TAIBA N'DIAYE WIND POWER
PROJECT DESCRIPTION & MONITORING REPORT

Document Prepared by AERA GROUP
on behalf of Parc Eolien Taiba N'Diaye S.A.U

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CONTENTS

1 PROJECT DETAILS

1.1 Summary Description of the Project

The project activity involves the installation and operation of a 158.7 MW wind farm in the commune of Taiba N'Diaye, Senegal. Parc Eolien Taiba N'Diaye (PETN) is Senegal's first large scale wind energy project and a critical part of the government's "Plan Senegal Emergent". The project has been built by Lekela and is owned and operated by Parc Eolien Taiba N'Diaye S.A.U.

PETN is designed to generate electricity for at least 20 years through its 46 Vestas wind turbines. The generated electricity is supplied to SENELEC, the state-owned utility, under a long-term power purchase agreement (PPA). PETN commissioning since December 2019 resulted in a 15% increase in electricity generation capacity for the country, providing power for over 2 million people.

In the absence of the project activity, electricity would have been generated by the operation of grid connected power plants, which are predominantly fossil fuel based. Therefore Taiba N'Diaye Wind Power project displaces carbon dioxide that would have been produced in the absence of the project activity by the grid connected power plants.

The project implementation took place in three phases:

1. the first phase with the installation of 16 wind turbines i.e. a total power of 52.8 MW,
2. the second phase with the installation of 16 wind turbines with a total power of 52.8 MW,
3. the third tranche with the installation of 14 wind turbines with a total power of 46.2 MW.

It has been estimated that approximately 451 GWh of electricity will be generated annually by the project, displacing approximately 258,535 tonnes of carbon dioxide (tCO_2) per annum and over 2.4 million tCO_2 over the 10-years crediting period.

1.2 Sectoral Scope and Project Type

Sectoral scope: 1
Project type: Energy Industries (renewable/non-renewable sources).

1.3 Project Eligibility

Grid-connected electricity generation using wind power plants/units in Senegal, a Least Developed Country. As a non-AFOLU project, it aims at completing validation within two years of the project start date.

1.4 Project Design

The project is a single installation of an activity.

Eligibility Criteria

Not applicable, since the project is not a grouped project.

1.5 Project Proponent

Organization name	Parc Eolien Taiba N'Diaye S.A.U
Contact person	M. Alioune BA

Title	Finance Director
Address	Immeuble Riviona 167 Avenue Lamine Gueye Dakar
Telephone	+221 33 849 73 93
Email	taiba@lekela.com

1.6 Other Entities Involved in the Project

Organization name	SENELEC
Role in the project	Public utility & conceding authority
Contact person	M. Papa Toby GAYE
Title	Head of properties
Address	28 rue Vincens BP93 Dakar Senegal
Telephone	+221 33 839 30 30
Email	toby.gaye@senelec.sn

Organization name	Aera Group
Role in the project	Carbon consultant & offtaker
Contact person	M. Alexandre DUNOD
Title	Head of Certification and Deliveries
Address	28 cours Albert 1er 75008 Paris France
Telephone	+33 142 180 202
Email	a.dunod@aera-group.fr

1.7 Ownership

Parc Eolien Taiba N'Diaye S.A.U has gained project ownership through a production licence and power purchase agreement with Senegalese public utility SENELEC, while AERA Group has gained ownership through a carbon certification and trading agreement with SENELEC.

1.8 Project Start Date

09-December-2019, as the date of commissioning of PETN first tranche.

1.9 Project Crediting Period

The project crediting period shall be ten years, between 09-December-2019 and 08-December-2029.

1.10 Project Scale and Estimated GHG Emission Reductions or Removals

Project Scale	
Project	x
Large project	

Year	Estimated GHG emission reductions or removals (tCO_2e)
09/12/2019 – 08/12/2020	117,332
09/12/2020 – 08/12/2021	258,535
09/12/2021 – 08/12/2022	258,535
09/12/2022 – 08/12/2023	258,535
09/12/2023 – 08/12/2024	258,535
09/12/2024 – 08/12/2025	258,535
09/12/2025 – 08/12/2026	258,535
09/12/2026 – 08/12/2027	258,535
09/12/2027 – 08/12/2028	258,535
09/12/2028 – 08/12/2029	258,535
Total estimated ERs	2,444,147
Total number of crediting years	10
Average annual ERs	244,415

1.11 Description of the Project Activity

The project, which is Senegal's first utility-scale wind farm, consists of 46 Vestas V126 wind turbines that can produce 3.45 megawatts each, for a total installed capacity of 158.7 MW. These wind turbines are some of the latest versions of onshore wind turbines available currently, building on Vestas' proven wind turbine technology. They utilise a 117m tubular steel tower and a blade length of 61.7m giving a very large swept area of 12,469 m^2, allowing the wind turbines to maximise the amount of energy captured from the wind, and are designed for at least 20 years of operation.

Senegal currently depends on imported fossil fuels for much of its power supply. Reserve capacity presently is at times insufficient, while transmission losses as well as old thermal power plants result in high production costs. Being the first utility-scale wind power project in Senegal, the project forms a critical component of the Government of Senegal's strategy to increase clean electricity production, diversifying Senegal's energy mix, and ensuring affordability. This clean energy supply thus implies a substantial reduction in the production of carbon from the predominantly thermal-based grid mix (reflected in West African Power Pool grid emission factor), thereby reducing the associated greenhouse impact upon the atmosphere.

Net annual output is expected at 451,195 MWh yearly (equivalent to 2,843 hours/year or 32.5% load factor) at full capacity, resulting in nominal annual emission reductions of 258,535 tCO_2.

Metering equipment is composed of two bi-directional meters for import/export (Model ITRON SL7000 class 0.2, main and back-up) located at SENELEC's Tobene sub-station delivery point.

The main elements of the wind power plant are Vestas V126-3.45 MW turbines, pitch regulated upwind turbines with active yaw and a threeblade rotor. The wind turbine family utilises the OptiTip® concept

and a power system based on an induction generator and full-scale converter. With these features, the wind turbine is able to operate the rotor at variable speed and thereby maintain the power output at or near rated power even in high wind speed.

