Environmental and Social Review Summary

Taiba N'Diaye Wind Farm

This Environmental and Social Review Summary (ESRS) is prepared by MIGA staff and disclosed in advance of the MIGA Board consideration of the proposed issuance of a Contract of Guarantee. Its purpose is to enhance the transparency of MIGA's activities. This document should not be construed as presuming the outcome of the decision by the MIGA Board of Directors. Board dates are estimates only.

Any documentation which is attached to this ESRS has been prepared by the Project sponsor, and authorization has been given for public release. MIGA has reviewed the attached documentation as provided by the applicant, and considers it of adequate quality to be released to the public, but does not endorse the content.

Country:	Republic of Senegal
Sector:	Power
Project Enterprise:	Projet Eolien Taiba N'Diaye SA (PETN)
Environmental Category:	A
Date ESRS Disclosed:	*April 6, 2017* *Revised May 22, 2017* *This version of the ESRS has been revised to further clarify the definition of the term PAP in the context of this project (p. 13) and to revise the GHG emission reduction figures (p. 10).*
Status:	Due Diligence

A. Project Description

Lekela Power B.V. (Lekela), an existing MIGA client, is seeking MIGA's cover of its equity and shareholder loan investments for up to $107 million in the Taiba N'Diaye Wind Farm ("Project") against the risks of Expropriation, Transfer Restriction and Inconvertibility, Breach of Contract, and War and Civil Disturbance. A special purpose vehicle, Projet Eolien Taiba N'Diaye SA (PETN), was formed in September 2009 in Senegal by Mr. Bruno Vigneron and Mr. Jeannot Schlernitzauer (owners of Sarreole Sarl) to hold all Project-related rights and obligations. The Project had been under development by Sarreole and Vigneron Energies, a sister company, since 2008. PETN will continue development and management of the Project.

The Project site comprises a total footprint of 67 hectares (ha), including 46 wind turbines, distributed in five rows, and ancillary facilities. The five turbine rows cover total surface area of approximately 7.5 ha. The Project includes the construction and operation of a 158.1 MW wind farm in the municipality of Taiba N'Diaye in the Tivaouane Department, Region of Thies, approximately 75 kilometers (km) northeast of Dakar in Senegal. Associated infrastructure includes internal and external electrical connections, one substation, access roads, and operations and maintenance (O&M) and administrative buildings. The turbine configuration includes 46 - 3.3 MW Vestas V112/117/126 turbines with hub heights between 84 and 137 meters. A network array of 33 kiloVolt (kV) underground cabling

will be constructed, collecting the energy generated by the turbines and transmitting it to an on-site substation. The Project substation will increase the voltage of the electricity generated from 33kV to 225kV and act as the existing grid connection point. The Project will not require a transmission line as the substation is located approximately 700 meters from the closest wind turbine generator. All electrical cables will be underground.

An Immediate Area of Influence has been defined to extend to a radius of 500 meters (m) around each turbine, comprising 2,200 ha of total land. The Project has applied to the Ministry of Environment to have these2,200 ha legally classified as an *"Installation Classée pour la Protection de l'Environnement" (ICPE)*. Under Senegalese law, such areas are subject to restricted uses and special supervision to minimize any risks to the environment, persons or property.

The Project site is generally dominated by agricultural land including fruit trees, rainfall related agricultural activities including millet, peanuts, black-eyed peas, and others as well as cash crops such cassava. Some livestock grazing also occurs on site to a lesser extent. The Project's area of influence is dominated by main and secondary, electricity transmission and distribution networks, and neighboring villages. Some industrial activities and thermal power plants were identified in the Area of Influence with the Tobene Power Plant bordering the project to the southeast approximately 1km from the site.

B. Environmental and Social Categorization

The Project is a Category A under MIGA's Policy on Environmental and Social Sustainability (2013) because there are potentially significant adverse impacts related to loss and restoration of livelihood for the people affected by the Project and potential mortality caused by seasonal and other bird bat movements across the Project site, as well as loss of habitat of high conservation value for vulnerable or endangered avifauna species.

Other key environmental and social (E&S) risks and impacts identified for the construction phase of the Project include loss of natural vegetation, potential for groundwater pollution due to management of hazardous substances, health and safety risks intrinsic to construction activities such as physical hazards related to the use of machinery and work in high elevations, increase of dust and noise emissions, and potential community safety accidents from construction and transport of oversized turbine equipment. During operation of the wind farms, potential risks include: disturbance and/or displacement of birds and bats nesting area by movement and/or noise of rotating turbine blades and mortality in collisions with turbine blades or by electrocution on new power infrastructure, as well as visual impacts and nuisances caused by the shadow flicker effect.

C. Applicable Standards

While all Performance Standards (PSs) will be applied to the Project, based on current information, it is expected that the Project will be managed in accordance with the following PSs:

- PS1: Assessment and Management of Environmental and Social Risks and Impacts
- PS2: Labor and Working Conditions
- PS3: Resource Efficiency and Pollution Prevention
- PS4: Community Health, Safety, and Security
- PS5: Land Acquisition and Involuntary Resettlement
- PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- PS8: Cultural Heritage

PS7 (Indigenous Peoples) is not relevant to this Project since indigenous communities are not present in the area.

