CONSORTIUM EDF RENEWABLES - MASDAR - GREEN OF AFRICA

Province of Midelt

Specific Environmental and Social Impact Assessment of solar power plant

NOOR MIDELT I

Environmental and Social Management Plan

ESMP

Réf : C 330 / R372-03

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CONSORTIUM EDF RENEWABLES - MASDAR - GREEN OF AFRICA

Province of Midelt Midelt

NOOR MIDELT I

This document has been prepared with the collaboration of

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PREAMBLE

The EDF RENEWABLES -MASDAR - GREEN of AFRICA consortium has entrusted to the Phénixa engineering consultant to carry out the specific environmental and social impact studies (SESIA) of NOOR Midelt I power plants within the NOOR solar complex.

The site of the NOOR Midelt solar complex extends on a plateau in Upper Moulouya about 20 km Northeast of the town of Midelt. It is accessible by a road developed by MASEN about twenty kilometres from the RN13 which connects Meknes to Midelt.

Administratively, the site of the Midelt solar complex as a whole is related to the following structures:

- Daraa - Tafilelt Economic Region;
- Province: Midelt;
- Municipalities of Mibladene and Ait Ben Yacoub in the province of Midelt.

The site of the solar complex of NOOR Midelt covers a total area of 4141 hectares, of which 950 towards the far west, will be reserved for NOOR Midelt I.

As a whole, the site of the complex was composed of collective lands, that are now MASEN property. These collective lands covering about 2714 ha, belonged to the Ait Ouefllа ethnic community and Ait Rahou Ouali. The site also includes forest lands covering about 1427 ha, property of Water and Forest administration.

MASEN has already finalized the land acquisition procedure for the site of this complex. This acquisition is dealt with as part of the acquisition plan prepared in addition to the FESIA already developed.

An environmental and social impact study was conducted in 2015 on the entire site (Midelt solar complex) and environmental acceptability has been given.

This document constitutes the specific environmental and social study of the NOOR Midelt I project. SESIA is compliant with all recommendations and commitments issued from FESIA.

In the context of this SESIA, and following the current national regulations, the Consulting Engineer (CE) must essentially identify the main impacts or the positive and negative effects that may be generated by the realization of the project. A set of compensating and/or mitigating measures must also be proposed for each negative effect. Finally, a monitoring and environmental monitoring program must be developed.

In application of the EIA Law 12.03 and in accordance with the requirements of international donors(World Bank and IFC, KfW, EIB, AfDB, AFD, EHS general guidelines (2007) and EHS Guidelines for Electric Power Transmission and Distribution (2007)), the objectives of this study are:

- To evaluate in a methodical and preliminary manner, the potential impacts, the direct and indirect, temporary and permanent effects of the project on the environment in particular, an on the human, biological and physical environments
- To remove, mitigate and compensate for the negative impacts of the project;
- To inform the population concerned about the negative impacts of the project on the environment.

The present report concerns the specific environmental and social impact assessment, of which the overall file will be composed of two volumes:

- Volume 1 - Including the SESIA main report;
- Volume 2 - Including the Environmental and Social Management Plan (ESMP).

This document corresponds to volume 2.

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ABREVIATION

Abreviations	Explanation
BESS	Battery Energy Storage System
CESMP	Environmental and Social Management Plan during Construction phase
CO	Carbon monoxide
EHS	Environment, Health, Security
EPC	Engineering Procurement Construction
EPFI	Signatory financial institutions of EP
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and social management plan
EU	European Union
FESIA	Framework Environmental and Social Impact Assessment
GG	Greenhouse gas
HTF	Heat Transfer Fluid
IFC	International Finance Cooperation
Km	Kilometre
kV	Kilovolt
M	Metre
MASEN	Moroccan Agency for Sustainable Energy
MW	Mega Watt
NGO	Non-Governmental Organisation
NOx	Nitrogen oxides
OECD	Organisation for Economic Co-operation and Development
OESMP	Environmental and Social Management Plan during the Operation phase
O&M	Operation and Maintenance
ONEE-BE	National Office of Electricity and Drinking Water (electricity branch)
OP	Operational Policy
PPE	Personal protection Equipment
PS	Performance standard
PSSE	Monitoring and Environmental Follow-up Plan
RN13	National Highway No. 13
SEDD	State Secretariat for Sustainable Development
SESIA	Specific Environmental and Social Impact Assessment
SOX	Sulphur oxides
VOC	Volatile organic compound

1. Introduction

This Environmental and Social Management Plan (ESMP) is established in accordance with SESIA for the NOOR Midelt I project developed by the Consortium composed of international firms: EDF Renewables / MASDAR / GREEN OF AFRICA that will form a project company in charge of developing and the operation of the project. The project company will identify an EPC (engineering, procurement, construction) structure responsible for design / construction and an O & M (operation and maintenance) structure responsible for operation and maintenance.

This document will also be available in the form of the Environmental Monitoring and Surveillance Plan required by the national competent authorities for the environment and will be published on the website of the Department of the Environment.

The present Environmental and Social Management Plan (ESMP) was developed based on the predictable impacts of NOOR Midelt 1 project, identified during the environmental assessment and the defined mitigating and reduction measures with the aim of reducing and mitigating the latter. Its objective is to ensure the respect of the implementation of these measures and the requirements derived from the regulations. The project company remains entirely responsible for the implementation of the ESMP and must adopt an organization than can be able to ensure this mission.

The information provided these ESMP, CESMP and OESMP (following chapters) are for use by the contractors and operators to develop their activity and project specific CESMP and OESMP. CESMP and OESMP prepared respectively by the contractor and the operator will have to approved by MASEN 30 days before starting construction/operation.

The action items proposed in the ESMP are the minimum requirements that the contractors and operators must follow during construction and operation.

It is to be remembered that in the framework of the NOOR Midelt project as a whole, the FESIA developed by MASEN identified, for the measures that are directly assumed by the developers, ESMP adapted to each technology (CSP, PV).The latter were approved by the competent authorities.

2. ESMP purpose

2.1 General content

As it was mentioned, the Environmental and Social Management Plan (ESMP) is a detailed set of measures and procedures designed to ensure the implementation of the mitigation measures identified from legal framework and International Financial Institutions (IFIs) requirements. These measures will be implemented at all stages of the project development, from construction, commissioning, and operation to decommissioning.

The ESMP also outlines the environmental and social management structure, which will be responsible for implementing the procedures of the ESMP; therefore this structure includes roles and responsibilities of team members.

Finally, the management plan is iterative in nature and will be amended and configured prior to and during all phases as circumstances or activities change on site. The ESMP measures designed to ensure and assess the long-term effectiveness of the ESMP include:

- Program of audits and inspections;
- Procedure for recording and reporting environmental and social incidents;
- Procedures for recording complaints regarding environmental and social issues;
- System for liaising with the environmental regulatory authorities;
- Procedures for regular review of the ESMP; and
- Program for environmental and social monitoring.
- Environmental and social safeguards plan.

2.2 Environnemental and Social Policies

2.2.1 IFIs requirements

Each IFI has its own environmental and social requirements to ensure the sustainability of its operations, and all of these requirements have been reviewed in the main SESIA report. The ESMP

- **World Bank requirements :**

Only OP 4.03 : Performance Standards for Private Sector Activities will apply..

OP 4.03 requires that private sector projects financed by the World Bank has to be compliant with IFC's Environmental and Social Perfomance standards. These standards are described below.

- **IFC requirements**

The performance standard 1 underscores the importance of managing environmental and socialperformance throughout the life of a project.

According PS1, "*The client, in coordination will conduct a process of environmental and social assessment, and establish and maintain an ESMS appropriate to the nature and scale of the project and commensurate with the level of its environmental and social risks and impacts. The ESMS will incorporate the following elements: (i) policy; (ii) identification of risks and impacts; (iii) management programs; (iv) organizational capacity and competency; (v) emergency preparedness and response; (vi) stakeholder engagement; and (vii) monitoring and review* ».

The PS1 gives specifications for Management Programs :

« *Consistent with the client's policy and the objectives and principles described therein, the client will establish management programs that, in sum, will describe mitigation and performance improvement measures and actions that address the identified environmental and social risks and impacts of the project.*

The management programs will establish environmental and social Action Plans,which will define desired outcomes and actions to address the issues raised in the risks and impacts identification process, as measurable events to the extent possible, with elements such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods, and with estimates of the resources and responsibilities for implementation. As appropriate, the management program will recognize and incorporate the role of relevant actions and events controlled by third parties to address identified risks and impacts. Recognizing the dynamic nature of the project, the management program will be responsive to changes in circumstances, unforeseen events, and the results of monitoring and review. »

- **KfW requirements**

For category A project, KfW sustainble guidelines require « *A ESMP describing the measures needed to avoid, mitigate, compensate for and monitor the adverse effects ».* An appropriate follow-up system is also expected.

- **EIB requirements**

The environmental and social standards 1 : A***ssessment and management of environmental and social risks and impacts*** emphasises the importance of managing environmental and social risks and impacts through the application of the precautionary principle throughout the life of an EIB-financed project. The provisions of the standard provide for the development of an effective management and reporting system on environmental and social aspects that is impartial and encourages the implementation of improvements and permanent developments.

The EES 1 gives some specifications for Environmental and Social Management Plans :

The promoter will develop and implement an environmental and social management plan (ESMP) that, in sum, will describe the mitigation of environmental and social impacts and risks, the performance improvement as well as the opportunities.

The ESMP is expected to:

- *prevent the negative impacts that could be avoided;*
- *mitigate the negative impacts that could not be avoided but could be reduced;*
- *compensate/remedy the negative impacts that could neither be avoided nor reduced; and,*
- *enhance positive impacts.*

All compensatory and remedial measures will be addressed in the ESMP.

The ESMP should be developed as a tool to assess the implementation and the expected effectiveness of the mitigation and compensation measures and to identify any unforeseeable adverse effects.

The ESMP will contain measures and actions that are measurable to the extent possible, including elements such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods. This includes allocation of resources, responsibilities and timeframe for its implementation, as well.

Organisation Capacity and Competencies

The promoter, will implement the ESMS and related ESMP. *Specific staff, including management representative(s), with clear lines of responsibility and authority should be designated. Key environmental and social responsibilities should be well defined and communicated to the relevant staff and to the rest of the promoter's organisation. The promoter should ensure that sufficient human and financial resources will be provided on an on-goingbasis to achieve effective and progressive environmental and social performance.*

AfDB

The Operational Safeguard 1: Environmental and social assessment includes the requirements for the Environmental and Social Impact Assessment Process. It states that borrowers or clients are responsible for conducting the environmental and social assessment (Strategic Environmental and Social Assessment (SESA), or Environmental and Social Impact Assessment (ESIA) and an Environmental and Social Management Plans; and for developing, as an integral part of the project documentation, an appropriate plan for managing possible impacts.

AFD

AFD requirements for ESMP refer to the International Finance Corporation performance standards for private sector financing.

2.2.2 National legislation requirements

The project company must be committed to respecting all legislative and regulatory dispositions provided by the national laws, as well as those of international agreements to which Morocco is a party. This concerns notably:

National regulation

- Law 12-03 on EIE (dahir1-03-06 of 12 May 2003) ;
- Law 99-12 related to National Global Charter on the Environment and Durable Development ;
- Law 11-03 on the protection and development of the environment (dahir 1-03-59 of 19 June 2003) ;
- Law 36-15 on water (dahir1-95-154 of 16th august 1995) ;
- Law 28-00 on solid waste (dahir 1-06-153 of 7 december 2006) ;

- Law 13-09 related to renewable energies (dahir 1-10-16 of 11 February 2010) ;
- Law 13-03 on air quality (dahir 1-03-61 of 12 May 2003) ;
- Law 67-15 on hydrocarbons storage ;
- Dahir of 14 January 1914 regulating the importation, circulation, sale of explosives in Morocco and fixing the conditions of installation of the deposits, modified and completed by the dahirs of March 14 1933.
- Decree 2-97-377 on emissions due to gas leakage (28 January 1998) ;
- Law 29-05 related to the protection of wild flora and fauna species and to the control of their commerce. (dahir 1-11-84 of 21 July 2011) ;
- Law 57-09 creating the firm "Moroccan Agency for Solar Energy." (dahir1-10-18 of 18 March 2010) ;
- Laws 111-14, 112-14 et 113-14 related to territorial organization,
- Law 12-90 related to urban planning (dahir 1-92-31 of 17 June 1992) and law 66-12 ;
- Law 30-05 related to hazardous materials transportation ;
- Law 22-80 (dahir 1-80-341 of 25 December 1980) on cultural and historic heritage as modified and completed in 2006 Law 19-05 (dahir 1-06-102 of 8 June 2006) ;
- Decree 2-70-510 (8 October 1970) related to prophylactic measures to be taken on construction sites ;
- Order (November 23, 1950) relating to drugs and medical equipment to be provided on the site of 100 workers, permanently or sites located more than 10 km from a supply center;
- Law 65-99 on the Labor Code (Dahir 1-03-194 of 11 September 2003);
- Decrees and orders implementing the aforementioned laws.

International Conventions

- Rio Convention for the protection of biological diversity (1992) ;
- Berne Convention for the conservation of wildlife and the natural environment (1979) ;
- International Convention for the protection of birds (1950) ;
- Bonn Convention for the conservation of migratory species belonging to wild fauna (1979) ;
- Convention on the international commerce of endangered species of wild fauna and flora (1975) ;
- African Convention for the Conservation of Nature and Natural Resources (1968) ;
- Maghrebine Charter related to the protection of the environment and of durable development (1992) ;
- International Convention on the protection of plant-life (1951) ;
- Convention on climate changes (1992) ;
- Kyoto Protocol;
- International Conventions ratified by Morocco in the domain of work law.

2.3 Environmental and Social Management System

EDF Renewables in accordance with the social commitments of EDF Group, has developed an environmental policy that binds the company to develop sustainable renewable energy development projects and contribute to the fight against global warming

In compliance with FESIA/SESIAand EDF Renewables policy, the project company will prepare and implement an Environmental and Social Management System in compliance with PS1 and ISO 14001, one for construction and one for operation. The CESMS and its associated procedures and plans will

be prepared and submitted to Masen's review and approval before the start of construction. Similar process will be conducted for the OESMS and its associated procedures and plans.

2.4 ESMP objectives

The main objective of the ESMP is to ensure that the various adverse impacts associated with the project are properly mitigated. The objective of the ESMP at various stages of the project planning and implementation are as follows:

Construction Phase

- To prevent and reduce the negative environmental and social impacts of the project by implementation of mitigation measures; and
- To ensure that the provisions of the ESMP are strictly followed and implemented.

Operation Phase

- To prevent deterioration of environmental and social components regarding air, water, soil, noise, community, society; and
- To improve the safety of the end users and communities.

This ESMP will be attached to the bidding documents and included as a legal obligation in the EPC and O&M Contracts.

2.5 Site description and baseline conditions

2.5.1 Project location

Geographical location

The solar complex site of NOOR Midelt covers a total area of 4141 ha, on a plateau in Upper Moulouya located at about 20 km north-east of the city of Midelt. It is administratively related to the municipalities of Mibladene and Ait Ben Yacoub in the province of Midelt.

The NOOR Midelt I plant is located northwest of the main NOOR Midelt solar complex area.

The total area of the NOOR Midelt I site is 950 hectares and is located on a flat and rocky plateau with low vegetation. The site is in the form of a plateau with an almost uniform and regular slope which decreases from north to south in the order of 2%. The site is located at an altitude ranging from 1307 to 1477 m and is crisscrossed by gutters resulting from erosion caused by the flow of water and which ensure the natural drainage of rainwater towards the watercourses bordering the plateau.

The site is accessible by a road planned by MASEN about twenty kilometres from the RN13 which connects Meknes to Midelt.