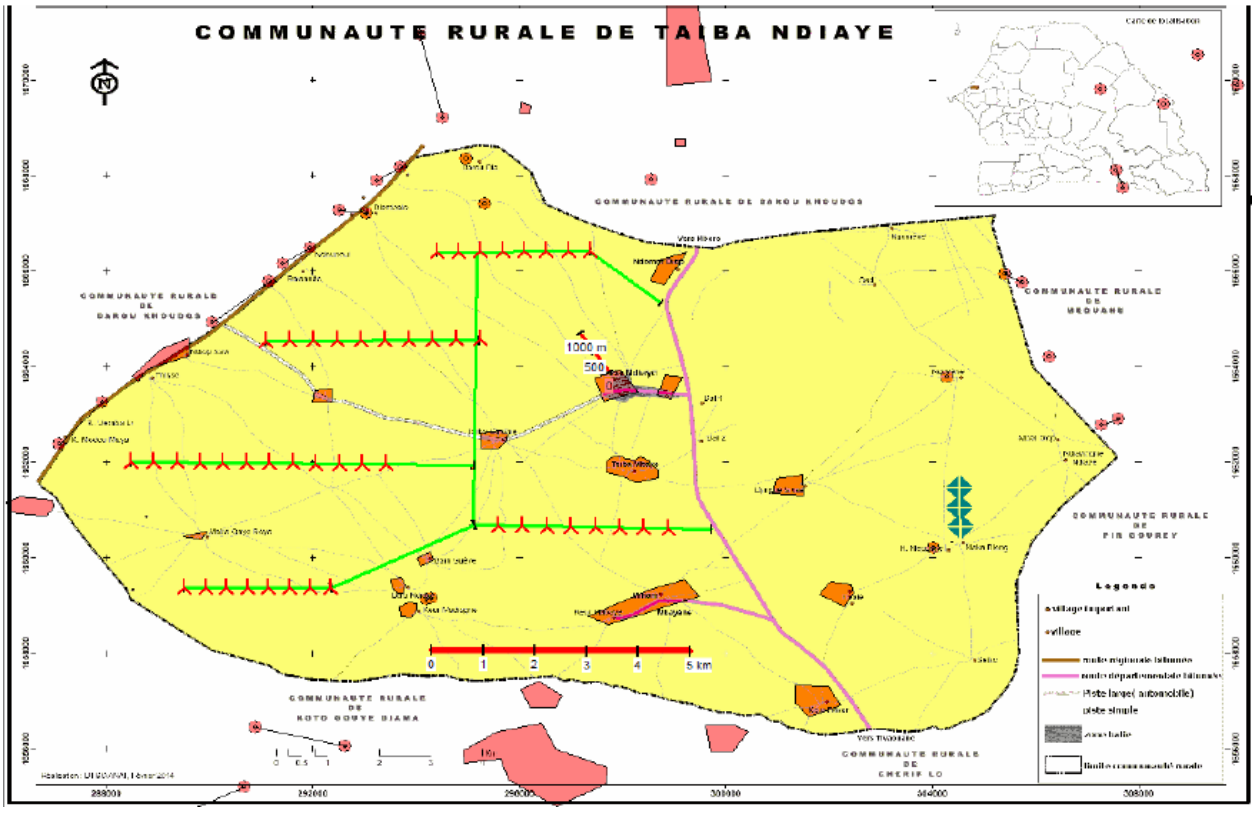
Implementation timeline

22-28 December 2012	Public Stakeholders Meeting
21 June 2016	Environmental Impact Clearance
04 August 2016	PPA signature
09 December 2019	Commissioning date

1.12 Project Location

Country:	Senegal
Region:	Thies
Department:	Tivaouane
Municipality	Taïba Ndiaye
Locations under the influence of the project	Ndomor, Keur Malé, Minam, Mbayéne, Keur Birama, Keur Samba Awa, Keur Mbaye Sénoba. Taïba Mbaye, Same Ndiaye, Baïty Ndiaye, Baïty Gueye, Keur, Madiagne, Taïba Santhie, Keur Assane

The forty-six (46) wind turbines, each occupying 1,400 m², i.e. a total land area of 7 hectares, are served by access tracks that accommodate the high-voltage electrical cables, of a length of approximately 34 km. The project site's geo-coordinates are: Latitude 15°00'36.5"N, Longitude 16°51'32.2"W.



1.13 Conditions Prior to Project Initiation

According to ACM0002 Version 20.0 and since the project activity is the installation of a new grid-connected renewable power plant (Greenfield) the baseline scenario is the following:

"Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system."

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

1.14 Compliance with Laws, Statutes and Other Regulatory Frameworks

To date, there are no regulations and policies preventing the implementation of the project activity. Senegal has prioritised the development of its use of the renewable energy sector, as the country has huge potential for solar and wind energy. The establishment of a Ministry for Biofuels and Renewable Energy in 2007 was the first step in the government's promotion of renewable energy and is also a fairly unique initiative in Africa. Furthermore, in June 2010, Parliament unanimously passed a new Renewable Energy Orientation Law[1] – which is meant to increase the production of alternative energy. Its main implementing decree is:

• Decree No. 2011-2013 provides conditions of power purchase and remuneration for electricity generated by renewable energy plants (suitable Feed-In Tariff) and the conditions of their connection to the grid ("must run" status to renewables).

Latest government strategy document from 2012 ("Lettre de Politique de Développement du secteur de l'Energie")[2] also encourage the realization of solar power plants such as the Project for achieving national renewable targets objective, reiterated in December 2015 Renewable Energies National Action Plan (PANER)[3].

1.15 Participation under Other GHG Programs

1.15.1 Projects Registered (or seeking registration) under Other GHG Program(s)

The project neither has nor intended to generate any other form of GHG related environmental credit for the GHG emission reduction or removal claimed under the VCS programme. Although it was originally registered under the CDM by its former developers, it was postponed and re-designed by its new developers, for certification and verification under the VCS only.

1.15.2 Projects Rejected by Other GHG Programs

The project has not been rejected by any other GHG program.

[1] https://energypedia.info/wiki/File:Loi_des_ENR-senegal.pdf

[2] http://www.energie.gouv.sn/decrets-et-lois/

[3] https://www.se4all-africa.org/fileadmin/uploads/se4all/Documents/Country_PANER/Senegal_Plan_d_Actions_National_des_Energies_Renouvelables_.pdf

1.16 Other Forms of Credit

1.16.1 Emissions Trading Programs and Other Binding Limits

The project does not reduce GHG emissions from activities that are included in an emissions trading program or any other mechanism that includes GHG allowance trading.

1.16.2 Other Forms of Environmental Credit

The project has neither sought nor received another form of GHG-related environmental credits.