In addition, the following World Bank Group (WBG) Environmental, Health, and Safety (EHS) Guidelines are applicable to the Project:

- WBG General EHS Guidelines (2007)
- WBG EHS Guidelines for Wind Energy (2015)

D. Key Documents and Scope of MIGA Review

MIGA's review consisted of appraising environmental and social information submitted by Lekela including Environmental and Social Impact Studies and environmental management programs, avifauna and bats impact assessments, ecological impact studies, social baseline studies, and others as applicable. The following are key documents reviewed by MIGA:

- Taiba N'Diaye Wind Farm Environmental and Social Impact Study (Rev 4), July 2015 ("Final ESIS")
- Addendum Environmental and Social Impact Study Parc Eolien de Taiba N'Diaye, September 2015 ("Addendum ESIS")
- Taiba N'Diaye Final Livelihood Restoration Plan (Rev 3), March 2017
- Taiba N'Diaye Report on Birds and Bats Survey Completed August 2015 – May 2016
- Draft Taiba N'Diaye Wind Farm, Thies, Senegal, Hooded Vulture Biodiversity Action Plan, December 2016
- Revised Initial Stakeholder Plan Parc Eolien de Taiba N'Diaye (Rev 1), December 2015
- Lekela Stakeholder Engagement Plan Parc Eolien de Taiba N'Diaye, August 2016
- Study of safe water supply and waste water treatment for PETN (Rev 4) October 2015
- Lenders Technical Advisor Final Due Diligence Report, February 2017

In addition to reviewing the above documents, MIGA's environmental and social specialist visited the Project site in February / March 2017. The visit included a walkthrough the

Project site and meetings with land owners, representatives of the Project sponsors, local government officials, and local communities.

Potential lenders to the Project engaged a qualified technical advisor to carry out technical due diligence which included E&S compliance. MIGA reviewed the due diligence report produced by the technical advisor and held conversations with Lekela and PETN specialists to further discuss certain topics such as the Project organizational structure and Project management, significant E&S impacts, proposed social investment strategy by Lekela, and potential outstanding gaps against MIGA's E&S requirements.

E. Key Issues and Mitigation

PS1: Assessment and Management of Environmental and Social Risks and Impacts

Environmental and Social Assessment

An Environmental and Social Impact Study (ESIS) was originally developed in 2011 by Ankh Consulting, a Senegalese consulting firm, in accordance with local ESIA requirements. Subsequently, the ESIS was updated multiple times to incorporate changes in the Project design. In early 2015, a gap analysis of the ESIS was carried again against IFC Performance Standards (2012) and WBG EHS Guidelines for Wind Energy (2015). Building on the results of the gap analysis, a final update to the ESIS (ESIS Addendum) was finalized in September 2015. The Project was originally issued a certificate of environmental conformity by the *Direction de l'Environnement et des Etablissements Classées (DEEC)* based on the latest update of the ESIS (July 2015).

The ESIS Addendum (September 2015) was prepared by EES SARL, a local consulting firm, with advisory support from Ramboll ENVIRON an external independent consultant. The ESIS Addendum establishes the Project's close area of influence and incorporates several additional activities undertaken such as rural land surveys to assess the extent of land loss by each land user, a second assessment of land compensation for people impacted by the Project, additional public consultations with affected local communities, and an expanded assessment of potential impacts to Biodiversity (i.e., additional baseline studies on birds and bats). The close area of influence takes into account all Project components and encompasses the villages in a radius of 2 km around wind turbine clusters and also the equipment transport routes. Site alternatives were also assessed in the ESIS Addendum taking into account existing land use and biodiversity sensitivity.

In 2013 pre-construction bird and bats surveys were carried out in the area by a local ecologist. From March until August 2015 supplementary bird and bat surveys were carried by independent experts, in collaboration with the local ecologist, in accordance with the Scottish Natural Heritage (SNH) Guidelines for Bird and Bat Monitoring (January 2009). A separate report on bird and bats surveys (Report on Bird and Bat Surveys) was completed in May 2016. The report also includes the results of the bird surveys completed along the nearby the Niayes Important Biodiversity Area (IBA) in January and February 2016. Potential project-related biodiversity impacts are further discussed under PS 6 below.

Emergency Preparedness and Response

Senegal is vulnerable to disasters including flooding, drought, and land degradation. The ESIS identifies flooding as a potential natural risk for the Project. The ESIS Addendum builds on this and highlights the potential impacts of Project construction activities on natural flow of run-off water and surface water during the construction phase, particularly the construction of access roads. Per the Project's framework Environmental and Social Management Plan (ESMF) and ESIS Addendum recommendations a surface water/storm water management plan should be developed prior to the commencement of construction activities on site. The ESIS Addendum and ESMF also recommend the design and implementation of an Emergency Preparedness and Response Plan (EPRP) to minimize the potential for accidents and emergency situations during the construction and operations phases of the Project. Per the ESAP, MIGA will require that both documents are developed in line with the recommendations of the ESMF and ESIS Addendum.

Cumulative Impacts

Cumulative impacts were assessed as part of the ESIA Addendum. The assessment was carried in line with the methodology published by the Canadian Environmental Agency (February 1999). The assessment identifies various E&S impacts of existing and future projects within the Project area. Projects identified in the cumulative impact assessment include: the Tobene Power Plant, a 70 MW heavy fuel plant located approximately 1 km southeast of the site; a 300 MW coal-fired power plant in Darou Khoudoss approximately 2.5 km north of the project site and currently under construction; a planned phosphate exploration project which borders the Project site to the north; and a phosphoric acid production unit which is still identifying potential locations.

The assessment indicates the possibility of cumulative impacts to groundwater and soil pollution, vegetation removal, waste management, noise and air emissions, and impacts related to the influx of workers to the surrounding areas. Although cumulative impacts are identified and recommendations are provided for their management, the Project is not expected to exacerbate significantly any of the impacts identified. Stakeholder engagement activities will be key to monitoring and understanding cumulative impacts on the communities as designed in the Project's Stakeholder Engagement Plan (SEP).

Stakeholder Engagement

Two SEPs were developed for the Project: the Initial SEP (2008 – 2015) and a second SEP (August 2016). The initial SEP describes the methods PETN implemented during the Project's early works phase and provides a framework of the methods PETN and Vestas plan to use going forward leading up to and during the construction and operations phases to engage the Project's stakeholders. This initial SEP also makes reference to stakeholder engagement activities to be conducted with the project affected persons (PAPs) under the Livelihood Restoration Plan. The second SEP identifies vulnerable stakeholders and focuses on targeted consultations with key stakeholders, including local women's groups.

The second SEP, a comprehensive one, builds on the initial SEP but expands to all phases of the Project through operations and it is in line with requirements under PS1.