Administrative organization

Administratively, the site is related to the following structures:

- Draa – Tafilelt Region ;
- Province of Midelt ;
- Municipalities of Mibladene and Ait Ben Yacoub in province of Midelt.

Urban and land status

As a whole, the site of the complex was composed of collective lands, that are now MASEN property. These collective lands covering about 2714 ha, belonged to the Ait Oueflla ethnic community and Ait Rahou Ouali. The site also includes forest lands covering about 1427 ha, property of ging to the water and forest administration's domain.

MASEN has already finalised the land acquisition procedure for the plant's site. This acquisition is treated as part of the acquisition plan prepared in addition to the FESIA already developed. All social impacts on acquisition land are addressed in the Land Acquisition Plan carried out by MASEN in 2017 and disclosed on MASEN website.

2.5.2 Environmental baseline

Physical environment

Topography : The NOOR Midelt I plant is located northwest of the main NOOR Midelt solar complex area. There are vast dominant plateaus that are divided into two contrasting E-W bands: one northern, the other southern. The topographic slope, almost uniform and regular, of the order of 2%, decreases from north to south.

The project’s site is at an altitude ranging from 1319 to 1462 m. It is crisscrossed by chaâbas resulting from the erosion caused by the flow of water and which ensure the natural drainage of the storm water supply to the rivers bordering the plateau.

Hydrology : There is no permanent surfaces water inside project site, only few chaabas flowing from the north to the south of solar plant site.

The site of NOOR Midelt I is located less than 200 m from an ephemeral river (wadi Bou Arich), bordering it to the west. The latter joins wadi Ait Ayad towards the south of the site. The latter joins Aouli, and goes down to the Moulouya, to feed the Hassan II dam's reservoir.

Hydrogeology : The study area is sterile from a hydro-geological point of view, only a few small superficial aquifers are to be noted around the study area, which are already exploited for the supply of drinking water and food agriculture.

Soil : There is various erosion effects on project site, the most important is water erosion from natural drainage of the storm water supply to the rivers bordering the plateau and the chaabas that cross the site.

Air : Whole study area does not include significant sources of air pollutant emissions. Only, the remote perimeter is exposed to a weak air pollution from RN13 and RR503 traffic. Analysis done on the site show good air quality.

Noise and vibration : In general, the site is located in an isolated area with no significant development or commercial activities within a radius of 10 km. No emission noise sources is identified on site ans analysis done shows a calm soundscape

Biodiversity

No protected areas on site project and in the remote study area. No critical habitat on site project.

The site itself is poor in species, due to a long over-exploitation by the breeders, related to the accessibility of the site, and to the proximity of the surrounding villages. Currently, the site itself is operated by breeders, of local origin; overgrazing is manifest, resulting in a sharp decline in Halfah grass.

At the heritage level: the best preserved habitats are at the edge of the study area: the Halfah grass steppe of the high plateau is the best example, followed by the steppe on uneven ground.

Power plant site is on the living space of Houbara Bustard. This is the main ornithological issue of the project. This species (Vulnerable globally and Endangered in Morocco) is quite common and uses the whole area (Site and Surroundings which cover the whole Midelt Plateau) as feeding grounds, courtship and breeding (surveys of the local population confirmed nesting and spawning throughout the area).The site is used by females for laying, breeding and feeding. A courtship area (Lek) has been identified 6 km south the site and won't be impacted by the project. DuPont's lark (threatened species at international level and endemic to Ibero-Maghreb) is no longer present resulting of the ecological conditions degradation , Although only one Large Migratory Raptor (Black Kite) has been identified during the ornithological surveys.However, migration flows do not pass over the site, the identified corridor are located further west .

Human environment

Project site does not include any house. Within a radius of 500 m, no village is established. The nearest village is Agoudi, located about 9 km west of the plant. Beyond 10 km, we found Douar Arbane in the north-west (14 km), Ait Ghiat, south-west (13 km).

The project as a whole is expected to be a major structuring economic element that will have significant repercussions throughout the sub-region characterised on the one hand by an austere physical environment and on the other hand by the great weakness of its economic bases and structures. It should be noted, however, that despite its location in the immediate geographical proximity of the Province of Boulemane, most of the project's activities will be directed towards the Province of Midelt.

The province of Midelt is crossed by two national roads: the RN 13 and the RN 15 and a regional road RR 503. The peripheric communes are sometimes extremely isolated.

Most of the economic activities of the Midelt Province revolve around the agricultural, forestry and mining economic sub-sectors. As a result, the industrial base is presently reduced to a bare minimum with only 2 companies: making clay tiles and bricks; and, sawing, planning and wood processing. The main handcraft activities characterising the province are wood works that are made possible thanks to the presence of trees such as cedar, pine and olive trees, the manufacture of urban and traditional carpets, textiles with decorative objects and beautiful embroidery, etc.

The site project doesn’t include any cultural heritage.

2.6 Description of the construction works

The NOOR Midelt I plant will consist in a hybridization project including solar PV power plant andCSP power plant (parabolic trough collectors). The project includes PV solar field, CSP solar field a power block and some ancillary infrastructures (evaporation pond, tanks, evacuation power line, etc.).

2.6.1 Main planned works

Given that the topology of the site is relatively favourable, the levelling works are limited to the areas requiring earthworks for the operation of the equipment. Therefore, the power block will be the only horizontally levelled area.

As far as the PV field is concerned, the earthworks will be limited to areas where the land does not meet the maximum slope criteria allowed by the structure. Explosives will be used for a minor part of such earthworks.

For the entire plant, the volume of land moved is estimated at 1M m^3. The Excavation/ Filling works ratio will be balanced.

The foundations of any vertical structures will be installed to respect the seismic construction rules of the region while taking into account the subsoil quality.

2.6.2 Arrangement of accesses and traffic lanes

Access to the site is through the southwestern end of the site. In order to move around the site, roads and service routes have been arranged for the accessibility of maintenance vehicles to all parts of the sites.

Main access road

The access road runs along the south limit of the site and provides access to the power block where the driving centre and all the administrative buildings of the site are located. This road will intersect with the main access road set up by MASEN.

Peripheral road

Two peripheral roads run along the PV and CSP fields (within the site boundary) and will help monitor the site's periphery.

Internal roads

Internal roads are provided in the north-south and east-west axes in the PV field and provide access to the PV field's inverter blocks for construction and maintenance activities. An additional road will run along the power line in an east-west direction. In the CSP field, internal roads are also provided in the north-south and east-west axes to serve all ends of the CSP field.

Internal paths

In the CSP field, unpaved solar collector loop maintenance paths are provided for maintenance and mirror cleaning activities.

Note: Only the access road will be asphalted. Other roads will be compacted and unpaved. On the other hand, the development of the access road to the site is not included in this SESIA.

2.6.3 Storm water drainage channels

Drainage works are planned in all CSP and PV fields to evacuate surface water without any risk of flooding for the structures. A north-south and east-west grid of ditches and canals will drain rainwater to

the east and south of the site. The drained water will be discharged into the drainage channel set up by MASEN and will not be discharged along the wadi Sidi Ayad bordering the site.

Ditches and canals will be sized according to the flow of rainwater to be drained. The materials used will differ depending on the section, slope and soil type as shown. At the power block level, rainwater that may be in contact with oil will be cleaned from oil before being discharged into the evaporation basin.

2.6.4 Materials supply

A significant part of assembly work will be carried out on site.

The delivery of large equipment will be accomplished from the port of Casablanca, Tangier Med and the high way A1/A2 and N13 national road or from Nador and National roads 19 and 15 and 13. Crossing the city centre of Midelt might be required.

2.6.5 Water needs to be mobilised

During the construction phase, water consumption is estimated at 300 000m^3.

2.6.6 Fossil energy needs

During the construction phase, fossil fuel requirements are related to the machines and vehicles needed for the construction site.

2.6.7 Effluent management

Chemical toilets will be implemented in sufficient number to treat sanitary water related to the presence of employees throughout the entire construction period. The emptying of these facilities can be carried out in the nearest treatment station (Missour located 90 km west Midelt).

2.7 Main resource requirements during the operation phase

2.7.1 Water requirements during the operation phase

Drinking water in the construction and operation phases would be made available to employees. It will be bought and stored in fountains and mobilised via trucks. The sanitary water will come from the Hassan II dam without any treatment planned.

During operation, the water requirements will be less than 70 000 m^3/year. This water is mainly used to top up the steam cycle and wash the CSP fields. It will be demineralised via Reverse Osmosis treatment and deionisation.

2.7.2 Hydrocarbon needs

The hydrocarbon used is diesel , to be supplied by truck. The facilities will be able to receive trucks with their own evacuation pump or will discharge by gravity. Discharged fuel will be transferred and stored in a buffer tank. The needs are about 150 m^3 per year.

The fuel will then be pumped from the buffer tank to the different consumers, with the exception of the fire pumps and the emergency generator. Indeed, in the last two cases, the hydrocarbons will be stored directly in a buffer tank of each corresponding equipment.

2.7.3 Heat transfer fluid needs

It is eutectic mixture of biphenyl and diphenyloxide.

In total, the plant will need about 570 tons of HTF for the filling of the circuit, with extra <1% / year.

2.7.4 Needs in molten salts

The molten salts will be composed of 60% Sodium Nitrate and 40% Potassium Nitrate.

A total of 26 920 tons of molten salts will be stored at the NOOR Midelt I plant. This initial volume of molten salts will be the same, and will remain so throughout the operating phase of the plant. No renewal or supplement is planned.

The planned storage allows to produce electricity during 6,25 hours.

2.7.5 Li-ion batteries

Li-ion batteries operation and cycling being limited (maximum 1 cycle per day), they are note supposed to be changed during the 25 years operation.

Only change would occur in case of break-down of one battery or higher degradation than expected.

2.8 Schedule and employment

The construction phase and the operation phase will employ :

- In the construction phase: more than 1000 people for 30 months for labour jobs but also, welders, assemblers, machine operators etc.
- In operation phase; about 60 people will constitute the Operation and Maintenance team.

3. ESMP in construction phase (CESMP)

CESMP concerns environmental management plan during construction phase. It aims to ensure that the commitments and recommendations of an environmental nature included in the present SESIA are fully applied. At first, this monitoring activity includes the integration of the mitigating measures and other environmental considerations in the plans and estimations, then their implementation during the construction.

The CESMP will be developed by the EPC before construction and will include at least mitigations measures identified in this ESMP. The CESMP will be associated with all plans and procedures required. It will be approved by the project company and by MASEN 30 days before starting construction..

3.1 CESMP development

In order to ensure compliance with environmental legislation, both national and international, the Construction Environmental and Social Management Plan (CESMP) will be developed to manage environmental risks during the construction phase. The complete CESMP will need to be prepared by the EPC and all sub-contractors will be obliged to adhere to procedures that are outlined. This also includes following and enacting proper management structures and procedures

3.2 Environmental management staff : roles and responsibilities

3.2.1 Organization

Before beginning of the construction, the consortium will define the respective roles and responsibilities with regard to the environment and identify the site's responsible Environmental Manager. Descriptions of

individual environmental team responsibilities will also be detailed and include, but not be limited to, the following team members:

Project Director/Manager is responsible for the delivery of the project, which includes environmental and social management requirements.

Environmental manager (environment, operational health and safety). The project company will appoint a responsible for environment, social, health and safety under the responsibility of Construction Manager and Site Manager. He will responsible for ensuring that Environment, Social Health and Safety (EH&S) measures are managed during construction and operational phases. He will be responsible to approve the CESMP and OESMP prepared by the contractor and the operator. He will also have the responsibility of reviewing monthly reports of environmental monitoring and a final report at the end of the work prepared by the EPC.

This Environmental Manager will have significant experience in E&S and OHS aspects particularly on similary projects . Throughout the duration of the work, the project company will advise the ministries or responsible organisms of the carrying out of the work and of important changes in the construction schedule. The ministries or responsible organisms can at any time come to ascertain the implementation of the planned mitigating measures.

EPC and subcontractors are responsible for preparing CESMP and consistently implementing environmental and social management measures in accordance with the mitigation and monitoring measures outlined in the SESIA and are in compliance with the national and international applicable regulations.The Subcontractors' responsibilities parallel those of the Contractor's project personnel, and therefore all persons working on site will comply with the environmental and social requirements detailed in the CESMP. The assigned EPC will be required to employ a E&S Officers and OHS Officers. OHS Officers will be OHSAS 18001:2007 or similar certified and have adequate experience obtained in other large projects. E&S Officers will have adequate experience obtained in other large projects. Both should be not straight from school.

3.2.2 Resources

All levels of management are accountable to ensure that the necessary resources are available for implementing and accomplishing environmental and social responsibilities. Therefore, the following issues will be provided and assured:

- Appointed Environmental/Social Managers will be competent and experienced in the relevant issues;
- Suitable time will be allocated to manage these issues
- Environmental and Community awareness training will be provided;
- Suitable documentation will be provided;
- Suitable documentation will be provided;
- Appropriate equipment will be provided; and
- Suitable budget will be allocated for managing environmental and social incidents.

3.3 Applicable Legislation, Policy and Environmental and Social guidelines

3.3.1 Applicable legislation

Legal texts identified in chapter 2.2 are applicable in construction phase.

3.3.2 Best environmental practices

Directly and through its contractor and subcontractors, the consortium is also committed to implement measures sound environmental management in the construction phase. Without being exhaustive, these include:

- To get all the necessary permits required by laws and regulations.
- Ensure compliance with health and safety measures site installations
- Establish and enforce a site regulations
- Protect surrounding properties of the site
- Ensure the continuity of traffic and access of local communities during construction
- Ensure solid waste collection and disposal of waste produced by work
- Inform and aware people prior to any degradation of private property.
- Adopt a speed limit for vehicles on site
- Perform signalization for works:
- Ensure respect to safety rules at work
- Educate field staff on STI /HIV / AIDS
- Organize storage of materials, parking and movement of machinery so as to avoid discomfort
- Respect cultural sites
- Organize the activities of the site taking into account the noise(noise, dust) and the safety of the surrounding population;
- Use the local labor in priority if they comply with the employers requirements
- Provide good quality of work, conducting check and choice of appropriate technologies.

These best practices will be reflected in a manual of environmental, social, health and safety management. The manual will be carried out by EPC and will be approved by EDF Renewables and MASEN.

3.3.3 Environmental and social policies and guidelines

The project company in charge to implement NOOR Midelt I project, has developed an environmental policy for all its projects. The main elements are:

- Working to develop technologies in renewable energy and operating as a company that takes responsibility for its environmental impact;
- Preventing pollution risks in all phases of a project, improve environmental performance and meet regulatory requirements;
- Optimizing the organization to ensure effective management and monitoring of contractors and consulting with all stakeholders throughout project ;
- Periodically checking and continuously improving environmental performance.

3.4 Environnemental/social requirements and compliance

Compliance analysis will be performed according environmental regulation and best practices. Mitigation measures presented in tables in chapter 6 identify monitoring, checking, roles and responsibilities. In case of non-compliance, the responsible for environment will identify correctives measures to be implemented.

The responsible for environment will have to develop procedures for dealing with major pollution incidents that could unexpectedly occur during the construction phase (including the reporting to the relevant authorities) and which are particularly related to air quality (e.g. dust), cultural heritage (e.g. archaeological finds), ecology (e.g. protected fauna/flora), ground/soil quality (contamination issues), noise and vibration, water resources, waste management.

The ESMP and the CESMP will be approved by the authority in charge of the environment through the development of the environmental monitoring plan developed during the procedure for issuing the Environmental Acceptability.

3.5 Labor and working conditions

Labor and working prepare, implement an OHS management system (consistent with ISO 45001) taking into account specific risks associated with the project, legal requirements and duty of care.