1.17 Additional Information Relevant to the Project

Leakage Management

As per approved methodology ACM0002 (Version 20.0), no leakage is considered for the proposed project.

Commercially Sensitive Information

Not applicable

Sustainable Development

The project is directly aligned with the pillars of the national sustainable development strategy of Senegal:

- Lettre de Politique de Développement du Secteur de l'Energie
- Stratégie Nationale de Mise en Oeuvre de la CCNUCC et Rapport de Contribution Prévue Déterminée au Niveau National (CPDN)

Among its main sustainable development contributions are the following:

• The project benefits from strong government and local community support, and will implement an extensive social investment programme, estimated to contribute up to US$20m over the life of the wind farm. This will help create sustainable livelihoods for communities, improving agriculture and provides vocational training opportunities for youth.

• The wind farm will provide employment opportunities during construction of the project, as well as increasing socio-economic activity in the local area. Built near the Taiba N'Diaye community, the wind farm will create 600 employment opportunities during the peak of its construction phase.

• The wind resource is free and clean, and unlike imported fossil fuels, will not impact on Senegal's balance of payments. The project will also be one of the lowest cost producers of electricity in Senegal.

• The project will create a legacy in Senegal, helping create a sustainable future for the country.

Further Information

The project participants obtained all necessary clearances; hence no legislative, economic, sectoral, social, environmental, geographic, site-specific risks are anticipated which may have impact on the eligibility of the project activity and the net GHG emission reductions.

2 SAFEGUARDS

2.1 No Net Harm

The development of the project will inevitably result in environmental and social impacts, both positive and negative.

Potentially sensitive environmental component	Critical stage	Potential negative impacts	Mitigation measures
Soil and subsoil	Construction phase	• Temporary soil compaction • Soil sealing due to concreting and excavation of soil at the base of the wind turbines • Limited risk of soil and groundwater pollution by accidental infiltration of liquid pollutants (construction equipment or storage: hydrocarbons, hydraulic oils, lubricants and paints).	• Carrying out geotechnical tests in situ. • Agricultural reclamation of the road surface and the surface layer of the foundations. • Storage of dangerous liquid products (oils, fuel, etc.) during the construction site on a retention tank that can contain the entire volume of the tank. • Provision of anti-pollution intervention kits on site.
	Operating phase	• Low risk of soil and subsoil pollution: presence of oils in the wind turbines (about 1500 l/wind turbine), oils in the transformers. Appropriate retention facilities at the installations concerned should limit this risk. • Risk of pollution during maintenance and oil changes.	• Place equipment containing oils (gearbox, transformers, etc.) in a sufficiently large retention tank. • Use dry-type transformers instead of oil transformers. • Carrying out maintenance according to a well established schedule and taking all the necessary precautions to avoid any spillage of oil or any other liquid substance dangerous for the environment. • Return used oil to approved collectors

Biotopes, fauna and flora	**Construction phase**	**Impact on biotopes :** • Decrease in cultivable area and potentially in initial agricultural production • dust deposit during the work ; • right of way, surface consumption ; • clearing and cutting of isolated trees ; • habitat modification ; • trampling of the surrounding habitats (work, walkers) and over-frequentation of the environments; • increased risk of fire ; • contribution of invasive exogenous species ; • destruction of protected species • damage to heritage and/or keystone species and/or keystone species. • Temporary alterations to soil qualities (see impacts on soil and subsoil). • Pruning or removal of certain plantations and/or remarkable shrubs along the access roads.	• Compensate landowners according to an agreed scale • Protection of the remarkable species present in the fields and along the access roads. • avoidance of sensitive habitats and species in the project design. • Care should be taken when transporting materials. During construction work, the flora present on the site should be protected as much as possible. • application for a derogation for the destruction of a protected species must be drawn up • the marking of sensitive species before the works and the ecological follow-up of the building site;
	Operating phase	**Impacts on Birds :** • direct mortality from collisions with wind turbine blades; • disturbances and disturbances, which result in a "barrier effect", distancing and sometimes, in critical situations, a loss of habitat.	• choice of site: this is the main factor which makes it possible to reduce or eliminate the majority of the impacts on the natural environment and therefore on birds; • positioning of wind turbines to avoid barrier or funnel effects. The orientation of the wind farms parallel to the migratory axes effectively reduces the negative effects on migratory birds. • choice of the period of work and the planning of the building site according to the calendar of the species, in particular outside the periods of reproduction of the most sensitive local species, i.e. between April and September included. • Elaboration of an ornithological follow-up to evaluate the impacts of the wind turbines on the avifauna and, more particularly on the migratory birds. • creation of a substitute habitat with, for example, the reconstitution of a network of hedges, the creation of a land reserve away from the wind farm to maintain fallow land for wildlife

			• beaconing of the wind turbines is necessary to limit the impact on avifauna.
Landscape	**Construction phase:**	• direct and indirect effects on the landscape due to : • destruction of existing vegetation and opening of views; construction or widening of access roads, earthworks, tree removal, soil compaction • modification of the colour and vegetation of the site; • appearance of weeds due to the contribution of exogenous soil • partial or total artificialization of the site (roads, embankments, areas without vegetation, etc.).	• limit to the strict minimum the addition of materials, the clearing of brush and the reshaping of the track at the end of the work • maintain a bearing capacity within the runways that allows the use of motorized vehicles for • maintenance
	Operating phase	• The creation or modification of existing roads and the creation of roads for the operation and maintenance or, if necessary, for the discovery of wind turbines can have different consequences on the site: ○ possible over-frequentation due to the opening of new accesses or the modification of existing routes; ○ Conflicts of newly juxtaposed practices due to easy access to motorized vehicles; ○ abandonment of the site by some of its users, following the installation of the wind turbines. • Stroboscopic effect and reflection of sunlight	• The promoter has already taken steps to ensure that the wind farm has as little impact on the landscape as possible (limiting the number of turbines, arranging the turbines in relation to the houses, installing them in a row, etc.). • Retain the assembly areas for maintenance, whereas it was previously recommended that they be removed after the installation. Integrate the head cabin in a harmonious manner. • paint the mast of the wind turbines with a non-reflective coating to prevent it from reflecting the sun "s rays. • Plantations (tree lines, etc.) or landscaping reminiscent of these characteristics will facilitate the integration of the site into the landscape.
Sound environment	**Construction phase:**	• Nuisance caused by the passage of construction equipment (trucks, cranes), increase in the number of peak levels per hour. • The noise generated by the construction site will be audible in the vicinity of the nearest houses, but the noise level should be below the limit values.	• Choice of the establishment and choice of the machines: research of an acoustic impact the least possible. This measure consists in choosing the establishment (number, localization of the wind turbines) and - of the machines answering the local constraints. • Carrying out the work on working days (work at weekends, at dawn and in the evening should be avoided as far as possible). • Sound power limitation (not to exceed the values considered in this study).