Management Program

Lekela has developed an Environmental and Social Governance (ESG) Framework in which it commits to applying international standards to all its investments. Lekela has a corporate ESG Head who will oversee the management of E&S aspects of the Project remotely, including regular visits to the Project. At the project-level, Lekela has appointed a Project management officer to oversee the day-to-day activities in collaboration with PETN's team. In line with Lekela's plans, MIGA agreed with Lekela to ensure that Vestas appoints an E&S Manager at the project-level to oversee the implementation of E&S requirements during the operational phase.

PETN has developed the overarching ESMF for the Project which includes a framework to develop the Environmental and Social, Health and Safety (ESHS) management plans and procedures. The ESMF updates the Environmental and Social Management Systems Plan in the ESIS Addendum to include key E&S mitigations and remedial measures that need to be undertaken to prevent or minimize impacts on the physical, biological and socio-economic environment for the Project. Additionally, PETN has developed an Employer's Environmental and Social Requirements document (September 2016). This document is a contractual requirement in the Engineering, Procurement and Commissioning (EPC)/ Operation and Maintenance (O&M) Contract and contains the required approach to manage E&S risks, Project financing conditions including E&S requirements, and local legal, and permitting requirements. The Employer's E&S Requirements document explains the Project's organizational structure and responsibilities and provides guidance to the EPC/O&M Contractor and subcontractors in developing specific construction and operation plans as applicable to the implementation of the Project. Requirements specified in these documents are in line with the IFC/MIGA PSs and relevant WBG EHS guidelines.

Vestas (the EPC/O&M Contractor) has a corporate-level Environmental and Social Management System (ESMS) in place. Vestas' ESMS contains comprehensive ESHS management plans and procedures which are adapted to the specific requirements of individual projects. Vestas will be responsible for updating the ESMS prior to the start of the construction phase (also referred to as the Construction E&S Management Plan). It includes all ESHS management plans, incorporating information specific to the Taiba N'Diaye Wind Farm Project in line with the Project's ESIS, ESIS Addendum, and the ESMF. Similarly, the ESMS will require revision and will be updated for the operational phase (also referred to as the Operation E&S Management Plan) as indicated in the Environmental and Social Action Plan (ESAP) dated March 27, 2016 and attached.

Vestas will employ subcontractors that will be contractually required to meet ESHS requirements as specified in the Employers E&S Requirements.

Supply chain: The Project will require 46 turbine foundations each requiring 600 to 800 cubic meters (m^3) of reinforced concrete per foundation, associated platforms, and the construction of 34 km of access roads for which significant quantities of raw materials are

needed. The quarries in Tivaouane, Lam-Lam, and the Diack quarries nearby the Project site have been identified as potential sources of raw materials by the Transport and Infrastructure Authority. Vestas will be required by Lekela to monitor report labor practices of its subcontractors including those in its supply chain.

Organizational Capacity

The Project will be developed by PETN under Lekela's oversight. PETN will appoint a Project Manager who will provide oversight, audit and inspection of the EPC/O&M Contractor, subcontractors, and their primary supply chain. During Project development PETN also has the responsibility for acquiring required permits and developing necessary E&S studies. PETN generally relies on external consultants for technical capacity to identify E&S risks and impacts, and to design and develop necessary studies as well as implement and monitor mitigation and management programs.

PETN will oversee that Vestas appoints an Environmental, Health and Safety (EHS) Manager who will be responsible for the management and monitoring of all ESHS aspects on the site during both the construction and operational phases of the Project. The EHS Manager will be supported by a team to be hired in accordance with the Employer's E&S Requirements document. The Project's EHS Manager and relevant team members, including the Environmental and Social Officer (ESO), will manage the daily implementation of the approved ESMF, Vestas' ESMS, and other applicable E&S requirements and develop E&S compliance and monitoring reports.

A Community Relations Officer (CRO) will be appointed by PETN and will be responsible for communicating with the local community to ensure that all relevant Project information is relayed to communities while collecting, managing, and documenting community grievances or concerns. Responsibilities will also include updating the SEP as necessary.

Monitoring and Review

Lekela retains overall responsibility to ensure E&S compliance with the PSs and other MIGA E&S requirements and has developed its own management system and organizational structure to carry out contractor oversight and monitor Project-related risks and impacts. The ESMF contains Project-specific impact mitigation measures and monitoring requirements, as well as key parameters and indicators to evaluate potential adverse social and environmental impacts. ESHS management responsibilities, monitoring, and reporting requirements are also outlined within the ESIS, the ESIS Addendum, and ESMF. Third party contractors will be responsible for conforming to Vestas management procedures and will be managed and monitored through procurement procedures. During construction, Vestas will be required to provide monthly contractor E&S performance monitoring reports to Lekela and PETN. Lekela has agreed with MIGA to share construction phase monitoring reports on a regular basis.

During the operational phase, Vestas will be responsible to ensure that Project-specific monitoring is carried Lekela will submit to MIGA annual monitoring reports (AMR) containing relevant E&S information throughout the guarantee period. Biodiversity

monitoring as specified in the Project's Draft Biodiversity Action Plan (BAP– December 2016) will be carried out by qualified professionals. Monitoring data will be utilized to evaluate the level and adequacy of mitigation measures designed and implemented by the Project and will be included in the AMRs.

E&S impacts during the decommissioning phase were considered in the ESIS and ESIS Addendum from the dismantling of equipment and its transport. Key potential impacts identified for the decommissioning phase of the Project include the potential contamination of soils by an accidental spillage from construction or heavy equipment and potential safety accidents/incidents with the community during the movement and transport of heavy equipment off site. During closure of the site, soils would need to be restored and possibly remediated from potential pollution ensued during the operational phase. As such, the Project will be required to develop a closure and decommissioning plan as specified in the ESAP in line with ESIS and ESIS Addendum recommendations to ensure that decommissioning and site closure are done in a manner consistent with international good practice and Senegalese legal requirements.