The OHS management system will include also worker accommodation if required.

An occupational Health & Safety Plan will be prepared. This includes among others induction for all workers, and work specific risk assessment and procedures, training and supervision; also provision of first aid and medical response staff and facilities.

The plan will be compliant with ILO conventions and will include at least :

- Identification of hazards, evaluation of risks and determination of controls and inspections.
- Identification of legal and other system requirements
- Code and procedures of safe practices in the Plant
- Training and information.
- Communication, participation and consultation.
- Safety inspections
- Document control.
- Operational Control : Safety standards, Work permits, Safety inspections, Revisions of equipment and installations, Revision and control of personal protective equipment, Control of Hazardous Substances, Control of Purchases and Acquisitions, Control of Works and Services, Control of Changes and New Projects, Coordination of contractors' activities and other external visitors
- Preparation for and response to emergencies.

Accident management, non-conformities and corrective actions.

The implementation of the OHS plan will be under the responsibility of the OHS officer.

3.6 Monitoring., recording, inspection and audits program

Daily inspections of work areas by the E&S and OHS officers will be conducted to identify any issues or non-compliance with the CESMP and to monitor the daily work practices.

A weekly inspection checklist will be prepared and will be provided to the External Auditors for evaluation, which will involve all the subcontractors to discuss environmental and social issues and their rectifications.

External audits will also need to be undertaken by an external, independent auditor in order to asses the compliance with IFIs requirements. The various audits are :

- Quarterly Independent Audits of the Environment –Documentation :
  - The auditors review the environmental documentation kept at the plant, verify the proper implementation of the environmental procedures in place in the ESMP (CESMP) and the application of the mitigation and monitoring measures cited in SESIA, including results of monitoring
- Quarterly Independent Environmental Audits - Site Inspection :
  - Auditors visit the plant site to ensure that environmental procedures are properly applied
- Annual Independent environmental audits –Surveillance :
  - The auditors will have their own samples and the measurements of the monitoring elements described above for the works and operation phases, if deemed necessary to confirm the validity of the results provided by the contractor or developer

These audits will take place in order to ensure the following:

- Compliance with all standards and regulatory requirements, CESMP and method statements;
- Auditing the contractor and subcontractor activities for non-conformances,
- Checking monitoring records, inspection checklists, and other relevant documentation; and
- Identifying the requirements for corrective actions.

The outcomes of the audit will also need to be documented including the recommendations and corrective actions.

3.7 Environnement and social training and awareness program

The responsible of environment will develop the training and awareness program. All staff and working on site will be required to attend an E&S and OHS awareness and training program prior to commencing work, which will include:

- Induction training for general environmental and social and OHS awareness and the content of the CESMP;
- Site induction training that will highlight the specific environmental requirements and activities being undertaken at the worksite including hours of operation, noise and vibration limits, necessary mitigation measures, soil and water control measures, sensitive receptors and local community issues, traffic access, site entrance and exits etc.;
- Dealing with and handling hazardous and non-hazardous wastes;
- The importance of waste recycling and associated procedures;
- Training on the emergency preparedness plan;
- Training on incident notification, investigation and reporting; and
- Induction training for construction site visitors.

It is recommended that this be incorporated with a safety training program, which will also be required for all employees working on the NOOR Midelt I site.

3.8 Communication

Communication, both internally and externally, is an important aspect of successful project delivery. Internal communication includes arranging regular meetings for the Project team to review and co-ordinate project progress with regards to environmental and community issues.

External communications, with the local representatives will also need to be conducted regularly.

In addition, as a mechanism by which community members can have grievances aired, the site along the Solar Power boundary will need the provision of information on sign boards easily viewable in order for the local community to be able to contact the Project team. A mailbox will also be set up to allow local people to express their complaints and opinions.

More details for communication are included in the Stakeholder Engagement Plan.

3.9 Document control and review

All documents relevant to the CESMP will be controlled onsite. The controlled documents include the CESMP report, procedures, audit reports, incident reports, records, and community complaints.

The EPC E&S and OHS officers are responsible for the quarterly review of the CESMP, its procedures and its implementation on site. If any new machinery or process is introduced on site, the existing CESMP will be updated accordingly.

3.10 Structure and process management

All personnel in the EPC Project Team are responsible for protecting the environment and community by ensuring that appropriate protection measures are implemented.

The following table offers a general representation of the likely general management structure and assigned responsibilities. The EPC must assign these responsibilities to the concerned personnel and incorporate the roles within the CESMP.

Table 1 : Roles and responsibilities – Construction phase

Role	Environmental Responsibilities
Project Director/ Manager	• Understand the requirements and objectives of the CESMP; • Ensure resources (personnel and financial) are provided to prepare and implement the CESMP; • Overall responsibility for environmental and social performance; • Approve reports of environmental issues and non-conformance to the client in the regular reporting and when any issues arise; • Facilitate proactive communication between all role-players in the interest of effective environmental and social management; • Implement temporary work stoppages where serious environmental or social infringements and noncompliance occur; • Enforce compliance with CESMP and all legal regulations; • Ensure all employees undergo environmental and social training; and • Ensure the CESMP is updated and approves the final updates
Environmental /Social responsible	• Set up program for regular monitoring; • Follow up community complaints; • Conduct inspections to monitor environmental performance and compliance with the CESMP by contractors; • Check CESMP compliance with legal requirements on regular basis; • Ensure the environmental and social meetings are held on a regular basis; • Communicate and advise PM and subcontractors on environmental and social aspects; • Report, investigate and follow up on incidents (environmental and social); • Establish corrective action plan for any non-compliance including action plan for prevention of such misconduct or incident; • Develop, implement and manage the environmental and social training program
OHS responsible	• Implement OHS plan; • Conduct inspections to monitor OHS performance and compliance with the CESMP by contractors; • Develop, implement and manage the OHS training program • Ensure the implementation of all OHS procedures • Ensure the OHS meeting are held on a regular basis; • Communicate and advise PM and subcontractors on OHS aspects; • Report, investigate and follow up on incidents (OHS); • Establish corrective action plan for any non-compliance including action plan for prevention of such misconduct or incident;

Role	Environmental Responsibilities
Construction Manager and Site Manager	• Responsible for overall environmental and OHS performance of the contractor and subcontractors; • Allocate sufficient resources to ensure compliance and effectiveness of CESMP; • Ensure sub-contractors have a copy of the CESMP and are aware of their environmental obligations; • Enforce compliance with CESMP and all legal regulations; • Communicate environmental and social and OHS aspects with PM and environmental managers; • Ensure Environmental training and OHS are undertaken; • Ensure community complaints are addressed; and • Maintain document registers for training, incidents, waste management and other related environmental reporting requirements.
Site Manager	In addition to the above: • Enforce environmental and OHS measures on lower levels; • Ensure compliance with CESMP directly on site; • Communicate environmental and social and OHS aspects with Environmental/manager and lower level management and personnel; • Report all incidents and non-compliance to PM and Environmental manager.
Sub Contractor - Foreman	• Implement the requirements of the CESMP; • Allocate the necessary resources to ensure compliance and effectiveness of the CESMP; • Cooperate with the Environmental manager to ensure that site inspections and training are conducted; • Comply with the observations and requirements for corrective actions, which are issued by the inspector; • Report all incidents and non-compliance to Site manager; • Notify the Construction Manager/Site Manger of any changes on the program, construction method which may affect the environmental or OHS mitigation measures and ability to comply with the CESMP and regulations; • Maintain a register of incidents and waste management for future audits; • Maintain a register of complaints and correction actions
Construction Workers	• Undergo environmental and social and OHS awareness training; • Understand environmental/OHS procedures and environmental /social/OHS aspects relevant to activities; • In case of any accident or non-compliance report that immediately to foreman.
Visitors	• All visitors must comply with the CESMP, must receive an induction before entering the site and must comply with the instructions given by site staff.

3.11 Mitigation measures, regulations and procedures

All precautions will be taken to minimize the effects of the construction of the various components of the NOOR Midelt I project surveyed on the various environmental components. To this end, various mitigation measures have been indentified to maximize the integration of these components in the environment and to minimize the effects in the short, medium and long term.

Many measures will not involve additional expenditures since they constitute best practices to be followed during construction or operating.

Design phase mitigation measures have also been recommended for consideration during the detailed design of the NOOR Midelt I project. Typically, the recommendations involve the use of pollution and discomfort control technologies to minimize the environmental and social impacts.

These measures are presented in detail in tables in chapter 6 of this document.

The overall effectiveness of the mitigation measures will be assessed by site monitoring programs, which will be implemented during the construction and operation phases of the project. The monitoring activities will also be designed to evaluate the project's compliance against environmental and social guidelines.

Mitigation measures

The construction of the NOOR Midelt I project will not cause a direct loss of land surface. This latter being natural and cleared of all housing and already acquired by MASEN. In addition, access to the site will be achieved using the principal access road of the NOOR Midelt solar complex from RN13.

4. ESMP in operation phase (OESMP)

The environmental management plan for operational phase will serve as a general tool for managing all environmental aspects related to the operation processes of the NOOR Midelt I project.

The following chapter provides an outline of the environmental management plans, which will be required during the operational life of the proposed project.

4.1 OESMP requirements

The OESMP establishes mechanisms for the identification and implementation of environmental and social protection, mitigation, monitoring and institutional measures that will be taken during the operational phase of the proposed NOOR Midelt I project, which will be in accordance with the procedures outlined in IFIs requirements.

The OESMP will have to be reviewed before the Project Commercial Operation Date (PCOD). It will need to:

- Fulfill statutory requirements;
- Highlight the applicable environmental guidelines, regulations/the legislative context;
- Highlight the agreed social and community mitigation actions and awareness programs
- Establish operational Environmental and Social Objectives;
- Establish significant Environmental and Social Aspects;
- Develop and implement relevant procedures;
- Develop a program of continuous environmental and social improvement
- Clearly specify roles and responsibilities; and
- Highlight the procedures to be considered in the event of an environmental monitoring trigger level being breached or an unforeseen impact arising.

The OESMP will also identify the operational briefing and training requirements. Training can be provided in different forms such as induction sessions, training packs detailing good practices, or 'toolbox talks'.

In addition, it is important for the OESMP to accommodate changes in conditions and respond to any need for further assessment requirements. Changes are most likely to arise if

- A new environmental or social sensitivity is identified as a consequence of changing environmental and social conditions and more detailed survey work or
- Changes are introduced to the installations/development design.
- Documentation and communication protocols will also be required to be identified within the OESMP. Communication protocol will include
  - Incident/emergency communication procedure,
  - Internal communications, external communications,
  - Management of external/internal inquiries.

4.2 Mitigations measures, regulations and procedures

Mitigation measures are presented in chapter 6 of this document.

The overall effectiveness of the mitigation measures will be assessed by site monitoring programs, which will be implemented during the operation phases of the project. The monitoring activities will also be designed to evaluate the project's compliance against environmental guidelines and community awareness initiatives.

5. ESMP in decommissioning phase

With regards to the decommissioning phase, it should be noted that the project is contracted under a 25 year BOOT scheme ((Build-Own-Operate-Transfer), therefore, the ownership of the solar power plant will be handed over to MASEN at the end of the 25 year period and consequently the responsibilities for the decommissioning of the plant will fall under the responsibility of MASEN.

Consequently, the decommissioning measures have only been discussed in general terms; and the proposed roles, responsibilities and monitoring activities that should be implemented by the decommissioning contractor during the decommissioning procedures have been taken from the construction phase mitigation measures and management plans.

The main important activities during decommissioning are described below. However, considering that decommissioning will occur beyond 25years from operation of the plant, the management plans, regulatory requirements and BAT methodologies should be revised to ensure applicability with the industrial standard practice at the time of decommissioning.

5.1 Preliminary works and studies

The aim is to prepare the deconstruction perimeter in order to work in safety conditions by preventing the fire risk, clean-up the power plant, avoid migration of pollution, and make space for the further deconstruction operations.

5.2 Decontamination and cleaning-up

Curage

The cleaning operations cover the removal of all the equipment that are in the buildings and are not part of the building structure. For instance, here is a non-exhaustive list: light bulbs, furniture, electrical cabinet, doors, windows, cables ducts, etc.

The cleaning will also consider panels, batteries, ondulators. These equipment could be reused or decommissioned according their operating conditions. Batteries and panels will go back to the supplier if they don't operate anymore. The supplier will be responsible for recycling. The others equipment will recycled according existing recycling facilities. The sorting, and the evacuation of those waste, will be performed according to the different type of waste.

Fluids depollution

In the depollution studies, it will be indicated all the necessary means to be set up:

- To separate the polluted materials and waste before dismantling
- To avoid any spread of the pollution, especially into the soil

Concrete depollution

It is required to set up on site all necessary means to ensure the complete or partial depollution of the waste and materials produced by the works taking into account the up to date best available technics in this field, in order to reduce at most the quantity of produced waste.

The pre-treatment at source is required when possible, to ensure a minimal level of on-site sorting.

5.3 Lagging removal

Before any dismantling operation, the whole lagging removal shall be realized in order to avoid any contamination of the lagging, and to limit the dispersion of the lagging fibers in the air during the dismantling works.

All necessary means shall be set up to limit the dispersion of fibers, issued from these operations, in the air.

The lagging wastes shall be stored on a zone specifically dedicated. The wastes will have to be packaged in flexible intermediate bulk container (FIBC)

5.4 Waste management

Responsibility

All the waste management operations shall be performed in compliance with regulations in force and the best available practices (BAT & BREF) especially by being careful about the safety and environmental impacts of its activities.

The waste management activities includes namely:

- Waste sorting,
- Waste packing,
- Waste weighting,
- Waste labelling,
- Waste evacuation,
- Waste disposal.

Waste prevention

Waste prevention is one of the main priorities during a deconstruction project. Therefore all appropriate measures will be taken to reduce at most the quantity, and the dangerousness of the produced waste during the works.

Selective sorting of waste

It will be ensured that the waste is sorted, and that this is done in accordance with the regulatory requirements and the requirements of the company on the expected level of sorting.

General rules for waste storage

All the necessary means for waste storage on site will be planned and provided.

5.5 General HSE requirements

Appropriate safety barriers will be provided with hazard warning signs attached around all exposed openings and excavations when the work is in progress. Permanent or temporary covers to openings shall be replaced at all other times.

All necessary adequate actions will be taken (including training, risk assessment, method statement, safety audit & safety tours, etc) whenever dangerous situations may occur.