	Operational phase:	• Increase in background noise at the immission points (currently very quiet). • The noise of the wind farm should not exceed the limit values in the nearest residential areas, the noise is very low. • Above 8 m/s, the wind noise should mask the noise generated by the wind turbines: it can be considered that for these wind speeds, the noise will hardly be audible.	• Periodic maintenance of wind turbines to limit mechanical noise. • Carrying out an acoustic study after the park has been built. • Adaptation of the mode of production: to program an operation "with slowing down" of the wind turbines (and thus to limit the noise emissions) according to the hours of the day and the period of the week or the year.
Capacity of public facilities and infrastructure		• Passage of construction machinery and abnormal loads on the unsuitable secondary network (possible damage to roads and side tracks, noise pollution, etc.). • No impact on air traffic	• Establishment of a special convoy route in collaboration with the wind turbine construction company, the police and local authorities. • Day and night beaconing will be carried out on the wind turbines to ensure the safety of the air space.
Health and safety		• The risk of accidents (broken blades, falling masts, fire, etc.) of the rotor, environmental pollution, road transport of wind turbine components, lightning).	• Install signs warning of the dangers present on the site (falling objects, electrical risk, This signage must be placed at the entrance to the site and at each storage and lifting platform. This signage must be placed at the entrance to the site and at each storage and lifting platform. • Electromagnetic interference and radiation • risk of radar interference ; • risks to aviation safety ; • risk of interference with radio waves fire hazard, etc.

2.2 Local Stakeholder Consultation

Conduct of the consultation

Local Stakeholders Consultation took place from 22 to 28 December 2012, between Dakar and Thies, where the following actors were consulted:

- The National Technical Departments:
  - the Directorate of Environment and Classified Establishments ;
  - the Civil Protection Directorate;
- the technical services of the Thiès region :
  - the Regional Division of the Environment and Classified Establishments ;
  - the Regional Directorate of Rural Development ;
  - the Regional Water and Forestry Inspectorate;
  - Regional Development Agency ;
  - the Regional Planning Department ;
- the Sub-Prefect of Ouadiour ;
- the Commune of Taïba N'diaye ;
- the populations of the villages of Diambalo, Balsande, Taïba N'diaye, Taïba Mbaye, Baïty N'diaye, Baïty Guèye, Minam Diop, Mbayène, Khelkom Diop, Taïba Santhie, Maka Gaye Bèye and Ndomor Diop
- the two persons claiming ownership of the land on which the unit will be located

Comments and conclusion on the public consultation

The opinion shared by the different actors on the project of the implantation of a wind farm in the Commune of Taïba N'diaye is that it will allow to improve significantly the production of electricity in Senegal with a contribution of 158,7MW foreseen annually. If some inhabitants of the CR are offended by the fact that their villages cannot benefit from this long-awaited service, there is an understanding of the objective of the project, which is to contribute to reducing the deficit in the supply of electricity that is plaguing many countries in the economic and social life of the country.

In terms of impacts, the issues related to the implementation of the project have not changed with regard to the problems raised. Firstly, the economic resources of the grassroots communities are affected by the annexation of land used for subsistence crops and sources of income through cash crops and harvested products that enable households to ensure their survival. From this perspective, the discrepancy between the losses incurred and the low level of compensation paid out is the main complaint about compensation efforts. Thus, an increase in the rates applied for the care of people affected by the project, in addition to accompanying measures aimed at enabling affected people to escape the trap of impoverishment, are strong expectations expressed by the stakeholders.

Secondly, the presence of the wind turbines raises concerns about the impact on the health and safety of people in the project's area of influence. However, an improvement compared to the first project implementation plan is the increase in the distance between the wind turbines and the nearest villages by about 500 metres. Nevertheless, the head of the Regional Division of the Environment and Classified Establishments suggests increasing the distance between them and the last dwellings by at least another 500 metres, in anticipation of the growth that the human settlements are sure to experience in the medium and long term, by implanting them at least 1500 metres away.

The presence of laterite runways is another concern, with the risk of dust generation that alters the environment, the living environment and the well-being of the population. In response to this problem,

it is recommended that a vegetation curtain be created along with the road axes that can help contain dust emissions. It will be a question of marking out the tracks of burial of the cables. This distance will also make it possible to guard against the risks of safety which could be amplified by a too great proximity between the dwellings and the alignments of wind turbines. From another point of view, the period of execution of the works will be determining to minimize the socio-economic impacts. The reason for this is the harvest period and the level of progress of seasonal crops.

Furthermore, the safety of people and animals may be compromised during the execution of the work. Therefore, fluorescent strips must be installed for the population. But for the animals, surveillance will be necessary, which implies at the same time an awareness of the populations.

Finally, the creation of the park raises concerns about the loss of vegetation cover and the management of hazardous waste such as PCBs, which are the main sources of impact on the natural environment. To this end, it is essentially recommended that the area be re-greened by targeting forest species and that the procedures approved for the management of dead oil during the first study be maintained, which had proposed satisfactory solutions that allowed its revalidation by the technical committee.

Grievance mechanisms

By communicating all contact details of the project proponent and ESIA consultant during the meetings, stakeholders were informed about the creation of the grievance mechanism through, which any complaints, suggestions, recommendations etc. could be communicated. It mainly consists of complaint forms, which are available and can be filled at the village council of Taiba Ndiaye, as well as the sub-prefecture of Meouane as well as the regional government administration of Thiès. On-going communications from local stakeholders also include phone, mail and direct inquiries locally with the project's site managers.

PETN will appoint an Environmental Monitoring Officer for the construction and decommissioning phases, who will, under the direction of the Project Manager, have the following main duties

- participate in the planning of work requiring environmental monitoring and inform the various stakeholders (contractors, construction project manager, maintenance managers and park operators) of the environmental requirements;
- ensure compliance with the monitoring program;
- inspect the work;
- prepare all required reports, including monthly and annual reports required by lenders, PETN management and government authorities, where applicable.

- During the operational phase, the operations manager will be responsible for environmental monitoring.