PS2: Labor and Working Conditions

It is estimated that the construction phase for the Project will require employment of approximately 385 skilled and unskilled workers, including five engineers during the course of the 34-month construction period. Vestas will prepare a Labor Management Plan that will include recruitment and retrenchment procedures and will be ultimately approved by Lekela. Priority will be given to the local workforce from affected villages and then national labor. Equal employment opportunities will be provided to women as part of Lekela's social support plan for local communities. However, given the type of tasks required during construction, it is anticipated that most of the workforce will be males. Benefits to the local economy as well as adverse community health and safety risks are anticipated due to the potential influx of workers. Adverse impacts will be managed by implementing mitigation measures as outlined in the ESMF including implementing Vestas' Employee Code of Conduct, implementation of health and safety guidelines, implementation of the Community Health and Safety Plan and SEP, and coordination with other project developers around the Project are to address potential cumulative effects from simultaneous construction of multiple projects.

During construction, workers will be accommodated in the nearest towns, and thus on-site worker accommodation will not be developed. Vestas will apply its Code of Conduct to all of its workers and subcontractors and is developing working relationships with local government agencies to monitor potential influx and adverse impacts resulting from its workforce. Monitoring of workers influx to the villages will be the responsibility of PETN, through its CRO in collaboration with local authorities and community leaders.

Lekela is responsible for compliance with PS2 and will carry out oversight and monitoring of Vestas and its subcontractor labor policies and procedures. Lekela will require Vestas to submit monthly monitoring reports during construction phase and quarterly monitoring

reports during the operational phase which will include information on labor practices, retrenchment, occupational health and safety statistics, and other relevant aspects.

Occupational Health and Safety

Construction and operation activities pose occupational risks to workers on site particularly risk of falls, electrocution, injuries from working in confined spaces and heavy lifting, etc. Construction workers will be provided occupational health and safety trainings and competency-specific technical and awareness training related to their responsibilities on site. During operations, workers will be trained, as applicable, on procedures developed to manage potential ESHS risks. As specified in the ESMF, PETN will develop an Occupational Health and Safety/Accident Prevention Plan to address all aspects of occupational health and safety risks in the Project which will be applicable to PETN and contractor workforce, and will guide contractors in the development of their own plans. Vestas will update its occupational health and safety procedure as part of the update to its ESMS prior to the start of construction activities and subsequently for the operational phase of the Project. Per the ESAP, both documents will be in line with requirements of PS2 and WBG EHS Guidelines. As mentioned above and as part of its contractual obligations, Vestas will report to Lekela on occupational health and safety matters, including training, incidents, and accidents, on regular basis during construction and operational phases. OHS updates will be included in monitoring reports to MIGA.

Post-construction activities and operation of the wind farms require a significantly smaller workforce. The curtailment of workers will be led by Vestas with oversight from PETN and Lekela. As part of its long-term Social Investment Strategy, Lekela will develop a complementary business and entrepreneurial training to assist workers during the post-construction phase.

Human Resources (HR) Policies and Procedures

Labor practices in Senegal are regulated by Law 97-17 (December 1997), the Labour Code, which organizes professional relations between workers and employers and standardizes employees' work-related rights, working conditions. It also stipulates obligations of employers and employees.

PETN has an HR team at the corporate level and corporate HR policies and procedures in line with Senegalese labor regulation and PS 2. PETN HR Policies and procedures will be adopted at the Project level.

Vestas has a corporate-level HR Policy, and Employee Code of Conduct, and a Human Rights Policy. Per the Employer's E&S Requirements document and as specified in the ESAP, Vestas will develop a Labor Management Plan compliant with Senegalese Law and PS2. Vestas has an employee grievance mechanism which will need to be updated with Project-specific information prior to the commencement of construction activities.

Third-party contractors are required to have HR procedures (including a grievance mechanism) and to develop occupational health and safety plans in accordance with the provisions in the Project's ESIS, ESIS Addendum, and ESMF. Vestas, under PETN

supervision, will ensure that subcontractors implement ESHS procedures and provide adequate training for designated staff, implement safe operating procedures, and follow reporting requirements for accidents, incidents, and safety non-compliances.

PS3: Resource Efficiency and Pollution Prevention

Environmental baseline conditions were established in the initial 2011 ESIS and were updated subsequently in the 2015 ESIS Addendum for the Project study area for air quality, noise, hydrogeology, geology, soil quality, terrestrial ecology, and avifauna. This section summarizes key findings for the most relevant aspects and proposed measures to avoid and control potential risks and impacts as delineated in the Project documents.

Noise, Vibration, and Air Emissions

Baseline measurements and noise impact modelling were conducted for the Project at representative points. Impacts from noise and vibration are expected to be moderate during the construction of the Project. The two closest villages identified as sensitive receptors are more than 800 m away from the wind turbines. Impacts during construction will be temporary and will result from the operation of construction equipment and traffic. Impacts during operation will be limited to the noise generated by the wind turbines at each site. Noise and vibration control measures have been designed accordingly in the ESMF. Workers on site will be required to wear individual protective equipment in accordance with Vestas health and safety directives and procedures. Per the ESAP, Vestas will update its noise monitoring procedures to adapt to Project-specific conditions to comply with local noise control regulations and WBG EHS Guidelines.

During construction, the main sources of air pollution will be dust emissions from excavation works and movement of vehicles, and engine emissions from exhaust gas from construction equipment and road traffic. Principal pollutants resulting from these sources are (i) dust and particulate matter from increased vehicle movement, soil excavation and removal; and (ii) nitrogen oxides, sulphur dioxide and carbon monoxide from exhaust of vehicles and generators (two 40 kVA 400 and two 20 kVA 400 vacuum generators) as a result of the combustion of diesel fuel. Fuel usage has been estimated at 16 100 liters for the entire construction period. The ESMF contains Project-specific air quality control measures for the construction and operational phases of the Project. Vestas will update its existing air emissions management procedure to include Project-specific information in line with measures specified in the ESMF and provisions under WBG EHS Guidelines.