6. Synthesis of mitigation measures and / or compensation measures

6.1 Construction phase

Table 2 : Synthesis of project impacts on air quality and mitigation measures and / or compensation measures

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual im
Dust production due to earthworks and site activities and vehicle dust (NOOR Midelt I power plant and power line corridor)	Site preparation and, levelling will be undertaken during periods of low winds when possible (<15 km/h) (most of the time)	EPC and Subcontractors	As soon as the works start and throughout construction period	Included in the contract No specific additional cost	Minor
	Powdery materials will be covered as much as possible.	EPC and Subcontractors	As soon as the works start and throughout construction period.	Included in the contract No specific additional cost	Minor
	Dusty material stockpiles will only be located onsite and away from the site boundaries to reduce dust outside the site.	EPC and Subcontractors	As soon as the works start and throughout construction period	Included in the contract No specific additional cost	Minor
	Where sand and other dusty materials are transported to the site, trucks will not be overloaded and will be appropriately covered to avoid any loss while moving forward. Water spraying on roads is also recommended to minimise the dust generated from the vehicles and trucks	EPC and Subcontractors	As soon as the works start and throughout construction period	Included in the contract No specific additional cost	Minor
	Powdery materials (e.g. cements) will be stored and transported in sealed containers.	EPC and Subcontractors	As soon as the works start and throughout construction period	Included in the contract No specific	Minor

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual im
				additional cost	
	No burning of waste or other materials will be allowed on site during the construction phase.	EPC and Subcontractors	As soon as the works start and throughout construction period	Included in the contract No specific additional cost	Minor
	Undertake daily visual assessment of dust levels and take actions (dust suppression) to reduce emissions, when they are identified as excessive.	EPC and Subcontractors	As soon as the works start and throughout construction period	Included in the contract No specific additional cost	Minor
	Transport of uncovered powdered loads (materials and waste) is strictly forbidden.	EPC and Subcontractors	As soon as the works start and throughout construction period	Included in the contract No specific additional cost	Minor
Gaseous and particulate emissions from vehicles (NOOR Midelt I Power plant or power line corridor)	On-site / off-site speed limits are included in the Road safety and traffic section of this SESIA. In addition to road safety, these limits will help reduce exhaust emissions resulting from traffic movements.	EPC and Subcontractors	As soon as the works start and throughout construction period	Included in the contract No specific additional cost	Minor
	Efficiently manage deliveries of equipment/installation to the site, to reduce the number of trips.	EPC and Subcontractors	As soon as the works start and throughout construction period	Included in the contract No specific additional cost	Minor
	Minimise exhaust fumes and particles emitted from trucks and vehicles by ensuring the use of vehicles in good condition. Vehicles entering the site for the first time will be inspected for their integrity and where necessary will not be permitted to enter the site. Vehicles will be turned off while waiting on site to minimise gas emissions	EPC and Subcontractors	As soon as the works start and throughout construction period	Included in the contract No specific additional cost	Minor
VOCs and other	Hazardous materials stored and used on site with potential gas	EPC and	As soon as the works	Included in the	Minor

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual im
fugitive emissions	emissions (e.g. Volatile organic compounds) will be located in well-ventilated, secured and low-risk areas	Subcontractors	start and throughout construction period	contract No specific additional cost	
	Fires and material burning is prohibited on the project's site.	EPC and Subcontractors	As soon as the works start and throughout construction period	Included in the contract No specific additional cost	Low
General	Personal Protection Equipment will be provided to all employees when necessary. Special attention will be given during site preparation and other activities likely to cause significant levels of dust.	EPC and Subcontractors	As soon as the works start and throughout construction period	Included in the contract No specific additional cost	Minor

Table 3 :Synthesis of project impacts on Noise and vibrations and mitigation measures and / or compensation measures

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residualimp
Construction noise and vibration (For power plant and power line corridor)	Diesel compression equipment or generators will be equipped with effective silencers when necessary	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract no specific additional cost	Minor
	Electrically powered equipment will be preferred, where possible, to mechanically powered alternatives. The motorised mechanical equipment will be equipped with appropriate silencerswhen necessary	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract no specific additional cost	Minor
	On site's facility units operating intermittently will be shut down during the intervening periods between uses	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract no specific additional cost	Minor
	Construction employees will, at all times, carry out all works in such a manner as to keep any disturbance from noise and vibration to a minimum within the industrial best practices limits	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract no specific additional cost	Minor

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residualimp
	Operators of vibrating hand held machinery will be provided with appropriate PPE (Protective gloves) and be given suitable breaks form using such equipment to reduce the impacts of vibration				
	No employee will be exposed to a noise level greater than 85 dB (A) for duration of more than 8 hours per day without hearing protection. No unprotected ear will be exposed to a peak sound pressure level (instantaneous) of more than 140 dB(C)	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract no specific additional cost	Minor
	Activities with highest noise emissions will be undertaken during daytime hours, avoiding as much as possible weekends.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract no specific additional cost	
	Explosives will only be used by qualified and licensed professionals..	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract no specific additional cost	Minor
	An approved handler shall develop the blast management plan and be responsible for all aspects of the use of explosives. The blast management plan content will be compliant with the requirements of the Joint Circular of the Ministry of Energy and Mines and the Ministry of the Interior No. 4546 of 21/7/2006. This document will content the instructions for the use of explosives that have to be approved by the regional representative of Ministry for energy and mines after the opinion of the provincial commission for explosives. a procedure for immediate consumption is available. The application for authorization to use explosives and accessories is addressed to the Director of Control and Risk Prevention of the Ministry of Energy and Mines.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract no specific additional cost	Minor
Vehicle noise (For power plant and power line corridor)	Heavy vehicle traffic during the night will be reduced	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract no specific additional cost	Minor
	Deliveries of fuel , and materials and equipments as well as removals of	EPC and	As soon as the works	Included in the	Minor

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residualimp
	waste must be carried out during daylight hours when possible	subcontractors	start and throughout construction period	contract no specific additional cost	
	All vehicles will be adequately maintained in order to minimise sound emissions	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract no specific additional cost	Minor
	Onsite/offsite speed limits are included in the Traffic and road safety section of this SESIA. In addition to road safety, these limits will help reduce noise levels resulting from traffic movements, particularly in the city of Midelt. These limits will be included in the traffic management plan that will be prepared by the EPC before starting construction works	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract no specific additional cost	Minor

Table 4: Synthesis of project impacts on soil contamination and mitigation measures and / or compensation measures

Impact/Source	Mitigation Measure	Responsibility	Programme	Cost	Residual i
Spillage and leakage (CSP and PV Pomer Plant and power line corridor)	Chemicals, fuels, lubricants and paints will be stored in dedicated locations on impermeable surfaces to prevent leakage into the ground and will be contained inside a secondary containment (110% of the largest container). Additional mitigation measures are presented in the non-hazardous waste and hazardous materials section.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
	The design and location of permanent/temporary storage areas will consider the potential ground contamination risks. Storm waterrunoff will not be able to enter areas where hazardous materials are stored, handled or transferred. If storm water runoff can enter potentially contaminated areas, there will be an oiler separator and then storage tank.. Depending on the quality (the limits value will refer to Moroccan regulations (Arrêté conjoint n° 1276-01 du 17 octobre 2002 portant fixation des normes de qualité des eaux destinées à l'irrigation), treated water could be used for dust control or soil compaction. When reuse is not possible, water will be stored on site until the waste water system will operate. The tanks will be waterproof and potential leaks would be monitored.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor

Impact/Source	Mitigation Measure	Responsibility	Programme	Cost	Residual i
	Hazardous materials' storage areas will be positioned away from major transport corridors and construction activities, in order to avoid potential collisions of vehicles or other machinery. No hazardous material will be stockpiled	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
	MSDS will be provided for all chemicals.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
	All chemicals will be handled in accordance with the relevant instructions (MSDS)	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
	Reduce quantity of chemicals and fuels on site to minimum practicable levels	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
	Regularly inspect drip collectors and containers for spills and leaks.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
	Ensure the availability of spill response equipment in all areas where hazardous liquids are stored.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
	Develop and implement an Emergency preparedness and Response Plan, to take immediate action in the affected area in the event of a spill or leakage of chemicals, fuels, paints, and any hazardous material.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
	Metal structures (including painting and protections) will be designed/selected to resist corrosion due to local environment conditions. All outdoor structural steel shall be hot-dipped	EPC and subcontractors	Design phase	Cost included in the contract	Minor

Impact/Source	Mitigation Measure	Responsibility	Programme	Cost	Residual ir
	galvanized in accordance with MFS requirements			No additional cost	
	Prepare a vehicle/machinery maintenance plan	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
	Washing of equipment, machinery, and vehicles will be performed on sealed platforms with a sanitation system to send the washing water to an oiler separator and solid decantation. Treated water will be stored in a tank. Depending on the quality (the limits value will refer to Moroccan regulations -Arrêté conjoint n° 1276-01 du 17 octobre 2002 portant fixation des normes de qualité des eaux destinées à l'irrigation) treated watercould be used for dust control or soil compaction. When reuse is not possible, water will be stored on site until the evaporation pond will operate. The tanks will be waterproof and potential leaks would be monitored.) Refuelling will only be carried out in designated areas following specified procedures, not at machinery work locations, to reduce potential spillages.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
	Vehicle maintenance areas will be equipped in such a way that there is no spill to the outside: protective measures, sealed areas with runoff water recovery system	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
	In case of soil contamination by spillage or leakage (Oils, chemicals, etc..) during construction activity, soil will be excavated separately, and stored onsite in accordance with environmentally adequate measures for waste management to reduce contamination. A licensed operator will collect the contaminated soil for disposal and will evacuate it from the site within a very short time.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
	Construction workers will attend training programmes, and safety induction sessions with regards to the transportation and handling of hazardous materials. Toolbox talks will also be held.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract	Minor

Impact/Source	Mitigation Measure	Responsibility	Programme	Cost	Residual i
				No additional cost	
Spillage and leakage of HTF	A bioremediation system will be constructed as a corrective measure to prevent contamination of soil and groundwater sources by accidental losses of HTF, which may occur in exceptional circumstances resulting from leaks and spills from materials and defective joints. The biological remediation plant will consist of impervious reinforced concrete tanks of approximately 470 m2 by 1 m of depth containing hydrocarbon degradation bacteria and CO2 and containing about 200 m3 of contaminated soil. The process is capable of reducing the initial contamination concentration from 20 g / kg to 0,5 g / kg over a period of about 2 to 4 months. For the treatment to be effective, nutritional elements are added such as monopotassium phosphate (0.3 kg / tonne of contaminated soil) and urea (0.4 kg / tonne of contaminated soil). In addition, a 50 to 70% moisture system is maintained by a sprinkler system and the soil is aerated by surface raking to facilitate bacterial activity.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
Leakage of evaporation ponds	Evaporation ponds will be watertight (with double liner) and equipped with a leak detection system	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
Spillage and leakage of HTF.	The following considerations will be taken into account during filling operation : • The HTF should be at low pressure and temperature, between 35ºC and 60° C. • Hoses must be metal and flexible homologated for high temperatures, as well as the flanges and connections. They should be removed when they are not used to avoid risks. • The tank and the hose connection must be within a concrete area to avoid spillage of the product and its extension. • Hoses should be checked periodically, removing those in	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract	Minor

Impact/Source	Mitigation Measure	Responsibility	Programme	Cost	Residual i
	poor condition. • Line endings will remain closed through valves and plugs. • It must be taken into consideration that the HTF will remain inside of the hose so it must be collected in concrete areas and in containment systems.				
	A bioremediation system will be constructed as a corrective measure to prevent contamination of soil and groundwater sources by accidental losses of HTF, which may occur in exceptional circumstances resulting from leaks and spills from materials and defective joints. The biological remediation plant will consist of impervious reinforced concrete tanks of approximately 470 m2 by 1 m of depth containing hydrocarbon degradation bacteria and CO2 and containing about 200 m3 of contaminated soil. The process is capable of reducing the initial contamination concentration from 20 g / kg to 0.5 g / kg over a period of about 2 to 4 months. For the treatment to be effective, nutritional elements are added such as monopotassium phosphate (0.3 kg / tonne of contaminated soil) and urea (0.4 kg / tonne of contaminated soil). In addition, a 50 to 70% moisture system is maintained by a sprinkler system and the soil is aerated by surface raking to facilitate bacterial activity.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract	Minor
Storage and waste management (CSP and PV Power plant and power line corridor)	All hazardous construction waste and chemicals, such as fuel, will be stored in well-equipped, leak-tight enclosures where drums have drip trays to avoid spillage to the ground. The storage tanks of fuels or chemicals and chemical toilets will be properly maintained and stored in contained areas amounting to 110% of the storage capacity.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
	Wherever possible, reduce the quantity of chemicals and fuel stored on site to minimum practical levels. Infrequently used chemicals will be ordered just before they are needed.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor

Impact/Source	Mitigation Measure	Responsibility	Programme	Cost	Residual i
	All servicing, refuelling, stockpiles, waste disposal and storage areas will be located as far as possible from the run-off drainage system to reduce the pollution risks via spillage or windblown debris.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
Soil compaction (CSP and PV Power plant and power line corridor)	Areas or parks where vehicles are allowed to circulate will be minimised and located only inside the project boundaries	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor
Quarries	Only quarries approved according Moroccan regulations will be used.	EPC and subcontractors	As soon as the works start and throughout construction period.	Cost included in the contract No additional cost	Minor

Table 5: Synthesis of project impacts on storm water management and mitigation measures and / or compensation measures

Impact/Source	Mitigation Measure	Responsibility	Schedule	Cost	Residual i
Soil erosion	The site will be fenced in order to ensure that no soil disturbance occurs outside of the site's area. The areas requiring excavation/filling shall be clearly demarcated to ensure that the soil is not disturbed outside this area. This fence with be compliant with MASEN requirements.	EPC and subcontractors	As soon as the works start and throughout construction period.	included in the contract no specific additional cost	Minor
	From the outset of works, plan, select and define areas for clearing, stripping and access routes in order to minimise unnecessary stripping of vegetation	EPC and subcontractors	As soon as the works start and throughout construction period.	included in the contract no specific additional cost	Minor
	Minimise the disturbed areas	EPC and subcontractors	As soon as the works start and throughout construction period.	included in the contract no specific additional cost	Minor

Impact/Source	Mitigation Measure	Responsibility	Schedule	Cost	Residual i
	Reduce cuttings as much as possible ((the volume of cuttings / embankments should be balanced)	EPC and subcontractors	As soon as the works start and throughout construction period.	included in the contract no specific additional cost	Minor
	Pathways and access routes will be defined to avoid slopes of more than 15% and adapted to the site topography to facilitate drainage of the surface through gutters. In areas selected as access roads, the longitudinal slope of the road must facilitate the flow of surface water and to avoid the accumulation of sediment in the gutters. The height of embankments and slopes will be reduced, and vegetation will be recovered on slopes and embankments Excavation work will be interrupted when the soil is extremely wet or saturated. Surface Soil Recovery: This will primarily be used to cover out-of-service areas, such as access areas that will not be used. Cross-sections will be made in the most stable areas, taking into account the geological conditions of the land. Steep slopes will be avoided on lands susceptible to landslides. Concrete gabions and barriers will be built for containment, wire mesh and nets, drains and gutters will be used in slopes for ground stability. Lands that have been removed and stacked for later use will be stored in order to limit soil compaction and erosion.	EPC and subcontractors	As soon as the works start and throughout construction period.	included in the contract no specific additional cost	Minor
	Excavated materials will be kept in the stockpile for as short a time as possible and, once an area is back-filled with soil material, it will be compacted in a short period of time	EPC and subcontractors	As soon as the works start and throughout construction period.	included in the contract no specific additional cost	Minor

Impact/Source	Mitigation Measure	Responsibility	Schedule	Cost	Residual i
Storm water drainage	The storm water drainage system will minimise and control surface run off and soil erosion within the boundaries of the site. The rainwater drainage system must respect the results of the flood protection study of the NOOR Midelt solar complex and be part of the general drainage scheme. The rainwater drainage system will have to be done in consultation with the technical services of the Moulouya's water basin agency. The connection of the drainage channels to the hydro-graphic network should be made from upstream to downstream The rainwater drainage system must take into account topography and geology site conditions.	EPC and subcontractors	Design	included in the contract no specific additional cost	Minor
	The storm water drainage system will include the necessary sediment retaining system to ensure that runoff is free of excessive sediment and other constituents at the discharge point. For this purpose, the following measures will be implemented: • Soil stabilization quickly: Soils will be stabilized where construction activities have ceased temporarily or permanently and stabilization measures will be put in place after the cessation of leveling activities. • Protection of storm sewer entrances. All inputs that could receive rainwater from the project must be protected until the final stabilization of the solar complex. • Establishment of perimeter controls. areas Areas without construction must be protected and complemented by an erosion control fence and fiber rolls around the perimeter of the Solar Complex to prevent soil erosion and prevent sediment from leaving the site. • Retains sediments on the solar complex and controls dewatering practices. The use of a temporary sediment trap or sediment basin will be considered when sediment retentions from larger areas are	EPC and subcontractors	Design and as soon as the works start and throughout construction period.	included in the contract no specific additional cost	Minor