2.3 Environmental Impact

The project was subject to a Comprehensive Impact Assessment (EIA) which is mandatory for "projects that have limited environmental impacts and which can be mitigated by implementing measures or changes in design" in accordance with Decree Law 2001-01 of 15 January 2001 on the Environment Code (Article R40). This law is followed by the decree 2001-282 of 12 April 2001 implementing the Environmental Code, which provides “obligation for any investment program to first make an impact assessment on the environment”.

The environmental and social impact assessment consisted mainly of linking the sources of impacts associated with the project and the environmental components of the various receivers likely to be affected, with a view to identifying the negative impacts and proposing specific environmental measures to reduce them.

The potential negative impacts identified take place during the construction and exploitation resulted in the following Environmental Monitoring Program:

	Monitoring Methods and Devices	**Responsible**	**Periods**
Implementation of environmental measures prescribed in the ESMP	Designate an HSE manager Control of the effectiveness of the prescribed measures (compliance; level of implementation)	PETN HSE Manager	Throughout the life of the project
Social risk management	Set up a compensation committee Compensation of owners Preferential hiring of local communities Set up & implement an information and awareness program for operating personnel and the general public Monitoring of PAPs' activities	PETN Administrative and Financial Manager Site manager	Before signing the lease During the construction and operation of the park After compensation for the PAPs
Monitoring of avian mortality	Wildlife inventory	HSE Manager	First three years of park operation
Noise climate monitoring	Acoustic measurements in the vicinity of dwellings	HSE Manager	Every 5 years
Follow-up of work accidents, safety and health	Open and maintain a register of accidents and incidents at work stations	HSE Manager	Daily
Traffic hazards	Road safety performance and number of accidents	HSE Manager	Monthly

Implementation of intervention actions emergency.	Monitoring of the number of sessions for sharing, experimenting and effectiveness of methods and emergency response equipment	HSE Manager Civil protection of Thiès	Biannual

From the evaluation of the environmental and social impacts of the establishment of a park of 46 wind turbines in the municipality of Taïba Ndiaye, it appears clearly the positive arguments of such an investment militate in favour of the acceptability of this project. Indeed, in its quality of renewable energy which does not require any fuel, does not create greenhouse gases, does not produce toxic or radioactive waste, the introduction of the wind energy constitutes a credible alternative of diversification and reinforcement of the park of production of electricity in Senegal. Moreover, by fighting against the climate change, the wind energy takes part in the long term in the maintenance of the biodiversity of the natural environments.

The Taïba Ndiaye wind farm will provide an additional 150 MW of power to the Senegalese electricity distribution network, which is strongly affected by recurrent deficits, without degrading the quality of the air, without polluting the water (no discharge into the aquatic environment, no thermal pollution), and without polluting the soil (no soot or ashes)

This means that the ecological and economic viability of the park can be guaranteed provided that the measures to mitigate the associated social and environmental impacts are properly implemented in a timely manner. These are mainly:

Fair and equitable compensation for the beneficiaries and social support for the PAPs of the wind farm;

- Implementation of actions to restore biotopes and mitigate disturbance to wildlife
- The respect of the agreement protocol with the local authorities of Taïba Ndiaye;
- Compliance with forestry regulations and the provisions of the ESMP set out in this report.

This is a good place for research to help resolve the uncertainties surrounding the impact of wind turbines on wildlife (mortality) and humans (noise, vibrations, etc.). This offers PETN an opportunity to expand the meagre resources of the universities and training institutes that it would include in the company's CSR approach.

In short, the above concludes in favor of the social and environmental acceptance of the project for the establishment of a wind farm of 46 turbines in the Commune of Taiba Ndiaye, in the department of Tivaouane.

Therefore, the project has been granted an Environmental Impact Assessment approval by decree on 21-June-2016.

2.4 Public Comments

Public comment period ongoing.

2.5 AFOLU-Specific Safeguards

Not applicable.

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

The approved baseline and monitoring methodology selected for to the proposed project activity is:
ACM0002 version 20.0 - "Grid-connected electricity generation from renewable sources"
The methodology also refers to the latest approved versions of the following tools, which are applied by the project:

- TOOL23: "Additionality of first-of-its-kind project activities" version 03.0
- TOOL07: "Tool to calculate the emission factor for an electricity system" version 7.0
- ASB0034-2021: "Grid emission factor for West African Power Pool" version 01.0

3.2 Applicability of Methodology

The choice of the ACM0002 methodology is accurate since the proposed project activity respects all the applicability conditions required.

Table 2: Compliance of the project activity regarding ACM0002 applicability conditions

ACM0002 version 19 applicability conditions	Project activity applicability
This methodology is applicable to grid-connected renewable energy power generation project activities that: a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plants/units; (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s).	The project activity is a greenfield solar wind power plant substituting electricity produced on the grid
The project activity is the construction and operation, capacity addition, rehabilitation (or refurbishment), retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (with or without reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;	The project activity is the construction and operation of a wind power plant and hence the methodology is applicable
In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum	The project activity does not involve any capacity additions, retrofits, rehabilitations or replacements

historical reference period and the implementation of the project activity.	
In case of hydro power plants, one of the following conditions shall apply: (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3) of the methodology ACM0002, is greater than 4 W/m^2; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3) of the methodology ACM0002, is greater than 4 W/m^2; or (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3) of the methodology ACM0002, is lower than or equal to 4 W/m^2, all of the following conditions shall apply: - The power density calculated using the total installed capacity of the integrated project, as per equation (4) of the methodology ACM0002, is greater than 4 W/m^2; - Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; - Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be: a.) Lower than or equal to 15 MW; and b.) Less than 10 per cent of the total installed capacity of integrated hydro power project.	Not applicable as the proposed project activity involves a wind power plant
In the case of integrated hydro power projects, project proponent shall: - Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or - Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.	Not applicable as the proposed project activity involves a wind power plant
The methodology is not applicable to: - Project activities that involve switching from fossil fuels to renewable energy sources at the site of the	The proposed project activity neither involves - switching from fossil fuels to renewable

project activity, since in this case the baseline may be the continued use of fossil fuels at the site; - Biomass fired power plants/units.	energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site, nor - biomass fired power plants/units
In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	The project activity does not involve capacity additions, retrofits, rehabilitations or replacements
In addition, the applicability conditions included in the tools referred to above apply.	Applicability conditions of the applied tools are justified

From the above it is concluded that the project activity meets all the applicability conditions of the methodology ACM0002 version 20.0 "Grid connected electricity generation from renewable sources".