Greenhouse Gases (GHG)

The development of the Project has the potential to result in significant GHG reductions. According to estimates presented in the ESIS report, the Project is expected to reduce approximately 274,421 tons carbon dioxide (CO_2) equivalents per year from the national grid. Therefore, the estimated reduction of CO_2 for the Project over the 20-year operational period is expected to be significant.

Visual and Shadow Flicker Impacts

A visual impact assessment was conducted during the ESIS phase for the Project and communicated to stakeholders during the consultation process. Accordingly, visual impacts were taken into account during site alternative assessments and design mitigation measures were implemented at that time. However, landscape modifications associated with the Project will remain as a high impact throughout the life of the Project.

Shadow flicker effects were evaluated by utilizing specialized software to determine potential shadow flicker receptors. The model predicted shadow flicker impacts may occur in two villages, Baiti N'Diaye and Balsande II. Limits recommended by international good industry practice are that the predicted duration of shadow flicker at sensitive receptors should not exceed 30 hours per year or 30 minutes per day on the worst affected day, based on an astronomical worst case scenario. This practice is in line with WBG EHS Guidelines for Wind Energy. As specified in the ESAP, the Project will monitor shadow flicker effect at sensitive receptors to verify the findings of the modelling and define specific mitigation measures.

Waste Management and Disposal

The production of liquid, solid, construction, and hazardous waste is expected throughout different phases of the Project. General domestic waste will be produced by site personnel including wrapping from food, bottles and cans throughout the duration of the Project. Construction waste as well as packaging material from unpacking turbine equipment will be generated during the construction phase. Domestic waste will be managed via the Taiba N'Diaye municipality services.

According to the ESMF, construction waste will be collected, stored, and disposed of in accordance with a waste management plan compliant with the national regulatory provisions and international codes of good practice. Waste will be removed by a competent contractor to a licensed municipal disposal site. Adequate measures will be implemented to mitigate potential impacts to soil, groundwater, or surface water from spills. For example, effluents from the cement batching plants must be contained within a bounded area and not be allowed to drain into adjacent sites.

Diesel fuel and other hazardous materials will be stored on site during construction in dedicated laydown areas. Access to construction laydown areas will be controlled through the Site Security Plan. Vestas will update its existing Environmental Management and Incident Management Plans to include project-specific information in line with measures specified in the ESMF, the ESIS, and provisions under WBG EHS Guidelines regarding the storage and containment of hazardous materials.

Hazardous waste including used oil, grease, and other waste considered hazardous will also be produced during the construction phase and maintenance of the turbines. According to the ESIS Addendum, hazardous waste could be recovered and sent to waste oil regeneration companies in the area. Alternatively, waste oil and grease would be sent to the nearby cement plant for burning. At the time of MIGA's visit, a hazardous waste disposal site had not been selected for the expected construction and hazardous waste to be produced by the Project activities. MIGA agreed with Lekela that Vestas' Waste

Management Plan is revised to include Project-specific information and that an authorized waste disposal facility is confirmed as specified in the ESAP. The Waste Management Plan will be in accordance with the requirements of WBG EHS Guidelines.

All wastewater produced by Project activities will eventually be transferred to the nearest treatment plant, presumably the Keur Saib Ndoye plant of the Senegal National Sanitation Office (ONAS) in Thiès. Domestic wastewater produced during the construction phase will be managed via two 21cubic meter septic tanks which will be stored by a subcontractor and evacuated on a regular basis. Wastewater produced during maintenance activities will also be transferred into mobile, kit treatment units emptied regularly into the Keur treatment plant. Wastewater effluents will be required to be in compliance with the limits set in the relevant local standard NS-05 061 concerning the quality of the effluents treated. MIGA agreed with Lekela that installation of septic systems and required discharge of wastewater is carried out in alignment with WBG EHS Guidelines and this will be reflected in the Project's final wastewater management procedure.

Water Consumption

The groundwater supply and quality study indicates that groundwater resources are sufficient to serve all water needs for the Project, including potable and cement and mixing water needed during the construction phase. The Project will implement an autonomous water supply system consisting of: (i) a groundwater borehole with a maximum capacity of 114 cubic meters per hour (m^3/h) to be exploited at 25 m^3/h during the duration of the Project; (ii) a reinforced concrete water tower with a capacity of 100 m^3 and a height of 12 m for storage; and (iii) a stem for the supply of water to tank trucks that will serve the Project site. It is expected that the system will be transferred to the municipality of Taiba N'Diaye adding capacity to the existing water supply system. The Project is not expected to impact quality or supply of existing municipal wells.

<u>PS4: Community Health, Safety & Security</u>

Community health and safety risks and impacts include risks during construction activities caused particularly by increased traffic of heavy machinery, noise and dust levels, increased risk of traffic accidents due to transit of heavy equipment and oversized turbine components, and risks of increased social and health issues due to the influx of workers to nearby town centers. During consultations with surrounding communities, PETN's CRO with assistance from EES (the local E&S consultancy), has discussed potential risks from the transportation of heavy equipment, risks related to access to the Project site, and the need for maintaining the assigned 500 m buffer zone around each turbine. PETN will continue to work with local communities to create awareness and communicate health and safety risks to the community as part of its community communication program.

The ESMF outlines mitigation measures to reduce potential impacts from construction activities and increased vehicular traffic, and community health and safety on the affected communities. Per the ESAP, the Project will be required to develop Project-specific Community Health Safety and Security Plan and revise Vestas existing Incident

Management Procedure to include Project-specific information and to incorporate a process to manage impacts on and communication with communities. The CRO will be responsible for relaying information regarding community grievances and working with the communities to resolve them.

Operational impacts should be limited given the distance between the turbines and nearest communities. However, the Project is committed to establish a community communication program to ensure communities understand potential health and safety risks such as blade throw, turbine collapse, live electricity, etc. As part of the Project's emergency response, representative community members and local emergency providers will be included in practice drills, As part of the operations ESMS, the Project will implement mitigation measures such as warning and information signs will be installed around the immediate areas for each line of wind turbines and EHS information boards specifying risks related to the turbines, and remote surveillance of immediate areas and access doors to the turbine towers, etc.