Impact/Source	Mitigation Measure	Responsibility	Schedule	Cost	Residual i
	required. • Establishment of stabilized construction outlets. The locations where construction vehicles will enter and exit the solar complex must be clearly marked and stabilization measures must focus on these locations. • Inspections and maintenance of controls. Erosion and sediment control measures will be regularly inspected and maintained, including regular and ad hoc inspections				
	Hazardous materials storage areas will be covered to prevent rainfall from entering such areas and avoid emissions of wastewater to the soils, chaâbas, or storm water drainage system. The maintenance of vehicles will only be undertaken offsite in appropriate premises.	EPC and subcontractors	As soon as the works start and throughout construction period.	included in the contract no specific additional cost	Minor
	The design and location of permanent/temporary storage areas will consider the potential ground contamination risks. Runoff will not be able to enter areas where hazardous materials are stored, handled or transferred. If runoff can potentially enter contaminated areas, a dedicated drainage system will direct the run off to dedicated tanks so as to avoid impacts on soils and groundwater. The fluids contained in these tanks will be collected by licensed operators and processed as hazardous wastewater.	EPC and subcontractors	As soon as the works start and throughout construction period.	included in the contract no specific additional cost	Minor
	The storm water drainage system will include a system that retains waste carried by storm water.The system will be located at the project's boundary and will allow easy access to the collection of retained materials.	EPC and subcontractors	As soon as the works start and throughout construction period.	included in the contract no specific additional cost	Minor
Flooding	The storm water drainage system will be able to accommodate and evacuate runoff so that it protects equipment during the worst case scenario according to the local rain conditions and site's area (funnelled to the channel) and according to the soil and vegetation coverage conditions.	EPC and subcontractors	Design	included in the contract no specific additional cost	Minor

Table 6 : Synthesis of project impacts on biodiversity and mitigation measures and / or compensation measures

Impact	Mitigation	Responsibility	Schedule	Cost	Residual i
Habitat Loss ((the habitat isn't Natural Habitat)	The living space of the Houbara Bustard (especially feeding, laying and breeding area on project's site) will certainly be affected. Monitoring will be implemented to assess the impact. Following the monitoring results (if they show an important reduction of Houbara Bustard presence assessed by an expert)and recommendations measures could be implemented such as the rehabilitation of the Halfah or Sage bush steppe on a limited area and/or around the space occupied by the solar park. This measure will be subject to discussion and agreement of all stakeholders.	Stakeholders	Before starting or during construction	To define	Minor to me
	In case of potential presence, eggs collection before works in coordination with Missour ECWP project that has implemented a rehabilitation programme for The Houbara Bustard (refer chapter 11.3.4 in SESIA report)	EPC and subcontractors	Before starting construction (if starting is in spring period).	30 KDHS	Minor to me
	Adding high viz tape to any fences to make them more obvious to flying or running birds	EPC and subcontractors	Design phase	Included in the contract	Minor
	The contractor will be careful in not encroaching on nearby, adjacent lands. The construction site facilities and the construction infrastructures will be located at the project's site and will be removed as soon as possible after the commissioning start-up, just after the reception..	EPC and subcontractors	As soon as the works start and throughout construction period.	Included in the contract	Minor
	During construction phase vehicles will circulate on the designated routes in order to prevent unnecessary land encroachment, thus protecting the natural resources and reducing dust emissions	EPC and subcontractors	As soon as the works start and throughout construction period.	Included in the contract	Minor
	When it is possible, vegetation by local species in areas where colonisation is difficult (or in order to promote the vegetation process) will be carried out in areas where	EPC and subcontractors	As soon as the works start and throughout construction period.	Included in the contract	Minor

Impact	Mitigation	Responsibility	Schedule	Cost	Residual i
	vegetation is acceptable during the operation phase. These areas are inside the site at the boundaries of PV field (only few hectares). The effort will focus on the selection of local species to achieve a natural restoration. Re-vegetation will only occur in areas remote from electrical equipment to prevent future fire hazards (main power block and CSP solar filed). Vegetation could be the same that initial cover (Halfah, Sage bush). The areas have to be identified between EPC and biodiversity expert (according monitoring mission for biodiversity). Large trees or shrubs are not recommended because they attract birds, reptiles and other wildlife to the site, which could lead to increased mortality. Therefore, planting will be limited to locally present herbaceous species.				
	Invasive species will be avoided for vegetation.	EPC and subcontractors	Design phase and end of construction	Included in the contract	Minor
	The personnel in charge of the works must be made aware of the requirements to reduce the risk of wildlife destruction. Works (including the movement of machinery) must be strictly confined to the project area.	EPC and subcontractors	As soon as the works start and throughout construction period.	Included in the contract	Minor
Poaching/Hunting/Trade	Hunting, falconry and trade will be strictly prohibited and sanctioned. Information notes will be posted.	EPC and subcontractors	As soon as the works start and throughout construction period.	Included in the contract	Minor
Direct Mortality of Fauna	A speed limit of 20 km / h will be imposed on the site to reduce mortality of wildlife. Speed limits will be respected on external access routes.	EPC and subcontractors	As soon as the works start and throughout construction period.	Included in the contract	Minor
	Workers will be trained to inform the E&S team of the presence of reptiles or small mammals trapped in the trenches, and a procedure will be implemented to bring the animals safely off-site (not just outside the project site).	EPC and subcontractors	As soon as the works start and throughout construction period.	Included in the contract	Minor

Impact	Mitigation	Responsibility	Schedule	Cost	Residual i
	Inland transportation to and from the site will be minimised through efficient transportation management to minimise the risk of animal mortality	EPC and subcontractors	As soon as the works start and throughout construction period.	Included in the contract	Minor
	Include in the initial training of employees, modules about the protocols for the ecological management of biodiversity, including prohibited activities on site, protocols for wildlife discovery especially with regard to the Houbara Bustard.	EPC and subcontractors	As soon as the works start and throughout construction period.	Included in the contract	Minor
	Establish procedures to treat all species on the construction site, including reporting, identification and potential relocation procedures	EPC and subcontractors	As soon as the works start and throughout construction period.	Included in the contract	Minor
Direct mortality of birdlife due to electrocution with power line	The EPC will take into account guidelines on how to avoid or mitigate the impact of power lines on migratory birds in the Africa-Eurasia region established by AEWA-CMS (Agreement on the Conservation of Waterbirds Africa - Eurasian Migratory Birds) and the Convention on Migratory Species (Bonn Convention) for the technical design of power lines[1]. This design will also conform to the recommendations specified by the "Berne Convention Group of Experts on Bird Conservation" and Birdlife "Birds and Power Lines in the Rift Valley / Red Sea Flyway". For each of these design recommendations, the EPC will clearly identify those that have been incorporated into the design and, where none of them have been incorporated, the technical reason why it is not applicable will be underlined. . The report will be submitted to the project company and reviewed by a qualified independent expert to ensure that the proposed detailed design is in line with international best practices to minimize bird mortality.	EPC	Design Phase	Included in the contract	Minor

[1] https://www.cms.int/sites/default/files/document/Inf25_Electrocution1_E_0.pdf and https://www.unep-aewa.org/sites/default/files/publication/ts50_electr_guidelines_03122014.pdf

Impact	Mitigation	Responsibility	Schedule	Cost	Residual i
Pest	The use of pesticides should be very limited, it will be preferred methods and / or non-harmful products when possible. The use of pesticides will be compliant with OS-4 of AfDB requirements. Only low-toxicity pesticides that do not pose a threat to human health or the environment, and that will not affect natural pest enemies. Management and disposal of pesticides would be in accordance with good international industry practice, such as the Food and agriculture Organization (FAO) International Code of Conduct on the Distribution and Use of Pesticides. Any chemical—including ozone-depleting substances and persistent organic pollutants, pesticides classified in Class Ia (extremely hazardous), Ib (highly hazardous) or II (moderately hazardous) are prohibited All food waste will be stored in lidded containers.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Human activity	Whenever possible, night work will be avoided to avoid excessive human disturbance to wildlife. Measures against light pollution (in compliance with night lighting requirements in MFS), as described in the chapter on landscape, and noise, as described in the chapter concerned, will minimise human disturbance.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor

Table 7 : Synthesis of project impacts on Management of waste, hazardous and non-hazardous materials and mitigation measures and / or compensation measures

Impact/Source	Mitigation measure	Responsibility	Schedule	Cost	Residual i
Solid waste volumes/quantities	Prepare a site-specific waste management plan, including hazardous and non-hazardous waste. The plan will include staff training. The waste management plan will be compliance with	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor

Impact/Source	Mitigation measure	Responsibility	Schedule	Cost	Residual i
	Moroccan regulations and will be approved by MASEN.				
	Physical and chemical composition of waste and identification of hazards characteristics will be established.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Waste masonry should be re-used in the internal road construction and base fillings. Reasonable levels of use would be between 50 to 80%	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	The recycling of metal waste will be prioritized according to potential value chains.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Ordering materials with reusable and / or bulk packaging can reduce waste generated	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Ask suppliers to use minimal packaging.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Whenever possible, chemicals should be ordered in returnable drums	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Whenever possible, surplus chemicals and / or non-reusable materials in operation will be returned to suppliers	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Refillable containers will be used, where possible, for the collection of solid and liquid waste	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Cleaning	Separate waste streams to facilitate recycling. All storage areas must be well organised and waste appropriately managed through segregation of hazardous and non-hazardous waste.	EPC and subcontractors	As soon as the works start and throughout	Included in the contract	Minor

Impact/Source	Mitigation measure	Responsibility	Schedule	Cost	Residual i
	Waste within each category will be further segregated by type (paper, plastic, metal, masonry) and whether the material is recyclable or non-recyclable. A waste log will be kept onsite and will contain, at least, information about quantities, types of management solutions (according to the waste management hierarchy described in the baseline section) operators, final disposal/destination, etc.)		construction period		
	Install adequate storage facilities for non-hazardous waste in designated areas to prevent waste from dispersing throughout the site	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Include at the beginning of the employee training, modules to increase their knowledge of waste management protocols, including proper waste handling and storage, response and contingency plans.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Storage of waste	Food waste will be stored within a sealed metal or plastic skip or bin with self-closing lid, in order to prevent birds/vermin/pests from gaining access	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Lightweight waste such as paper, cardboard, plastics will be stored within a skip sealed with a tarpaulin/mesh sufficiently secured to prevent any material from being dispersed.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Heavy waste may be contained in an open skip, provided that segregation is carried out in a sufficiently efficient way to remove any light material that may be washed away.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Different bins for each separate category of garbage (food or household waste) will be placed throughout the site where construction workers and staff consume food. These will be regularly collected and taken to the main waste storage area. Separate portable bins will also be placed in areas where works will be undertaken	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor

Impact/Source	Mitigation measure	Responsibility	Schedule	Cost	Residual i
	No underground waste containers will be set up.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Waste containers will be clearly marked with appropriate warning labels to accurately describe their content and detailed safety precautions. The labels will be water repellent and securely attached. Wherever possible, chemicals will be kept in their original container	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Waste generated during operation will only be transported off-site for disposal by an appropriately licensed vendor. This service provider will follow the appropriate protocols to ensure that all handling and disposal of waste from the site is done in accordance with accepted environmental regulations. A register of all waste streams will be kept on the site.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Regular training of site staff on waste management and proper chemical handling procedures will be provided on a regular basis.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Incineration / combustion of waste will not be allowed on the site.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Hazardous materials	Preparation of an explosives storage and blast management plan	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Implementation of best practice and regulatory procedures for proper handling, establishment of secure temporary storage areas, and disposal of waste by licensed companies.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Hazardous waste will be disposed of in an environmentally sound manner and by the approved hazardous waste operator.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor

Impact/Source	Mitigation measure	Responsibility	Schedule	Cost	Residual i
	The materials will be separated according to whether they are combustible or not, and all flammable substances should be kept away from any source of ignition.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	No underground hazardous materials containers will be set up. Hazardous materials storage will be located in a dedicated fenced area with a separate rainwater drainage system which will be covered to prevent rainwater from entering the area. The location of these hazardous materials storage area will be chosen according to the potential risks (e.g. traffic accidents/collisions, falling items, drainage system, etc.).	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Establishment of retention tanks for the storage of hazardous materials. The retention areas will have the capacity to contain 110% of the total volume of stored materials and will be protected from vehicular traffic and other risks. This area must be placed away from any sources of ignition. Retention tanks for fuel storage tanks will be tested regularly with recycled water or treated wastewater (e.g. non-hazardous water already used for an activity that is not likely to be contaminated or treated wastewater). The storage areas will be waterproofed at the base (this requires, if needed, to cover a large area in order to avoid soil contamination, for example the refuelling areas must include an impervious base that protects the ground where vehicles are parked), and must be covered and equipped with spill kits.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Hazardous Materials containers will be clearly marked with appropriate warning labels accurately describing their contents, detailed technical specifications and safety precautions. The labels will be water repellent and securely attached. Wherever possible, hazardous materials will be kept in their original container	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor

Impact/Source	Mitigation measure	Responsibility	Schedule	Cost	Residual i
	Hazardous materials will only be transported to/from the site by an appropriately licensed operator. This service provider will follow the proper protocols to ensure that all hazardous materials are transported and transferred according to accepted national/regional environmental regulations in effect. A record for all hazardous materials will be kept onsite.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Only trained personnel will be permitted to handle hazardous materials.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Waste management facilities	Only approved waste management facilities are to be used for the disposal of hazardous and non-hazardous waste, respectively.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor

Table 8 : Synthesis of project impacts on wastewater Management and mitigation measures and / or compensation measures

Impact/Source	Mitigation Measure	Responsibility	Programme	Cost	Residual impa
Sanitary wastewater	Chemical toilets will be available at various locations on the site in sufficient numbers to accommodate the number of employees expected (at least one for every 20 workers) and cleaned at least every other day. Outdoor chemical toilets will be checked frequently for leaks. Leaks will be checked and a licensed society compliant with applicable national regulations will manage the evacuation to a wastewater treatment plant. Temporary biological treatment systems will be set up for the treatment of sanitary water (showers, canteens, etc.). Treated water will be stored in tanks to be reused for dust treatment or soil compaction according the quality and MASEN approval. If the quality is not acceptable, the water will be sent off-site by licensed society compliant with applicable national regulations.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	No wastewater will be discharged outside any treatment system to prevent wastewater discharges into soils, chaâbas and the storm	EPC and subcontractors	As soon as the works start and	Included in the contract	Minor

Impact/Source	Mitigation Measure	Responsibility	Programme	Cost	Residual impa
	water drainage system.		throughout construction period		
	Wastewater from chemical toilets will be collected by licensed operators compliant with national regulations. Each chemical toilet will generally be collected and emptied before their content reaches 80% of its capacity. Authorisations and contracts required must be obtained by the EPC prior to the commencement of construction	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Chemical toilets must be completely emptied before demobilisation to avoid contamination of the site's area. The demobilisation procedure will ensure that tanks are not destroyed or damaged during the removal process.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	All subcontractors hired by EPC will comply with the same requirements than the EPC.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	
	Develop a wastewater management plan	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Effluents from cleaning operation	Cleaning, refueling, cleaning of vehicles and machinery, refueling and maintenance operations will be carried out on watertight platforms with water recovery, passage through a de-oiler before being sent to a storage tank. These treated water could be reused according the needs and the quality. If not, it will be stored and sent to industrial wastewater treatment plant with it will operational. Platforms for maintenance operations will be implemented in dedicated areas within the site. These platforms will have : • Waterproof floor (using concrete flooring, a layer of clay or other means). • Evacuation and effluent collection system.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor

Impact/Source	Mitigation Measure	Responsibility	Programme	Cost	Residual impa
	• Tank or sump adequate for the storage of generated effluents.				
Effluents from solid waste storage area	Hazardous material storage areas: Storage areas for hazardous and / or contaminating materials must also be suitably conditioned by: • Adequate impervious soil (using concrete flooring, a layer of clay, or other means). • Cover to prevent toxic and / or dangerous contact with rain and / or other weather agents. • Spill retention system possible.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Temporary waste placement areas: Temporary waste storage areas must be duly conditioned by: • Waste containers adapted to each specific type of generated residue. Containers must always be closed to prevent contact with rainwater and must be in good working order, without dents or leaks • The generated effluents must be brought to an authorized manager for their appropriate treatment.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Effluents from cleaning concrete	Construction of a specific area for site machinery maintenance work. A waterproof concrete area shall be provided with a tank to collect any liquid waste. Construction of a settling basin to retain waste water. Wastewater from the cleaning of concrete discharging chutes that could include concrete waste shall be directed to this basin. Water free of sediments may be used to irrigate the site area and access routes	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Effluents from commissioning phase	Commissioning Phase: On commissioning, oily effluent and effluent containing chemicals from plant facilities will be collected in appropriate containers and managed by an authorized manager.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Wastewater from industrial process	Separate drainage system for different waters so as not to mix them.	EPC and subcontractors	Design	Included in the contract	Minor

Impact/Source	Mitigation Measure	Responsibility	Programme	Cost	Residual impa
	Establishment of an effluent treatment system by neutralization and homogenization	EPC and subcontractors	Design	Included in the contract	Minor
	Installation of oil separators managing the oily effluents from power block area	EPC and subcontractors	Design	Included in the contract	Minor

Table 9: Synthesis of project impacts on traffic and transportation and mitigation measures and / or compensation measures

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual impac
Increased traffic load along the national road and local roads	Develop a transportation and traffic management plan (Chapter 20). The blast management plan will include transportation of explosives.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Determine designated access routes for equipment delivery, road capacity, site entry / exit points, etc.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Determine the requirements for regular vehicle maintenance (currently implemented) and the use of manufacturer-approved parts	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Identify areas that are sensitive to road safety problems and implement the necessary road safety measures, including the residential areas through which construction vehicles will drive and the interconnection point of the access road with RN13. The sensitive area will be communicated in advance to all drivers who will have plans to ensure proper identification. Special measures will be implemented if deemed necessary and communicated appropriately to the drivers (e.g. the maximum speed at a specific vulnerable point on the route). Information will be provided to local authorities in sensitive areas during transportation planning. Warning signs will be put in place for sensitive public institutions	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual impac
	(schools, health structures).				
Movement of vehicles on-site	The access road will be clearly marked and compact (at least) or paved.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Identify designated access routes for equipment delivery, site entry points, storage areas, parking areas, etc.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor

Table 10: Synthesis of project impacts on landscape and mitigation measures and / or compensation measures

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual impact
Topographical impacts to landscape	The height of the fences and any other structure will be such that their visibility from the terminal access road will be reduced - complying with the Landscape Charter developed by MASEN. Construction will be compliant with MASEN requirements.	EPC and subcontractors	Design and construction phase	Included in the contract	Minor to medium
Part of construction facilities decommissioned	Provision of restoration plan in order to recover pre-existing conditions, as much as possible and minimize visual impact.	EPC and subcontractors	Construction ESMP	Included in the contract	Minor to medium
Luminous pollution	Any flood lights required during night time construction activities will be directed onto the site, with a maximum position angle of 30° from vertical, therefore minimising any potential luminous leakage and impacts at night	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor

Table 11 : Synthesis of project impacts on socio-économics and mitigation measures and / or compensation measures

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual impact
Labour and Work Conditions	A specific Occupational Health & Safety Plan and Health & Safety Management System will be developed. This includes among others induction for all workers, and work specific risk assessment and procedures, training and supervision; also provision of first aid and medical response staff and facilities. The plan will be compliant with ILO conventions and will include at least : - Identification of hazards, evaluation of risks and determination of controls and inspections. - Identification of legal and other system requirements - Code and procedures of safe practices in the Plant - Training and information. - Communication, participation and consultation. - Safety inspections - Document control. - Operational Control : Safety standards, Work permits, Safety inspections, Revisions of equipment and installations, Revision and control of personal protective equipment, Control of Hazardous Substances, Control of Purchases and Acquisitions, Control of Works and Services, Control of Changes and New Projects, Coordination of contractors' activities and other external visitors - Preparation for and response to emergencies. Accident management, non-conformities and corrective actions.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual impact
	Provide complaints mechanism for employees and an action plan to address them	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Worker accomodation	Workers' housing will either be located in the city of Midelt and / or the neighbouring municipalities, or on site. Housing availability and feasibility studies for an on-site base will be studied by the EPC company before the start of works.	EPC and subcontractors	Before starting construction phase	Included in the contract	Minor
	In case of any worker accommodation on site, the accommodation facilities will be compliant with IFC/EBRD Worker Accommodation Guidelines.	EPC and subcontractors	Before starting construction phase	Included in the contract	Minor
Employment	As far as possible the project according to the phases, will aim to employ local workers where simultaneously they are ready and available with the necessary skills to perform the tasks. All non-specialised job opportunities will be offered to local residents prior to hiring employees from other regions whenever possible. The employment of women and vulnerable groups will be specifically targeted where possible. The actions will be included in the labour management plan and information will be provided to population during public consultation meeting.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Positive
	All job offers / applications will be sent to the ANAPEC branch that has opened in Midelt. This will ensure the transparency of the recruitment mechanism. Information is given to the various partners to inform them of this employment mechanism.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Positive

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual impact
	Establish and implement a recruitment policy and ensure that the measures necessary to mitigate the negative effects of working conditions and employment are implemented (e.g. child labour and forced labour, operation, excessive overtime, inadequate wages, harassment, dangerous living and working conditions/.). Work and working conditions will be aligned with IFC standards	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	A downsizing plan will be prepared for the transition from construction to operation	EPC and subcontractors	Before the end of construction	Included in the contract	Minor
Environmental and social management skills	Identification of a skill development plan for all stakeholders concerned by environmental and social management. Information to population will be given during public consultations	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Positive
Purchases	The EPC will only engage with reputable suppliers who do not use force or child labour	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Procurement of goods and services for labour and building materials will be at the local / regional level when it is possible	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Positive
SE * and HSW ** risks Social and environmental and HSW	If activities are developed and have not been evaluated in the SESIA, the E & S and HSW risks for the communities will be assessed before the start of the construction	EPC and subcontractors	As soon as the works start and throughout construction	Included in the contract	Minor

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual impact
HSW: Hygiene and safety at work			period		
	The site will be fenced and access to the construction site will be controlled by the security staff	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Dissemination of skills.	Dissemination of skills will be included in labour management plan. Local employees will receive E&S and HSW training to enhance the development of skills. A certificate describing the contents of the training and signed by the EPC will be provided at the end of the employment contract	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Cultural acceptance of the workforce	Initial training of foreign employees will include information on the cultural background of the nearest residents	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Risk from workers conduct	All workers should sign a Code of Conduct prior to start work, which should include: prohibition of child and forced labor, discrimination based on race, ethnicity, religion, etc., equal opportunities, prohibition of Sexually Based Violence (SBV), Sexual Exploitation and Abuse (SEA), alcohol and drug use during working hours, prohition of poaching, care for the environment. The code of conduct will be attached to CESMP prepared by EPC.	EPC and subcontractors	As soon as the operation start and throughout operation period.	Included in the contract	Minor

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual impact
Security measures	Develop and implement a policy on security and a code of conduct for security personnel which will comply with IFC Good Practice Handbook on the Use of Security Forces: Assessing and Managing Risks and Impacts (2017).	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	The security provider and its staff will adhere to the international code of conduct on human rights. Only security personnel and companies without human rights violations will be employed. Security will comply with IFC Good Practice Handbook on the Use of Security Forces: Assessing and Managing Risks and Impacts (2017).	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
	Security personnel will undergo a specific training programme that will include at least information on how to practice the GIIP (the United Nations Voluntary Principles on Security and Human Rights), the cultural context of the region and the workforce (main groups), the way in which they must interact with local communities and workers. Security will comply with IFC Good Practice Handbook	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Spread of illnesses/disease	Disease prevention (including STDs) will be included in training programmes through toolbox conferences or separate training sessions.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor
Proliferation of informal settlements and encroachment .	Informal or clandestine settlements will be monitored by on-site security staff and reported to the relevant authorities	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual impact
	Local public security forces will be required to deal with illegal immigrants who settle in accordance with national requirements.	EPC and subcontractors	As soon as the works start and throughout construction period	Included in the contract	Minor

Archeology and cultural heritage

The EPC contractor will be required to prepare a Construction ESMP before starting the construction works, which will consider the potential for unearthing historical sites or artefacts. The discovery of remains will be signalled to the competent authorities with the implementation of the appropriate procedure: works suspension on the identified area and within a protection perimeter, investigations implemented by the Ministry of Culture.

Training and awareness programmes will be provided to ensure that construction staff and workers are aware of the procedures relating to the Archaeological Watching Brief if any artefacts or anthropogenic finds are uncovered. In the unlikely event of any artefacts being found/uncovered, the construction works would be ceased immediately and the Minister of Culture, via the*"Institut National des Sciences de L'Archéologie et du Patrimoine (INSAP)" will be contacted by the* EPC Site Manager. The INSAP will be in charge of any archaeological investigations.

6.2 Operation phase

Table 12: Synthesis of project impacts on air quality and mitigation measures and / or compensation measures

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual impact
Air emissions from vehicles	Regular maintenance of vehicles in dedicated maintenance areas Adequate indications for traffic Vehicle speed control Road maintenance to limit dust rises Public transit service for employees	O&M	As soon as the operation start and throughout operation period.	Cost included in O&M Budget No specific additional cost	Minor
	Third parties employed to provide services during the project's operation that involve regular transportation to the site (e.g., waste collectors or chemical toilet collectors) will be required to use vehicles that are regularly maintained and in good condition and will be inspected prior to entry into the site	O&M	As soon as the operation start and throughout operation period.	Cost included in O&M Budget No specific additional cost	Minor
COV from HTF	The treatment of VOCs with carbon filters minimizing emissions and treating makes it possible to limit Benzene emissions to less than 5mg / m^3. Adsorption carbon filter is classified as a Best Available Technology.	Design and O&M	Included in design period.	Cost included in O&M Budget No specific additional cost	Minor
	Information will be provided to employees about the emissions of VOC from HTF system. VOC Concentration will be lower than Threshold Limit Values –ACGIH Guidelines).	O&M	As soon as the operation start and throughout operation period.	Cost included in O&M Budget No specific additional cost	Minor
	Health, Safety and Environmental management plan	O&M	As soon as the	Cost included in	Minor

	will be carried out and including actions addressed VOCs risks.		operation start and throughout operation period.	O&M Budget No specific additional cost	
Emissions for Auxiliary HTF heater and generators	Emissions from heaters and generators will be compliant with Moroccan limit values and MASEN requirements (CO : 100 mg/m" (1 hour average), NOx 200 mg/m3 (1 hour average), SOx 100 mg/m3 (1 hour average), Particular Matter : 50 mg/m3 (1 hour average)	Design and O&M	As soon as the operation start and throughout operation period.	Cost included in O&M Budget No specific additional cost	Minor
	Monitoring air emissions from the auxiliary HTF Heater and generators to ensure compliance with permissible emissions levels. Monitoring quarterly for VOC and monthly for the heater (rate of flow, T ° C, SOx, NOx, CO, CO2 et MP)	O&M	As soon as the operation start and throughout operation period.	Cost included in O&M Budget No specific additional cost	Minor

Table 13: Synthesis of project impacts on Noise and vibrations and mitigation measures and / or compensation measures

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual impact
Vehicle noise	Deliveries of fuel and materials and removals of waste must be carried out during daytime when possible	O&M	As soon as the operation start and throughout operation	Included in O&M budget No specific additional cost	Minor to negligible
	All vehicles will be adequately maintained in order to minimise sound emissions	O&M	As soon as the operation start and throughout operation	Included in O&M budget	Minor to negligible
Noise during operation phase	All machinery will be adequately maintained in order to minimise sound emissions	O&M	As soon as the operation start and throughout	No specific additional cost	Minor to negligible

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual impact
			operation		
	The noise generated during the operation phase would occur mainly in the site power block area and dissipate before reaching the perimeter of the site. Cumulative noise emissions generated within the plant would be rapidly reduced and lower ambient background noise levels at the site boundary. All equipment specifications will limit near field noise to a maximum of 85 dB (A) at 1 m. When equipment and installations exceed 85 dB (A) at 1 m under normal operating conditions, noise suppression techniques shall be developed, which may include: - Acoustic isolation enclosures for certain installations - Sound-absorbing materials - Safety valves with silencer	EPC	Design	Included in O&M budget	Minor to negligible

Table 14 : Synthesis of project impacts on soil and groundwater and mitigation measures and / or compensation measures

Impact/Source	Mitigation Measure	Responsibility	Schedule	Cost	Residual impact
Spillage and leakage (power plants out of HTF system)	Develop and implement a spill emergency and contingency plan	O&M	As soon as the operation start and throughout operation	Included in O&M budget No specific additional cost	Minor
	Develop and implement the training programme for employees to increase their awareness of chemical management protocols including proper handling and storage of chemicals, emergency response, contingency plans and appropriate	O&M	As soon as the operation start and throughout operation	Included in O&M budget No specific additional cost	Minor

Impact/Source	Mitigation Measure	Responsibility	Schedule	Cost	Residual impact
	PPE, if needed.				
Storage and waste management (Power plants)	Storage areas for domestic waste will be sealed, covered, water-resistant, with shelving / cabinets in order to prevent spillage and leakage into the ground.	O&M	As soon as the operation start and throughout operation	Included in O&M budget No specific additional cost	Minor
	The storage tanks of fuels/chemicals/sewage will be properly maintained and stored within a confined space of 110% of their storage capacity.	O&M	As soon as the operation start and throughout operation	Included in O&M budget No specific additional cost	Minor
Spillage and leakage of HTF (CSP Solar field)	The design of the HTF system will include the following features: HTF pipes: - Aerial (not buried, to facilitate the detection of leaks) - equipped with isolation valves, - Welded joints Paved areas of reinforced concrete slabs reinforced at the main HTF system Adequate drainage system Bio-sanitation system for the treatment of soil polluted on site. Contaminated soil may be recognized by its characteristic color and odor or by the use of a portable hydrocarbon detector, and will be immediately removed for bio-sanitation treatment. Leak detection system at the thermal storage Sampling system to detect the presence of HTF in the process water	O&M	As soon as the operation start and throughout operation	Included in O&M budget No specific additional cost	Minor

Impact/Source	Mitigation Measure	Responsibility	Schedule	Cost	Residual impact
	Bioremediation system (see mitigation measures in the construction phase concerning bioremediation)				
Spillage & leaks	MSDS will be provided for all chemicals.	O&M	As soon as the operation start and throughout operation	Included in O&M budget No specific additional cost	Minor
Wastewater collectors	The design of wastewater collectors, sewers and pumping needs will take into account topography and geotechnical constraints as the case may be	EPC & O&M	Design and Construction phase.	Included in O&M budget No specific additional cost	Minor

Table 15 : Synthesis of project impacts on storm water management and mitigation measures and / or compensation measures