The project activity also meets the following applicability conditions of "Tool to calculate the emission factor for an electricity system".

Table 3: Compliance of the project activity regarding applicability conditions of "Tool to calculate the emission factor for an electricity system"

No	Applicability condition	Applicability to this project activity
1	This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	As part of ACM0002, "operating margin" (OM), "build margin" (BM) and "combined margin" (CM) need to be estimated to calculate baseline emissions of the project activity that substitutes electricity in the Senegalese grid. Hence the tool is applicable.
2	Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off - grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in "Appendix 2: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in	The emission factor for the project electricity system is calculated for grid power plants and off-grid power plants. Option IIb is applied, i.e. the tool is applicable.

No	Applicability condition	Applicability to this project activity
	MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	
3	In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	Since the project electricity system is not located partially or totally in an Annex I country - it is located in the Republic of Senegal - the tool is applicable.
4	Under this tool, the value applied to the CO_2 emission factor of biofuels is zero.	There are no biofuels used in the project activity, i.e. the tool is applicable.

Table 4: Compliance of the project activity regarding applicability conditions of Standardized Baseline ASB0034

No	Applicability condition	Applicability to this project activity
(a)	The project activity is implemented in any of the countries members of WAPP and is connected to the project electricity system;	The project activity is implemented in Senegal, member of WAPP, and connected to the same electricity system.
(b)	The CDM approved methodology that is applied to the project activity requires the determination of CO2 emission factor(s) through the application of the grid tool;	As part of ACM0002, “operating margin” (OM), “build margin” (BM) and “combined margin” (CM) need to be estimated to calculate baseline emissions of the project activity.
(c)	The project activity uses ex ante option for the grid emission factor as indicated in the tool i.e. no monitoring and recalculation of the emissions factor during the crediting period is required	Ex-ante option for grid emission factor is applied in this project activity.

Other tools mentioned in the methodology are not applicable to this project activity.

3.3 Project Boundary

Table 5: GHG source, sinks and reservoirs in project and baseline scenarios

Source		Gas	Included?	Justification/Explanation
Baseline	CO2 emissions from electricity generation in	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source

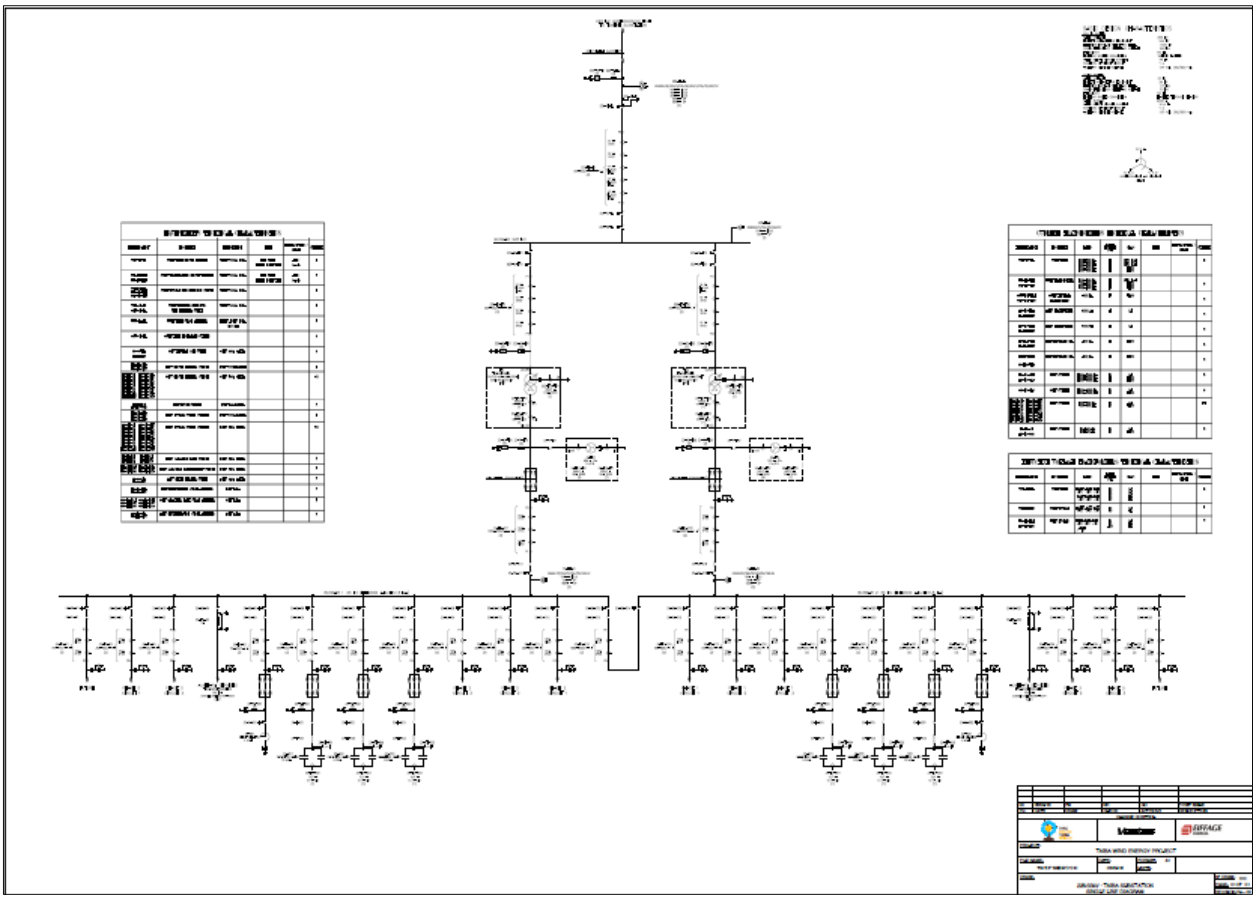
Source		Gas	Included?	Justification/Explanation
	fossil fuel fired power plants that are displaced due to the project activity	N_2O	No	Minor emission source
		Other	No	Minor emission source
Project	For geothermal power plants, (fugitive) emissions of CH4 and CO2 from non-condensable gases contained in geothermal steam	CO_2	No	Not applicable (Only for geothermal)
		CH_4	No	Not applicable (Only for geothermal)
		N_2O	No	Not applicable
		Other	No	Not applicable
	For binary geothermal power plants, fugitive emissions of hydrocarbons such as n-butane and isopentane (working fluid) contained in the heat exchangers	Low GWP hydro-carbon/ refrigerant	No	Not applicable (Only for geothermal)
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	No	Not applicable (Only for solar thermal power plants and geothermal power plants)
		CH_4	No	Not applicable
		N_2O	No	Not applicable
		Other	No	Not applicable
	For hydro power plants, emissions of CH4 from the reservoir.	CO_2	No	Not applicable (Only for hydro)
		CH_4	No	Not applicable
		N_2O	No	Not applicable
		Other	No	Not applicable

According to ACM0002 methodology, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the project power plant is connected to.