Security: During construction, workers will be provided official transportation to and from the site, minimizing the influx of unauthorized personnel to the site. Project site will be fenced; however, surrounding land will be accessible to the communities for farming. A third-party security provider may be hired and guards are expected to be unarmed. However, where armed guards are employed, Lekela agreed that a security risk management plan is to be carried out in line with PS4 requirements.

PS5: Land Acquisition and Involuntary Resettlement

The Project site is located in intensely farmed rural areas approximately 800 m to 2 km away from the villages' centers. The Project will be developed on existing farm land resulting in the land acquisition of and temporary and permanent restrictions to 423 plots and the loss of approximately 2,000 mango trees causing economic displacement of 409 Project affected parties (PAPs)[1], referring to the land holder or user of affected land parcels as defined in the Livelihood Restoration Plan (LRP), across three municipalities – Taiba N'Diaye, Noto Gouye Diama, and Darou Khoudoss. As indicated in the LRP, the estimated total number of people economically affected by the Project is 4,908.

Initial household surveys were carried between July and August 2015. Data collected indicates that households surveyed were highly dependent on rain-fed sustenance agriculture and practice small-scale activities such as animal rearing and the sale of produce to generate income. Surveys also indicate that the majority of PAPs will lose less than 10% of the agricultural land, one household will lose 50% or more of their total agricultural land, 2 individual households will lose between 40 and 45% of their total agricultural land, and the rest losing anywhere between 10 and 30% of their total agricultural land. Additional targeted household surveys were carried to complement the initial baseline information gathered and guide the development and implementation of the LRP. At present, some of

[1] The term PAPs is defined in the LRP as "project affected parties" which diverges from the traditionally used definition of "project affected people/persons". The LRP definition is used throughout this document.

social household data is being resampled and verified as some of the information collected during the recent targeted household surveys was incomplete or inaccurate.

The most important cash crop in the area are mango trees. The majority of affected parcels contain one or more mango trees that the owners would have planted, protected, and in some cases watered for a period of at least four years before coming into production. According to the baseline information in the LRP, approximately 70% of PAPs will be affected by losing up to 10% of their revenue associated with mango trees and 5 PAPs will lose all of the mango trees within their affected land parcels. The households that will lose all of their mango trees, will lose no more than 15% or less of their total agricultural land. Compensation to PAPs will include the loss of the mango trees. Additionally, through the LRP, the Project commits to implementing a fruit tree cultivation program and providing approximated 3,000 trees to the program.

In line with requirements of PS5, a Draft LRP for the Project was developed to guide the land acquisition process and to ensure that displacement impacts are managed effectively, in accordance with the Senegalese Legislative Framework and in alignment with provisions under PS5. The LRP was developed in full consultation with Project affected parties and key stakeholders in the communities affected. The LRP is expected to be completed upon finalization of the data verification exercise. MIGA agreed with Lekala that prior to commencing activities on the site, the LRP will be finalized and implementation started in line with requirements of PS5. Progress reports from the LRP implementation will be included in the monitoring reports submitted to MIGA during construction and operation as specified in the ESAP.

Initial compensation activities per Senegalese legal requirements were finalized in September 2016. To meet PS5 requirements, Lekela and PETN have agreed to cover compensation at full replacement cost and double the amount required by local legislation in line with market rates. The second round of compensation, including tree compensation is planned to be carried out upon Project financial closure.

PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

The construction and operation of the Project could result in disturbance, fragmentation and permanent removal of habitat, as well as potential collisions of birds and bats with the wind turbines. Bird and bats surveys were carried in 2011, 2015, and finalized in 2016. The monitoring methodology applied is based on the best practice guidance as set out by Scottish Natural Heritage SNH (January 2009). An initial desk-based exercise was carried to identify suitable vantage points (VP) locations for siting turbines, followed by a ground verification exercise. Based on the proposed turbine array in five rows, surveyors chose five VP locations within the Project area that ensured coverage of all of the proposed turbine locations. VPs were surveyed each month, providing a real time representation of bird activity. Each VP was surveyed covering every season in accordance with SNH guidance. During the surveys, potential collision heights ranging from 0 to above 200m were applied to ensure adequate coverage.

A total of 41 bird species were recorded during the monitoring exercise of the Project site with just four species accounting for approximately 75 % of all birds observed. Despite the fact that most birds identified during the survey do not have a significant conservation status, the surveys identified the recurring presence of the hooded vulture (*Necrosyrtes monachus*), with ten flights, and the sporadic presence of the white-backed vulture (*Gyps africanus)*, with three flights, on site. Both species are identified as critically endangered in the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species.

The Niayes IBA is located 6 km west of the Project site extending 126 km along Senegal's coast from Dakar to St. Louis, and it is host to coastal water birds. Monitoring in the Niayes IBA also took place in 2015 and again for a two-month period in January and February 2016, a period corresponding to the bird migration period. Both surveying events were carried utilizing the same methodology using transects. Given the extent of the distance along the coastline, each transect was covered in vehicles with three ornithological surveyors. Monitoring of the Niayes IBA did not indicate the presence of red listed species. The report identifies the Audouin's gull (*Larus audouinii*) listed as near-threatened. However, subsequent checks in the IUCN Red List show the species status listed as least-concern. A total of 35 species were recorded during the 2016 survey and 41 species total across the two-year monitoring period. Most species observed comprise a variety of terns and gulls. Only one IBA trigger species, the slender-billed gull (*Larus genei)* which is also listed as least-concern, was identified during the surveying period.

Pre-construction bat monitoring was conducted during the same monitoring period using transect surveys. Each transect was completed using ultrasonic bat detectors. Subsequent analysis of the recordings identified those species inhabiting the Project area. In addition to the ultrasonic recordings, passive acoustic surveys and visual observations were conducted. Passive acoustic surveys were conducted using the installation of ultrasonic bat detectors at strategic locations across the Project area and recording for a minimum of five nights each month at each location.