Impact/Source	Mitigation Measure	Responsibility	Schedule	Cost	Residual impact
Erosion/siltation/ flooding	The discharge point of the drainage system are presented in the technical offer (see also Figure 5) and will be subject to the approval of the La Moulouya Watershed Agency	EPC / O&M	Design Phase	Included in the contract	Minor
	The runoff collection system will be inspected monthly and at the start of a rain event to ensure that no blockages leads to overflowing.	O&M	As soon as the operation start and throughout operation period	Included in the O&M budget	Minor
	The effectiveness of erosion prevention and mitigation measures at rainwater discharge points will be verified after storm events to ensure the adequacy of the design measures. Otherwise, these should be upgraded to keep up with storm water flows.	O&M	As soon as the operation start and throughout operation period	Included in the O&M budget	Minor
Storm water	The site will be inspected regularly to ensure that no spills have occurred in areas that may be susceptible to storm	O&M	As soon as the operation start and	Included in the	Minor

Impact/Source	Mitigation Measure	Responsibility	Schedule	Cost	Residual impact
drainage	water runoff. All spills must be immediately contained and cleaned, in order to prevent direct and indirect contamination to soils and water sources		throughout operation period	O&M budget	
	The storm water drainage system will include a system that retains jams . The system will be located at the project's boundary and will allow easy access to the collection of retained materials.	EPC	Design phase	Included in the contract	Minor

Table 16: Synthesis of project impacts on biodiversity and mitigation measures and / or compensation measures

Impact	Mitigation	Responsibility	Schedule	Cost	Residual impact
Habitat Loss (the habitat isn't Natural Habitat)	The living space of the Houbara Bustard (especially feeding, laying and breeding area on project's site) will certainly be affected. Monitoring will be implemented to assess the impact. Following the monitoring results (if they show an important reduction of Houbara Bustard presence assessed by an expert)and recommendations measures could be implemented such as the rehabilitation of the Halfah or Sage bush steppe on a limited area and/or around the space occupied by the solar park. This measure will be subject to discussion and agreement of all stakeholders.	Stakeholders	Before starting or during construction phase	To define	Low to medium
	The development of the vegetation inside the solar filed could be a favourable environment for the improvement of ecological conditions for DuPont'Lark which could allow a re-colonisation..	N/A	N/A	N/A	Positive

Impact	Mitigation	Responsibility	Schedule	Cost	Residual impact
Direct mortality of birdlife due to collision (Panels/mirrors)	Mortality monitoring will be undertaken continuously by O & M services in the operational phase. Daily monitoring by trained employees and quarterly surpervision by an expert (ornithologist) Specific training will be provided to ensure that injured carcasses or birds are properly reported and appropriate identification of species is achieved. The foreseeable change in birdlife needs to be followed-up, possibly for adaptive management.	O&M	As soon as the operation start and throughout operation period.	30 Kdhs for training 40 Kdhs / Year for supervision	Minor
Direct Mortality of Fauna	Regular stripping of vegetation does not seem necessary as low vegetation does not present a fire hazard (Fire hazard risks are in CSP field and Power Block). The reg habitat could thus be partially preserved, as well as its fauna. Maintenance personnel must be sensitised to avoid any destruction of wildlife. No plantation of exotic species, generally consuming water, should be considered	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	No invasive species will be used.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	A speed limit of 20 km / h will be imposed throughout the site to reduce mortality of wildlife.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Vehicles will circulate on the designated routes in order to prevent unnecessary land encroachment, thus protecting the natural resources and reducing	O&M	As soon as the operation start and throughout	Included in O&M budget	Minor

Impact	Mitigation	Responsibility	Schedule	Cost	Residual impact
	dust emissions		operation period.		
Poaching/Hunting/Trade	Hunting, falconry and trade will be strictly prohibited and sanctioned. Information notes will be posted.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
Herbicides and pesticides	An integrated pest management programme will be implemented avoiding the use of pesticides and herbicides. If weeding is needed, it will be done manually or mechanically. The use of pesticides will be very limited, it will be preferred methods and / or non-harmful products when possible. The use of pesticides will be compliant with OS-4 of AfDB requirements. All food waste will be stored in lidded containers. Only low-toxicity pesticides that do not pose a threat to human health or the environment, and that will not affect natural pest enemies. Management and disposal of pesticides would be in accordance with good international industry practice, such as the Food and agriculture Organization (FAO) International Code of Conduct on the Distribution and Use of Pesticides. Any chemical—including ozone-depleting substances and persistent organic pollutants, pesticides classified in Class Ia (extremely hazardous), Ib (highly hazardous) or II (moderately hazardous) are prohibited	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor

Table 17: Synthesis of project impacts on Management of waste, hazardous and non-hazardous materials and mitigation measures and / or compensation measures

Impact/Source	Mitigation measure	Responsibility	Schedule	Cost	Residual im

Impact/Source	Mitigation measure	Responsibility	Schedule	Cost	Residual im
Solid waste volumes/quantities	Prepare a site-specific waste management plan, including hazardous and non-hazardous waste. The plan will include staff training. The waste management plan will be compliant with Moroccan regulations and will be approved by MASEN.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Metal waste will be recycled in the maximum possible level.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	
	Ordering materials with reusable and / or bulk packaging can reduce waste generated. These practices will be preferred when possible.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Request that suppliers use minimal packaging.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Chemicals will be ordered in returnable drums.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	If Batteries Li-ion have to be changed, the original supplier will do the substitution and will recycle the used battery	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	
	If some panels are damaged, the original supplier will do the substitution and will recycle the used battery.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	When possible, “Buy-back” arrangements will be made with key suppliers so that any surplus chemicals or materials can be returned	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
Cleaning	Separate waste streams to facilitate recycling. All storage areas	O&M	As soon as the operation	Included in O&M	Minor

Impact/Source	Mitigation measure	Responsibility	Schedule	Cost	Residual im
	must be well organised and waste appropriately managed through segregation of hazardous and non-hazardous waste. Waste within each category will be further segregated by type (paper, plastic, metal) and whether the material is recyclable or non-recyclable. A waste log will be kept onsite and will contain, at least, information about quantities, types of management solutions (according to the waste management hierarchy described in the baseline section) operators, final disposal/destination, etc.)		start and throughout operation period.	budget	
	Install adequate storage facilities for non-hazardous waste in designated areas to prevent waste from dispersing throughout the site	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Include at the beginning of the employees' training, modules to increase their knowledge of waste management protocols, including proper waste handling and storage, response and contingency plans.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
Storage of waste	Food waste must be stored within a sealed metal or plastic skip or bin, in order to prevent vermin/pests from gaining access	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Lightweight waste such as paper, cardboard, plastics must be stored within a skip sealed with a tarpaulin/mesh sufficiently secured to prevent any material from being dispersed.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	As for litter (food waste, domestic waste), bins for separate categories will be placed throughout the site where construction workers and staff consume food. These will be regularly collected and taken to the main waste storage area.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Waste containers will be clearly marked with appropriate warning labels accurately describing their content and detailed safety precautions. The labels will be water repellent and securely attached. Wherever possible, chemicals will be kept in	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor

Impact/Source	Mitigation measure	Responsibility	Schedule	Cost	Residual im
	their original container.				
	Waste generated during operation will only be transported off-site for disposal by an appropriately licensed vendor. This service provider will follow the appropriate protocols to ensure that all handling and disposal of waste from the site is done in accordance with accepted environmental regulations. A record for all streams of generated and collected waste will be kept onsite.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Regular training of site staff on waste management and proper chemical handling procedures will be provided on a regular basis.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Incineration/burning of waste on site will not be allowed	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
Hazardous materials	Implementation of best practice and regulatory procedures for proper handling, establishment of secure temporary storage areas, and disposal of waste by licensed companies.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Hazardous waste is disposed of in an environmentally sound manner and by the approved hazardous waste operator	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	The materials will be separated according to their combustibility, and all flammable substances will have to be kept away from any source of ignition.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	No underground hazardous materials containers will be set up. The hazardous materials storage will be located in a dedicated fenced area with a separate drainage system and covered to prevent contact with rainwater. The location of these hazardous materials storage area will be chosen according to the potential	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor

Impact/Source	Mitigation measure	Responsibility	Schedule	Cost	Residual im
	risks (e.g. traffic accidents/collisions, falling items, drainage system, etc.).				
	Establishment of retention tanks for the storage of hazardous materials. The retention areas will have the capacity to contain 110% of the total volume of stored materials and will be protected from vehicular traffic and other risks. This area must be placed away from any sources of ignition. The storage areas will be waterproofed at the base (this requires, if needed, to cover a large area in order to avoid soil contamination, for example the refuelling areas must include an impervious base that protects the ground where vehicles are parked), and must be covered and equipped with spill kits.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Hazardous Materials containers will be clearly marked with appropriate warning labels accurately describing their contents, detailed technical specifications and safety precautions. The labels will be water repellent and securely attached. Wherever possible, hazardous materials will be kept in their original container	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Hazardous materials will only be transported to/from the site by an appropriately licensed operator. This service provider will follow the proper protocols to ensure that all hazardous materials are transported and transferred according to accepted national/regional environmental regulations in effect. A record for all hazardous materials will be kept onsite.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Only trained personnel will be permitted to handle hazardous materials.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
Waste management facilities	Only approved waste management facilities are to be used for the disposal of hazardous and non-hazardous waste,	O&M	As soon as the operation start and throughout	Included in O&M budget	Minor

Impact/Source	Mitigation measure	Responsibility	Schedule	Cost	Residual im
	respectively.		operation period.		

Table 18 : Synthesis of project impacts on wastewater Management and mitigation measures and / or compensation measures

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Residual im
Sanitary wastewater generation	Sanitary and domestic wastewater will only be discharged to the sanitary water treatment plant. Then treated water will be sent to the evaporation pond.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Sludge will be collected by a licensed operator.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Develop a wastewater (sanitary and industrial) management plan	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
Industrial waste water	Ensure the good operation of industrial wastewater treatment facilities to avoid untreated discharge	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor

Table 19: Synthesis of project impacts on traffic and transportation and mitigation measures and / or compensation measures

Impact/Source	Mitigation Measure	Responsibility	Schedule	Cost	Residual i
Movement of vehicles along the site's access road and onsite	Develop a transportation management plan	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Identify designated access routes for collection and delivery, site entry points and parking areas, etc.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor

Impact/Source	Mitigation Measure	Responsibility	Schedule	Cost	Residual i
	Determine the requirements for regular maintenance of vehicles in accordance with national and GIIP requirements	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Specific areas will be designated in appropriate locations	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Movement of vehicles along the access road will be minimised to essential operational and maintenance activities.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor

Table 20 : Synthesis of project impacts on landscape and mitigation measures and / or compensation measures

Impact/Source	Mitigation Measure	Responsibility	Schedule	Cost	Residual i
Luminous pollution	Lighting provision shall not be excessive or unnecessary – Lights for the plant will be switched on only when strictly necessary. Lighting will be compliant with MFS	O&M	As soon as the operation start and throughout operation period.	Included in the O&M budget	Minor
	Lights required during night time will be directed onto the site, therefore minimising any potential back spills and impacts at night to avoid disturbance to fauna. Lighting will be compliant with MASEN requirements	O&M	As soon as the operation start and throughout operation period.	Included in the O&M budget	Low
	Lighting should not cause reflected glare for access roads users.	O&M	As soon as the operation start and throughout operation period.	Included in the O&M budget	Low
Facilities design	Respect of the components of the landscape charter adopted by MASEN for the best integration in the site. Constructions will be compliant with MASEN requirements.	EPC	Design	Included in the O&M budget	Medium

Table 21: Synthesis of project impacts on socio-economics and mitigation measures and / or compensation measures

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Resid impa
Labour and Work Conditions	A specific Occupational Health & Safety Plan and Health & Safety Management System will be developed. This includes among others induction for all workers, and work specific risk assessment and procedures, training and supervision; also provision of first aid and medical response staff and facilities. The plan will include at least : - Identification of hazards, evaluation of risks and determination of controls and inspections. - Identification of legal and other system requirements - Code and procedures of safe practices in the Plant - Training and information. - Communication, participation and consultation. - Safety inspections - Document control. - Operational Control : Safety standards, Work permits, Safety inspections, Revisions of equipment and installations, Revision and control of personal protective equipment, Control of Hazardous Substances, Control	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Resid impa
	of Purchases and Acquisitions, Control of Works and Services, Control of Changes and New Projects, Coordination of contractors' activities and other external visitors - Preparation for and response to emergencies. Accident management, non-conformities and corrective actions.				
Employment	The project will aim to employ local workers where they are ready with specific and adapted skills. All non-specialised job opportunities will likely be offered to local residents in priority prior to hiring employees from other regions. The actions will be included in the labour management plan and information will be provided to population during public consultation meeting. The employment of women and vulnerable groups will be specifically targeted and monitored where possible	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Positi
Employment	Establish and implement a recruitment policy and ensure that the measures necessary to mitigate the negative effects of working conditions and employment are implemented	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Resid impa
	(e.g. child labour and forced labour, operation, excessive overtime, inadequate wages, harassment, dangerous living and working conditions/.) Work and working conditions will be aligned with IFC standards				
Purchases	O & M will only engage with reputable suppliers who do not use forced labour or child labour. Corresponding contractual clause to be inserted.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	The purchase of goods and services by labour and building materials at the local / regional level will be a priority	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
Skills enhancement	Local employees will receive E&S and HSW training to enhance the development of skills. A certificate describing the contents of the training and signed by the plant's management will be provided. Details will be included in the labour management plan.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Identification of a skill management plan for all stakeholders concerned by environmental and social management. This will be detailed in the labour management plan and information will be provided to	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Resid impa
	population during puplic consultation.				
	Identification of a skill management plan in solar technologies included in Labour management plan	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
cultural acceptance of the workforce	Inception training will include information on the cultural background of the population	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
Safety Measures	Develop and implement a policy on security and a code of conduct for security personnel	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	The security provider and its staff will adhere to the international code of conduct on human rights. Only security personnel and companies without human rights violations will be employed. Security will be compliant with IFC Good Practice Handbook on the Use of Security Forces: Assessing and Managing Risks and Impacts (2017).	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
	Security personnel will undergo a specific training programme that will include at least information on how to practice the GIIP (the United Nations Voluntary Principles on Security and Human Rights), the cultural context of the	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor

Impact/Source	Mitigation measures	Responsibility	Schedule	Cost	Resid impa
	region and the workforce (main groups), the way in which they must interact with local communities and workers				
Risk from workers conduct	All workers should sign a Code of Conduct prior to start work, which should include: prohibition of child and forced labor, discrimination based on race, ethnicity, religion, etc., equal opportunities, prohibition of Sexually Based Violence (SBV), Sexual Exploitation and Abuse (SEA), alcohol and drug use during working hours, prohition of poaching, care for the environment. The code of conduct will be attached to OESMP prepared by O&M.	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor
Disease transmission	Disease prevention (including STDs) will be part of training programmes	O&M	As soon as the operation start and throughout operation period.	Included in O&M budget	Minor

Archeology and cultural heritage

There will be no significant impacts on the historic and religious heritage during the operation phase, so there are no measures identified.

7. Public consultationprocess

In order to comply with the guidelines of the donors, public information meetings must be conducted. The process started with the completion of the public inquiry according to the law 12-03 and a first meeting of public consultation of presentation of the FESIA.

7.1 Public consultation meetings

The public inquiry carried out under Law 12-03 was conducted from June 30 to July 20, 2015.

The FESIA was presented to the CNEIE on 8 October 2015 and environmental acceptability was pronounced on 1st December 2015 at the second CNEIE meeting.

For the NOOR Midelt solar complex project as a whole, a series of consultation and public inquiry meetings took place in Midelt, in line with the public consultation strategy planned under the FESIA.