The project boundary is therefore determined as:

- the project activity site, where the electricity is being produced,
- the grid that the power plant is connected to.

Figure 3: Diagram of the project boundary



3.4 Baseline Scenario

According to ACM0002 Version 20.0 and since the project activity is the installation of a new grid-connected renewable power plant (Greenfield) the baseline scenario is the following:
"Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system."

Baseline emissions include only CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as described in section 3.1.

3.5 Additionality

In accordance with ACM0002 methodology, additionality of the project activity is demonstrated and assessed using the latest version of the "TOOL23: Additionality of first-of-its-kind project activities"

Demonstration whether the proposed project activity is the first-of its-kind

- Applicable geographical area : Senegal (the entire host country)
- Measure : use of renewable energies (wind power)

- Output : electricity

The proposed project activity is the first of its kind in the applicable geographical area since:

(a) The project is the first in the applicable geographical area that applies a technology that is different from technologies that are implemented by any other project, which are able to deliver the same output and have started commercial operation in the applicable geographical area before the project design document is published for global stakeholder consultation or before the start date of the proposed project activity, whichever is earlier:

=> indeed, no other wind power has started operation in Senegal to date[4]

(b) The project implements one or more of the measures;

=> indeed, the project implements wind power as a renewable energy measure

(c) The project participants selected a crediting period for the project activity that is "a maximum of 10 years with no option of renewal".

=> indeed, the project participants selected a 10 years crediting period with no option of renewal.

The proposed project activity has been identified as a first-of-its-kind project activity and is thus additional.

3.6 Methodology Deviations

Not applicable.

4 ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

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

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

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)

[4] https://www.crse.sn/producteurs-independants

Calculation of $EG_{PJ,y}$

Since the project activity consists of the installation of new grid-connected renewable power plant at a site where no renewable power plant was operated prior to the implementation of the project activity, the project activity is the installation of a greenfield renewable energy power plant, so that:

$$EG_{PJ,y} = EG_{facility,y}$$

Where:

$EG_{PJ,y}$	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)
$EG_{facility,y}$	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh/yr)

Calculation of $\mathbf{EF_{grid,CM,y}}$

Based on Standardized Baseline ASB0034-2021 Grid emission factor for West African Power v1.0, the applicable grid emission factor value to calculate the emission reductions of the PV power plant project is 0.573 tCO_2/MWh.

4.2 Project Emissions

Project emissions are calculated as follows:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where:

PE_y	=	Project emissions in year *y* (t CO_2e/yr)
$PE_{FF,y}$	=	Project emissions from fossil fuel consumption in year *y* (t CO_2/yr)
$PE_{GP,y}$	=	Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year *y* (t CO_2e/yr)
$PE_{HP,y}$	=	Project emissions from water reservoirs of hydro power plants in year *y* (t CO_2e/yr)

$PE_{FF,y}, PE_{GP,y}$ and $PE_{HP,y}$ are equal to 0 as the project is an installation of a wind power plant with no auxiliary fossil fuel consumption. In particular, ACM0002 §37 stipulates that for all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected.

4.3 Leakage

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.

4.4 Estimated Net GHG Emission Reductions and Removals

According to the approved methodology ACM0002 version 20.0, emission reductions are calculated as follows:

$$\mathbf{ER_y = BE_y - PE_y}$$

Where:

ER_y = Emission reductions in year y (t CO_2e)

BE_y = Baseline emissions in year y (t CO_2)

PE_y = Project emissions in year y (t CO_2e)

Table 7: Calculation of emission reductions

	Value/Result	Source/reference
Total installed capacity	158.7 MW	Project documents
Net electricity delivered to the grid ($EG_{PJ,y}$)	451,195 MWh/yr	Project documents $[EG_{PJ,y} = EG_{facility,y}]$
Grid emission factor ($EF_{grid,CM,y}$)	0.573 tCO_2e/MWh	ASB0034
Baseline emissions (BE_y)	258,535 tCO_2e	Section 3.1 $BE_y = EG_{PJ,y} \cdot EF_{grid,CM,y}$
Project emissions (PE_y)	0 tCO_2e	Section 3.2
Emission reductions (ER_y)	258,535 tCO_2e	$ER_y = BE_y - PE_y$

Table 8: Summary of emission reductions

Year	Estimated baseline emissions or removals (tCO_2e)	Estimated project emissions or removals (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated net GHG emission reductions or removals (tCO_2e)
09/12/2019 – 08/12/2020	117,332	-	-	117,332
09/12/2020 – 08/12/2021	258,535	-	-	258,535
09/12/2021 – 08/12/2022	258,535	-	-	258,535
09/12/2022 – 08/12/2023	258,535	-	-	258,535
09/12/2023 – 08/12/2024	258,535	-	-	258,535

09/12/2024 – 08/12/2025	258,535	-	-	258,535
09/12/2025 – 08/12/2026	258,535	-	-	258,535
09/12/2026 – 08/12/2027	258,535	-	-	258,535
09/12/2027 – 08/12/2028	258,535	-	-	258,535
09/12/2028 – 08/12/2029	258,535	-	-	258,535
Total	**2,444,147**	-	-	**2,444,147**

5 MONITORING

5.1 Data and Parameters Available at Validation

Data / Parameter	**EFgrid,CM,y**
Data unit	tCO2/MWh
Description	Combined margin CO2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system"
Source of data	As per ASB0034-2021
Value applied:	0.573
Justification of choice of data or description of measurement methods and procedures applied	As per the "Tool to calculate the emission factor for an electricity system"
Purpose of Data	Calculation of baseline emissions
Comments	-

5.2 Data and Parameters Monitored

Data / Parameter	**EGfacility,y**
Data unit	MWh/yr
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 project site.
Description of measurement methods and procedures applied	Electricity outputs will be electronically stored and invoiced monthly to Senelec by PETN, after reconciliation with internal meter which readings are recorded on a record sheet by the Technical/Engineering/ Maintenance Department under the Plant Manager's authority
Frequency of monitoring/recording	Continuous measurement and at least monthly recording
Value applied:	451,195
Monitoring equipment	Bi-directional electronic electricity meters measuring the net electrical energy delivered to Senelec with the following specifications: Make: Itron Model: SL7000 Accuracy class: 0.2S (±0. 2%) Serial ID: 1904406426-1904406427
QA/QC procedures applied	Cross check of measurement results with invoiced electricity. Calibration of the meters will be carried out after each deviation of more than +- 0.5% between the 2 meters as per manufacturer & PPA specifications.
Purpose of data	Calculation of baseline emissions
Calculation method	Electronic recording
Comments	-

5.3 Monitoring Plan

The proposed project activity monitoring plan complies with the methodology ACM0002 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources, whereby it is stated that:

"All data collected as part of monitoring should be archived electronically and be kept at least for 2 years after the end of the last crediting period".

