ($EG_{facility,y} = \text{Exports} - \text{Imports}$, in MWh/yr) and (ii) the combined margin CO₂ emission factor for grid connected power generation in year y ($EF_{grid,CM,y}$):

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y} \quad \text{Equation (1)}$$

Where:

BE_y	Baseline emissions in year y (t CO ₂ /yr)
$EG_{PJ,y}$	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year y (MWh/yr)
$EF_{grid,CM,y}$	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 emission factor for an electricity system” (t CO ₂ /MWh)

$EG_{PJ,y} = EG_{facility,y}$ i.e. the quantity of net electricity generation supplied by the project plant to the grid, as monitored and displayed below on a monthly basis.

$EF_{grid,CM,y} = 0.6703$ tCO₂/MWh, as the Project Proponent have calculated, the VVB validated and was registered.

Calculation of Baseline Emissions (detailed version available in ex-post ER sheet) :

	<i>Initial phase production (kWh)</i>	<i>Extension phase production (kWh)</i>	<i>$EG_{PJ,y}$ (MWh)</i>	<i>$EG_{PJ,y}$ (MWh) with error factor adjustment (0.5S)</i>	<i>BE_{Amb1} (tCO₂)</i>
Jan-24	2,094,900	2,710,100	4,803	4,562	3,058.2
Feb-24	1,792,430	2,162,670	3,953	3,755	2,517.2
Mar-24	2,208,370	2,391,130	4,597	4,367	2,927.5
Apr-24	2,038,770	2,236,710	4,274	4,060	2,721.2
May-24	2,239,800	2,265,980	4,504	4,278	2,867.7
Jun-24	2,192,190	2,214,510	4,400	4,179	2,801.4

Jul-24	2,754,770	2,801,870	5,554	5,276	3,536.2
Aug-24	2,483,810	2,567,950	5,050	4,797	3,215.5
Sep-24	2,746,200	2,888,860	5,632	5,350	3,586.4
Oct-24	2,686,920	2,928,700	5,614	5,333	3,574.5
Nov-24	2,604,300	2,893,330	5,496	5,221	3,500.0
Dec-24	2,696,290	2,987,590	5,683	5,399	3,618.7
Jan-25	2,550,880	2,631,550	5,181	4,922	3,299.2
Feb-25	1,856,090	1,939,920	3,794	3,604	2,415.6
Mar-25	2,655,580	2,720,520	5,373	5,104	3,421.4
TOTAL	35,601,300	38,341,390	73,907	70,206	47,060.8

5.2 Project Emissions

There are project emissions from the extension phase and its associated BESS battery system. The emissions resulting from the use of the electricity grid to charge it outside of daylight is considered thanks to the ‘Consumption’ data collection. This data includes, but is not limited to, electricity from the grid used during the night to charge the battery system. Using this data for PE(bess) calculations is therefore conservative.

As per the applicable methodology para. 49, the formula used for the calculation of these project emissions are calculated according to the procedure described in CDM tool05 v03.0:

$$PE_{EC,y} = \sum EC_{PJ,j,y} \times EF_{EF,j,y} \times (1 + TDL_{j,y}) \quad \text{Equation (2)}^{25}$$

Where:

$PE_{EC,y}$ = Project emissions from electricity consumption in year y (t CO₂ / yr)

$EC_{PJ,j,y}$ = Quantity of electricity consumed by the project electricity consumption source j in year y (MWh/yr)

$EF_{EF,j,y}$ = Emission factor for electricity generation for source j in year y (t CO₂/MWh)

$TDL_{j,y}$ = Average technical transmission and distribution losses for providing electricity to source j in year y

Vintage period	Project emissions (tCO _{2e})
01-Jan-2024 to 31-Dec-2024	17
01-Jan-2025 to 31-Mar-2025	7
Total	24

²⁵ As per para 49 of applicable methodology ACM0002, V22.0 and as per the procedure described in TOOL05 under option A2 (a) of Paragraph 20, a conservative emission factor of 1.3 tCO₂/MWh is used. Also, a default value of 20% is chosen for data/parameter TDL_{j,y}

During this monitoring period 01-January-2024 to 31-March-2025, 24 tCO₂e have been emitted as project emissions from that source and are therefore subtracted from the baseline emissions for final VCUs calculation Detailed calculations are available on the ER ex-post calculation sheet.

5.3 Leakage Emissions

As stated in the applicable methodology, no leakage emissions are considered.

5.4 GHG Emission Reductions and Carbon Dioxide Removals

The monitoring period for which GHG emission reductions were achieved spans from 01/01/2024 to 31/03/2025, split by vintage as it follows:

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCUs (tCO ₂ e)	Removal VCUs (tCO ₂ e)	Total VCUs (tCO ₂ e)
01-Jan-2024 to 31-Dec-2024	37,924	17	0	37,907	0	37,907
01-Jan-2025 to 31-Mar-2025	9,136	7	0	9,129	0	9,129
Total	47,060	24	0	47,036	0	47,036

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-Jan-2024 to 31-Dec-2024	45,478	37,907	-16.6%	Multiple defaults of inverters as well as a default of a protection cell on the initial phase
01-Jan-2025 to 31-Mar-2025	11,153	9,129	-18.2%	Multiple defaults of inverters
Total	56,631	47,036	-16.9%	Although a few incidents impacted the production, considering the previous monitoring period as well as this one, it is possible that the overall ex-ante production was slightly overestimated

APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION

No commercial sensitive information to be excluded from the public version.