Critical habitat analysis per PS6 was carried by an external consultant during pre-construction bird and bat assessments. The results indicate that based on the criteria stipulated under PS6 and corresponding Guidance Note, the hooded vulture meets the definition critical habitat whereas the white-backed vulture does not meet the criteria specified under PS6.

A Draft Biodiversity Action Plan (BAP) specifically focused on the Hooded Vulture was developed for the Project in October 2016 and revised in December 2016. The Draft BAP takes into account Senegalese requirements for the conservation of nature, international conservation strategies, and was developed under the overarching principles of PS6. The BAP delineates a scenario to achieve net gains of the species that is based on establishing further research on the species, relies on stakeholder communication for the analysis of the formal and informal waste management in the area and the implementation of a waste management scheme and a community engagement program (actions 3 and 4 in the BAP), and promotes the conservation of the hooded vulture through a series of specific actions.

Implementation of the BAP will be managed by PETN with assistance from an external consultant and support from Vestas. The BAP is in draft form and does not specifically address risks of poisoning by pesticide in the community engagement program, which are currently a threat to the Hooded Vulture in the Region. MIGA agreed with Lekala to further development of the BAP to include measures in areas considered key for the conservation of the species and to better understand where vultures come from and where they go. Completion and implementation of the BAP and monitoring proposed therein will be required as part of MIGA's ESAP.

Long-term bird and bats collision mitigation measures have been delineated in the bird and bat assessment and included in the ESMF. PETN will implement the post-construction bird and bat monitoring to inform adaptive mitigation management which will be managed through the BAP. Proposed monitoring and mitigation measures are in line with WBG EHS Guidelines for Wind Energy. Required biodiversity monitoring reports will be provided to MIGA as part of the Annual Monitoring Reports.

PS 8 Cultural Heritage

Cemeteries and certain trees are considered sacred places in Senegal. The presence of culturally sensitive places in the Project area of influence was determined during the ESIS and the LRP data collection phases. Specifically, there were two baobab trees identified as sacred for local communities, as well as the Keur Maka Beye cemetery which is in close proximity to the Project site. The Project was designed to avoid both trees, but will still implement fencing and a buffer zone to avoid impacts during the construction phase. Similarly, the cemetery will be fenced in to avoid construction impacts. Vestas currently has a Cultural Heritage Protection procedure (including a chance finds procedure) that will be updated with Project-specific information. As part of the ESAP, the Project will develop and implement a Cultural Heritage Protection Procedure and include instructions on removal of replicable cultural heritage in line with requirements in PS8.

F. Environmental Permitting Process and Community Engagement

The public consultation and disclosure process for the Project started in 2011 with the initial ESIS process. Consultations were carried out in Wolof, the most commonly used local language, and French, with the assistance of local consultants and PETN's existing CRO. Key stakeholders were identified at that stage and re-evaluated during the ESIS Addendum phase and once again during the development of the Livelihood Restoration Plan. Public consultations in the form of community meetings were held at different times between 2011 and 2016 with community members, affected parties, and other key stakeholders throughout the Project risk and impact evaluation process and the land acquisition and compensation process. Evidence of the meetings and outcomes are included in the respective reports. PETN employs a Community Relations Officer who has been working with the company since the inception of the Project and maintains regular interaction with the communities. Consultations involve a series of meetings that allowed stakeholders to provide input and understand how their concerns were considered in the design of the Project and its programs. As part of the community Information,

Consultation, and Participation process, MIGA visited members of the affected community members and stakeholders. During the exchange, participants seemed to have a good understanding of the Project, its activities, and risks and impacts as well as opportunities expected from the development of the Project. There is evidence that implementation mechanisms included in the LRP have been tailored based on the communities' feedback. They have a generally favorable view of the Project and broadly support the development of the Project provided that adequate implementation of livelihood restoration programs takes place. PETN will update its SEP as necessary and will maintain ongoing communications throughout the Project.

The Project has obtained the required Environmental Compliance Authorization (March 2016), which implies approvals of the ESIS, ESIS Addendum, and relevant annexes. The Project has also obtained required permits including the Building Permit for the Wind Farm (November 2016). Operational permits such as waste disposal permits depending on waste type, a wide-load transport permit, or wastewater discharge, etc. will be required during the construction phase of the Project. As part of the ESAP, MIGA agreed with Lekela to updated matrix of the required permits and corresponding status. The status of the permits will be included in the monitoring reports to ensure Project compliance as specified by the Senegalese Legislative Framework.

G. Availability of Documentation

The following documentation is available electronically as PDF attachments to this ESRS at www.MIGA.org.

- Taiba N'Diaye Wind Farm Environmental and Social Impact Study (Rev 4), July 2015
- Addendum Environmental and Social Impact Study Parc Eolien de Taiba N'Diaye, September 2015
- Taiba N'Diaye Final Livelihood Restoration Plan (Rev 3), March 2017
- Taiba N'Diaye Report on Birds and Bats Survey Completed August 2015 – May 2016
- Draft Taiba N'Diaye Wind Farm, Thies, Senegal, Hooded Vulture Biodiversity Action Plan, December 2016
- Revised Initial Stakeholder Plan Parc Eolien de Taiba N'Diaye (Rev 1), December 2015
- Lekela Stakeholder Engagement Plan Parc Eolien de Taiba N'Diaye, August 2016
- Study of safe water supply and waste water treatment for PETN (Rev 4) October 2015

Information is also available for viewing at the following locations:

Projet Eolien Taiba N'Diaye SA
47, Boulevard de la Republique,
Immeuble Sorano, 1er etage
Dakar, Senegal

MIGA supports its clients (as defined in MIGA Policy on Environmental and Social Sustainability) in addressing environmental and social issues arising from their business activities by requiring them to set up and administer appropriate grievance mechanisms and/or procedures to address complaints from Affected Communities.