Therefore, the quantity of net electricity generation supplied by the project plant to the grid will be reliably monitored through calibrated electricity meters and cross-checked with sales records as per internal monitoring practices.

Monitoring team and training

Data collection, consolidation and results analysis will be undertaken by a dedicated team adequately trained, well aware of VCS requirements. This team will not have any hierarchical relationships or dependence links with all entities involved to measure net electricity supplied to the grid and to assure the correct operation and maintenance of the measuring equipment. This independence shall guarantee the integrity of the work that will be done.

Quality management procedures

The implementation of a system of supervision and control that will transfer real-time all monitoring information for off-site recording will allow the operator to access and retrieve safely all Project data regardless of eventual incidents.

Meter measurements by Senelec main/back-up shall not exceed +- 0.5% difference, beyond which dysfunctional meter will in all cases need to be identified by Senelec and PETN, adjusted or replaced within 48 hours in accordance with manufacturer guidelines. After each deviation of more than +- 0.5%, a test and calibration of the meters will be carried out for each meter, certified by a third party.

Non-conformance data during uncalibrated periods will systematically be discounted by the corresponding error margin.

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6 ACHIEVED GHG EMISSION REDUCTIONS AND REMOVALS

6.1 Data and Parameters Monitored

Data / Parameter	$EG_{facility,y}$			
Data unit	MWh/yr			
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y			
Value applied:	**2019**	**2020**	**2021**	**Total**
	22,936	216,520	297,960	**537,416**
Comments	✓ Main & check meters SL7000 ITRON #: 1904406426-1904406427 class 0.2S at delivery point ✓ Meters readings difference confirmed as <0.5% every month			

6.2 Baseline Emissions

The monitoring period for which GHG emission reductions were achieved spans 09/12/2019 to 31/07/2021. Baseline emissions are calculated according to §4.1 methodological approach 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 ($EG_{facility,y}$ = Exports – Imports, in MWh/yr) and (ii) the combined margin CO_2 emission factor for grid connected power generation in year y ($EF_{grid,CM,y}$):

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

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.

$EF_{grid,CM,y} = 0.573$ tCO_2/MWh, as the Project Proponent has applied approved standardized baseline- ASB0034-2021 Grid emission factor for West African Power v1.0.

Year	BE_y	$EF_{grid,CM,y}$	$EG_{facility,y}$
	t CO_2	tCO_2/MWh	MWh
2019 (from 09/12/2019)	13,142	0.573	22,936
2020	124,066	0.573	216,520
2021 (until 31/07/2021)	170,731	0.573	297,960
TOTAL	307,939		537,416

6.3 Project Emissions

No project emissions are expected as the project activity only involves renewable electricity generation from the wind power plant. Hence according to ACM0002 guidelines PEy = 0.

6.4 Leakage

As stated in the applicable methodology, no leakage emissions are considered, therefore LEy = 0.

6.5 Net GHG Emission Reductions and Removals

The monitoring period for which GHG emission reductions were achieved spans 09/12/2019 to 31/07/2021, split by vintage as follows:

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2019	13,142	-	-	**13,142**
2020	124,066	-	-	**124,066**
2021	170,731	-	-	**170,731**
Total	307,939	-	-	**307,939**

APPENDIX 1

Summary of the concerns of the various stakeholders and the extent to which they are addressed in the project description or ESMP

N	Concerns	Actors		Consideration taken into account (Yes/No)	Level of consideration (Project Description or ESMP)	Elements of response (Response to the concern)
		Technical Services	*Local communities/ elected officials and populations*			
1	The risk of loss of agricultural production and income due to the colonization of cultivated land, especially in a context of land pressure in the Taïba N'diaye Regional Council, accentuated by the presence of ICS and MDL.	YES	YES		No	The project has acquired the necessary land for its functionalent. These acquisitions were made as a result of local populations and the population concerned.
2	Risk of impoverishment and food insecurity due to a poor compensation policy that favours fruit trees such as mango to the detriment of food crops, which would eventually lead to the development of monoculture.	YES	YES		No	The project has acquired the necessary land for its functionalent. These acquisitions made as a result of local populations and the population concerned.
3	The risk of conflict that may arise from the failure to take into account damage to the agricultural holdings of third parties during my construction or operation.	----------	YES		No	The project has acquired the necessary land for its functionalent. These acquisitions made as a result of local populations and the population concerned.
4	Risk of obstructing the movement of farmers during the runway construction phase				Yes	

5	Risk of accidents for people living in the area where the wind turbines and underground power cables are located, due to the proximity of their farms, both during construction and afterwards. the operation.	YES	----------		YES	Plan de renforcement and communication of the ESMP
6	Risk of accidents due to falling masts, breakage of the blades or the detachment of the rotors	YES	YES		NO	ESMP
7	Risk of pollution with liquid waste such as dead oil, especially PCB or grease.	YES	----------		NO	ESMP
8	Risk of wear and tear on underground cables due to contact with runoff water.	YES	----------		NO	ESMP
9	Risk of noise and odour pollution with the noise and repellent odours generated by the wind turbines which may have an impact on human health or insects ensuring the survival of the population. pollination.	YES	----------		NO	ESMP
10	Risk of air pollution from the construction and use of lateritic tracks.	YES	YES		NO	ESMP
11	Risk of loss of vegetation cover as a result of felling fruit trees, shrubs and protected species such as the Alida acacia.	YES	----------		NO	ESMP
12	Risk of lightning incidents.	YES	----------		NO	ESMP
13	Risk of accidents to employees during the construction phase as well as for maintenance activities.	YES	----------		NO	ESMP