In addition, Affected Communities have unrestricted access to the Compliance Advisor/Ombudsman (CAO), the independent accountability mechanism for MIGA. The CAO is mandated to address complaints from people affected by MIGA-guaranteed business activities in a manner that is fair, objective, and constructive, with the goal of improving environmental and social Project outcomes and fostering greater public accountability of MIGA.

Independent of MIGA management and reporting directly to the World Bank Group President, the CAO works to resolve complaints using a flexible, problem-solving approach through its dispute resolution arm and oversees Project-level audits of MIGA's environmental and social performance through its compliance arm.

Complaints may relate to any aspect of MIGA-guaranteed business activities that is within the mandate of the CAO. They can be made by any individual, group, community, entity, or other party affected or likely to be affected by the environmental or social impacts of a MIGA-guaranteed business activity. Complaints can be submitted to the CAO in writing to the address below:

Compliance Advisor/Ombudsman
International Finance Corporation
2121 Pennsylvania Avenue NW Room F11K-232
Washington, DC 20433 USA
Tel: 1 202 458 1973 Fax: 1 202 522 7400
E-mail: cao-compliance@ifc.org

Lekela Taiba N'Diaye Wind Farm Environmental & Social Action Plan – April 5, 2017

Task Title & Description	Anticipated Completion Date
Construction	
Provide the updated copy of the EPC/O&M Contractor Environmental and Social Management System (ESMS), also referred to as the Construction E&S Management Plan, and relevant Environmental, Social, and Health and Safety (ESHS) management procedures and plans or develop such plans for the construction phase as required by the national regulation and in a manner satisfactory to MIGA including: Traffic Management Plan; Training Plan; Labor Management Plan; Community Health Safety and Security Plan; Environmental monitoring plan (including noise monitoring and consider any cumulative noise impacts during construction and operation); Occupational Health and Safety Monitoring / Accident Prevention Plan; Emergency Preparedness and Response Plan; Spill Prevention, Control and Contingency Plan; Hazardous Materials Management Plan; Surface Water/Storm water Management Plan; Waste Management Plan; Air Emissions Control Plan; Transportation Management Plan; Site Reclamation and Closure Plan; Incident Management Plan; HR Policies and procedures; Community health Safety and Security Plan; Decommissioning Plan; Visual Impact Plan; and Cultural Heritage Management Plan.	30 days prior to commencement of construction.
Provide a copy of Projet Eolien Taiba N'Diaye (PETN) HR policy and procedures, including the employee grievance mechanism in line with Performance Standard 2	30 days prior to mobilization of the workforce.
Provide a copy of Vestas HR policy and procedures, including the employee grievance mechanism in line with Performance Standard 2	30 days prior to mobilization of workforce
Establish a schedule for auditing that includes all environmental and social aspects of the project including labor rights, stating the timeframe for resolution of non-conformities.	30 days prior to construction
Provide evidence to MIGA that the Project's ESHS Manager, Community Relations Officer, and Human Resources Officer positions have been filled with competent professionals.	30 days prior to commencement of construction.
Lekela shall prepare a site-specific occupational health and safety manual	30 days prior to construction
Confirm the final waste disposal facility to be used by the Project to dispose of construction and hazardous waste and provide evidence that it is an authorized site.	30 days prior to commencement of construction.
Develop a Waste Management Plan for the adequate management of all expected waste streams during construction and operation of the	30 days prior to commencement of construction.

Task Title & Description	Anticipated Completion Date
Project. The Waste Management Plan should be in line with provisions under Performance Standards 3 and WBG Environmental, Health and Safety Guidelines.	
Develop a project-specific Community Health Safety and Security Plan including an emergency response plan in line with Performance Standard 4.	30 days prior to commencement of construction.
Provide copy of the finalized Livelihood Restoration Plan, including household socioeconomic census, in a manner consistent with requirements under Performance Standards 5.	30 days prior to commencement of construction.
Provide evidence that compensation to Project affected persons has been completed in line with Performance Standard 5.	30 days prior to commencement of construction.
Provide copy of the finalized Biodiversity Action Plan, including a detailed monitoring plan, in line with Performance Standard 6 and World Bank Group (WBG) Environmental Health and Safety (EHS) Guidelines for Wind Energy.	30 days prior to commencement of construction.
Operation	
Provide the updated copy of the EPC/O&M Contractor Environmental and Social Management System (ESMS), also referred to as the Operation E&S Management Plan, and relevant Environmental, Social, and Health and Safety (ESHS) management procedures and plans or develop such plans for the operations phase as required by the national regulation and in a manner satisfactory to MIGA including: Traffic Management Plan; Training Plan; Labor Management Plan; Community Health Safety and Security Plan; Environmental monitoring plan (including noise monitoring and consider any cumulative noise impacts during construction and operation); Occupational Health and Safety Monitoring / Accident Prevention Plan; Emergency Preparedness and Response Plan; Spill Prevention, Control and Contingency Plan; Hazardous Materials Management Plan; Surface Water/Storm water Management Plan; Waste Management Plan; Air Emissions Control Plan; Biodiversity Action Plan; Transportation Management Plan; Site Reclamation and Closure Plan; Incident Management Plan; Community health Safety and Security Plan; Decommissioning Plan; Visual Impact Plan; and Cultural Heritage Management Plan.	60 days prior to the commercial operation date.
Provide evidence of hiring of avifauna experts to conduct the post-construction avifauna monitoring.	30 days prior to commercial operation date
Develop and implement post-construction bird and bat monitoring and management program by qualified experts as specified in the Bird and Bat Assessment and Biodiversity Action Plan annually for	30 days prior to commencement of construction

Task Title & Description	Anticipated Completion Date
years 1 through 5 (with potential for revision for extension after year 5 depending on findings) and that includes and an adaptive reporting schedule in a manner consistent with WBG EHS Guidelines for Wind Energy and satisfactory to MIGA.	
Update the Biodiversity Action Plan annually (or more frequently should conditions warrant) until a net gain for hooded vulture and other potential critically endangered species identified during monitoring exercises can be demonstrated in accordance with criteria set under Performance Standard 6.	12 months after contract of guarantee effective date