7.2 First public consultation

A first public consultation meeting was held on March 10, 2016 in Midelt, bringing together the various stakeholders identified on the project:

- Representatives of ethnic communities involved in the project (Ait Oueflla, Ait Rahou Ouali and Ait Massoud Ouali Ennajil) and Ait Ben Yacoub concerned by the proximity of the project
- Representatives of the rural municipalities of Zaïda, Ait BenYacoub and Mibladen and the neighbouring douars of the site (Agoudim, Ait Ghiat, Ahouli, Ait Ben Yacoub, Mibladen, Zaida and Midelt);
- Representatives of civil society: development associations, environmental and women's associations, cooperatives, etc.;
- Academics
- Representatives of the external services of the province of Midelt (Equipment and transport, water and forests, water basin agency, ONEE etc.)

During this meeting, the various stakeholders were informed about the project and its possible socio-economic impacts were assessed within the framework of the SESIA. A complaint management mechanism was also presented.

A second public consultation will be held to present the results of the SESIA to the various stakeholders. This meeting will be held once the developer has been designed awarded by MASEN at the end of the bidding process. This meeting will need to be expanded to ensure that all stakeholders are informed. Newspaper publications will be made to inform the meeting. During the meeting, a presentation of the project as well as the main impacts and measures will be carried out. An exchange of questions and answers will be held with the different participants.

The results of this public consultation will be incorporated into the final document.

7.3 Grievance mechanism

The aim of the grievance mechanism is to establish a system to receive and facilitate resolution of the stakeholder's concerns and grievances about the Project's environmental and social performance. The grievance mechanism has the Affected Communities as its primary beneficiaries. It seeks to resolve concerns promptly, using an understandable and transparent consultative process that is culturally appropriate and readily accessible at no cost and without retribution to the party that originated the issue or concern. The mechanism will not impede access to judicial or administrative remedies.

MASEN is the entity responsible for the implementation of the Grievance Mechanisms for external stakeholders for the NOOR Midelt Solar Power Complex. EDF Renewables is the entity responsible for the implementation of the Grievance Mechanisms for NOOR Midelt I.
The grievance mechanism for the project will comply with the following principles:

- Clarify at the outset what is the purpose of the procedure;
- Assure people that there will be neither cost nor retribution associated with lodging a grievance;
- The entire process (i.e. how a complaint is received and reviewed, how decisions are made and what possibilities may exist for appeal) will be made as transparent as possible by explaining it to relevant stakeholders;

The grievance mechanism will be available during the construction, operational and decommissioning phases of the project at the site gate. All information about grievance procedures, grievance forms, and responses will be explained in Arabic, Tamazigh and French. Access to the mechanism will be free of cost.
Coming out with a complaint can pose risks for people, especially if it concerns issues such as corruption, misconduct, monetary compensation, or if it interferes with local social norms, including gender norms. The grievance mechanism will include precautions such as a clear non-retaliation policy, measures to ensure confidentiality and safeguarding of the personal data collected in relation to a complaint, as well as an option to submit anonymous grievances.
Handling grievances encompasses a step-by-step process as well as assigned responsibilities for their proper completion. Companies establishing grievance mechanisms will follow the process' steps discussed below.

7.3.1 Scope

The scope of the grievance mechanism is to cover all stakeholder's problems and concerns regarding project activities and the implementation of the mitigation and compensation measures identified at the SESIA stage. Generally, all claims from affected communities should be accepted and no judgment made prior to investigation, even if complaints are minor. However, according to best practice, the following claims should be directed outside of project-level mechanisms:

- Complaints clearly not related to the project: It is sometimes difficult to determine which issues are related to the project and which are not. If in doubt, employees designated to receive grievances should accept the complaint and assess its legitimacy;
- Issues related to governmental policy and government institutions;
- Complaints constituting criminal activity and violence: In these cases, complainants should be referred to the justice system;
- Commercial disputes: Commercial matters should be stipulated in contractual agreements and issues should be resolved through a variety of commercial dispute resolution mechanisms or civil courts. Suppliers will have access to the grievance mechanism stipulated in the previous point.

7.3.2 Publicizing Grievance Management Procedures

The grievance mechanisms will be publicized in the following ways as a minimum:

- Posters at the site entrance; and
- On the SEP disclosed online.

The information provided online and on posters will be available in all the relevant languages (i.e. Arabic, Tamazigh, French and English) and will include at least the following:

- Who can raise complaints (i.e. all stakeholders);

- Where, when, and how community members can file complaints (to agree during the stakeholder engagement process);
- Who is responsible for receiving and responding to complaints;
- What sort of response complainants can expect from the company, including timing of response; and
- What other rights and protection are guaranteed.

In addition, specific measures have been included in the SESIA to ensure that grievances are reported (e.g. all vehicles dedicated full time for the project and circulating on roads outside the project site will have a clearly visible unique identification number and a sign with a telephone number for any road user to report grievances when required).

7.3.3 Submitting a complaint

The grievance mechanism will allow for complaints to be filed, as a minimum, in the following ways:

- By post;
- By email and/or through an online form; and
- At the project gate.

Written and verbal complaints will be received at the project's gate – therefore the security personnel have to be aware and trained to deal with the complaint appropriately. The security personnel should communicate that a stakeholder wants to submit a grievance to the person responsible to receive complaints (e.g. EDF Renewables Community Liaison Officer). For illiterate complainants or those that prefer to submit their complaints verbally, the person responsible to receive complaints will meet them and will take notes on the details of the complainant and read them out loud to the complainant to confirm that the key elements of the complaint have been captured.

7.3.4 Receiving Complaints

MASEN and EDF Renewables will commit to a certain time frame in which all recorded complaints will be responded and to ensure that this response time frame is enforced. By letting people know when they can expect to be contacted by company personnel and/or receive a response to their complaint their frustration may be reduced.

7.3.5 Reviewing and Investigating Grievances

To ensure that all grievances are adequately investigated and closed out, a grievance log will be kept, documenting all the actions taken to address each grievance.
An extensive investigation may be required when grievances are complex and cannot be resolved quickly. MASEN and EDF Renewables will take full responsibility for investigating the details of grievances coming through its grievance mechanism, following the principle of "no cost to communities". Involving second parties during the investigation of grievances (i.e.the Project Company, the EPC or subcontractors) when required is recommended.
In cases of sensitive grievances - such as those involving multiple interests and a large number of affected people - it may help to engage outside organizations in a joint investigation, or allow for participation of local authorities, only if the complainants agree to this approach.
For complex grievances an investigation team will have to be appointed. If the investigation team is formed internally, issues that will be taken into consideration include potential conflicts of interest, qualifications, gender composition, and budget.
Meetings with complainants and site visits can be useful for grievance investigation and will be undertaken, as appropriate.

7.3.6 Grievance Resolution Options and Responses

One of the potential advantages of a grievance mechanism is its flexibility. Rather than prescribe a specific procedure for each particular type of complaint, a list of possible options appropriate for different types of grievances are available. Options may include altering or halting harmful activities or restricting their timing and scope (e.g. for construction noise), providing an apology, replacing lost property, providing monetary compensation, revising the community's engagement strategy, and renegotiating existing commitments or policies.

The grievance investigation team will provide a proposal to resolve the complaint, which will have the backing of the Management. The person appointed by MASEN and EDF Renewables will then contact the complainant to get an agreement on the proposed solution.

If all parties accept the proposed solution, the agreed actions will be implemented in the established timeframe. In the case that complainant does not accept the proposed resolution, the company should re-assess the situation and make sure that all alternatives within the grievance mechanism are explored. If agreeing on a solution acceptable to all parties is not possible within the grievance mechanism, the complaint will be referred to external mechanisms.

Close-up monitoring of a complaint will be undertaken, if possible, by collecting proof that the necessary actions have taken place. For example:

- If the issue was resolved with the satisfaction of the complainants, get a confirmation and file it along with the case documentation;
- Take photos or collect other documentary evidence to create a comprehensive record of the grievance and how these were resolved.

8. Environmental monitoring plan

8.1 General objectives

Environmental monitoring during construction and operational phase pursues two objectives within the framework of the project:

- Evaluate the adequacy of environmental assessment and, as needed, adjust the impact assessment and propose mitigating measures allowing the minimization of unforeseen repercussions on the project's insertion environment;
- Evaluate the performance of mitigation measures and, if necessary, make improvements,

The principal functions of environmental monitoring will be the following:

- Establish an exhaustive list of the measures proposed within the framework of the FESIA and the SESIA of the NOOR Midelt I project and of the commitments of MASEN and the concerned developer;
- Establish a detailed schedule of activities to be carried out in order to meet the commitments and the implementation of the proposed measures;
- Document actions taken (letters, written reports, photographs, etc.);
- Prepare Quarterly Environment Progress Report of activities carried out within the framework of environmental monitoring ;
- Announce the results of the monitoring to the concerned administrations of the Developer, ministries involved with the management and protection of the environment, international moneylenders, and to the local population.

In addition, a Quarterly Environment Progress Report on environmental monitoring will be prepared. Nevertheless, in the event of an incident or an activity likely to have significant impact on the environment during construction or operation, an immediate report will be produced in order to put in place, as rapidly as possible, the appropriate corrective measures.

The Quarterly Environment Progress Report and eventual immediate reports in case of an incident will be addressed to MASEN.

8.2 Environmental monitoring plan in construction phase

8.2.1 Objectif

Environmental monitoring is to ensure that the commitments and recommendations for environmental issues included in this SESIA will be applied. At first, this monitoring includes the integration of mitigation and other environmental considerations measures in the plans and specifications and their implementation during construction.

The Consortium will approve the documents and detailed studies submitted by contractors mitigation measures that companies should integrate.

The ESMP (including the construction and operation phases) will be subbmitted to regulator with the SESIA to be approved according the permitting process.

The Quarterly Environment Progress Report during the construction phase may contain the following elements:

- Principal phases of work accomplished (i.e.: purification of rain-water, placement of civil engineering elements, etc…);
- Environmental issues related to these steps (soils, natural environment, etc…);
- Measures implemented by the company;
- Possible impacts and measures taken;

- Elements of synthesis of possible complaints.

The table of contents of this report is[2] hereafter :

8.2.2 Monitoring plan content in construction phase

Environmental monitoring consists of ensuring that mitigation and compensation measures have been taken into account in both design and construction phases.

The environmental monitoring plan will involve the following aspects during the work:

[2] This content is required by MASEN and templates are provided by MASEN.

Table 22 : Monitoring plan in construction phase

What (Wich parameter to be monitored?)	**Where** (Place / monitoring point ?)	**How** (is the parameter to be monitored?)	**When** (Define the frequency / Period)	**Why** (is the parameter to be monitored?)	**Cost**	**Who** (Is responsible for the contrôle?)
Air quality - Dust (PM 2.5 & PM 10)	Boundaries of site Out door Facilities areas (with employees presence)	measuring by portable equipment for total MP, MP2.5 & PM 10.	Weekly. Daily in case of dust generating activities or in windy conditions> 15 km/h	Dust generated by machinery and vehicles used for earthworks	Integrated into the project budget	EPC
Air quality – Exhausts	Vehicles / exhausts of equipment and machinery	Visual inspection of smoke (monitoring and control of equipment and machinery before / during use)	Daily	Sending equipment and machinery for maintenance, maintenance or replacement, in case of significant or visible smoke development	Cost borne by the contractor	EPC
Noise	Limits of the plant site and surrounding sensitive receptors	Noise monitoring standards	Weekly frequency	Increased noise by construction work (earthworks, excavations, etc.)	Cost borne by the contractor (as an indication, the cost of a sound level meter: 2000 - 5000 Dh)	EPC
Waste water – (level, leaks)	Chemical toilets	Monitor the good working condition and the emptying needs	Weekly	Wastewater in the natural environment	Integrated in the cost of the work	EPC
Wastewater treatment (level of sludge, parameters related to irrigation in case of reuse)	Temporary Biological reactor	Monitoring the quality of treated water, the level of sludge. Analysis by agreed laboratory	Whenever necessary (for reuse for water) Monthly for sludge	After treatment and before reuse Values have to be compliant with Moroccan regulations. Reuse to be approved by MASEN	Integrated in the cost of the work	EPC
Wastewater	Basin after	Monitoring the treated	Whenever	After treatment and before reuse	Integrated in the cost of	EPC

What (Wich parameter to be monitored?)	Where (Place / monitoring point ?)	How (is the parameter to be monitored?)	When (Define the frequency / Period)	Why (is the parameter to be monitored?)	Cost	Who (Is responsible for the contrôle?)
treatment system for concrete and oily waters (parameters related to irrigation in case of reuse)	treatement	water. Analysis by agreed laboratory	necessary (for reuse for water)	Values have to be compliant with Moroccan regulations. Reuse to be approved by MASEN	the work	
Waste management	All over the site construction	Presence of not collected solid waste	Daily	Compliant with law 28-00 and CESMP and IFC's Standards	Integrated in the cost of the work	EPC
Waste management	On dedicated solid waste storage areas	Identify the quality of waste to classify them Waste management plan (approved by MASEN)	control	To prevent anu contamination and to be manage disposal and recycle channels To be compliant with Moroccan regulations and IFC's standards	Integrated in the cost of the work	EPC
Waste management	-	Recording quantities and various flux Waste management plan (approved by MASEN)	Whenever waste is identified off-site or recycled on-site	Process control of waste recycling and off-site disposal by approved subcontractors. To be compliant with Moroccan regulations and IFC's standards.	To be agreed and validated between contractor and evacuation and on-site waste management company	EPC
Biodiversity Houbara Ostard	Construction site	Checking presence of nest before starting works	Before starting works	To displaced eggs according CESMP	30 K MAD	Project Company
Biodiversity Houbara Ostard	Around the site (part 3 of complex site and width of 5 km aroound Midelt I)	Field observation	From April to June (3 days / month)	To assess the disturbance for Houbara ostard compared to baseline situation	50 KMAD/year	Project Company
Avifauna (Migratory)	At the site	Check the frequentation of the site by migrants	Monthly frequency Field observation mission between March and April	Monitor the level of site visits	50 KMAD/Year	Project Company

What (Wich parameter to be monitored?)	**Where** (Place / monitoring point ?)	**How** (is the parameter to be monitored?)	**When** (Define the frequency / Period)	**Why** (is the parameter to be monitored?)	**Cost**	**Who** (Is responsible for the contrôle?)
Job offer	Not applicable	Local Labor Report	Whenever there is a need for recruitment	Provide jobs for local people by giving them priority as needed	Integrated in the cost of work	EPC
Register of grievances	Point of contact to be posted at the entrance of the site	Record complaints and how they are handled	Whenever there is a complaint	Registration of the complaint, its care and follow-up	Integrated in the cost of work	EPC
Emergency supervision	Not applicable	Register the emergency case and follow-up of its support	Whenever there is an emergency	Register the emergency case and follow-up of its support	Integrated in the cost of work	EPC
Quarterly Environment Progress Report	-	Reporting of all activities carried out within environmental monitoring.	Quarterly	Provide to MASEN activities carried out within environmental monitoring	Integrated with the operating cost	O&M Co
Independent Audits of the Environment - Documentation	-	The auditors review the environmental documentation kept at the plant, verify the proper implementation of the environmental procedures in place in the ESMP (CESMP) and the application of the mitigation and monitoring measures cited in SESIA, including results of monitoring	Quarterly frequency	Independent environmental audits provide assurance of compliance with the measures proposed in SESIA and the ESMP. Audit reports can be provided to the funder	Cost of an independent environmental expert	EPC
Independent Environmental Audits - Site Inspection	-	Auditors visit the plant site to ensure that environmental procedures are properly applied	Quarterly frequency	Independent environmental audits provide assurance of compliance with the measures proposed in SESIA and the ESMP. Audit reports can be provided to the funder	Cost of an independent environmental expert	EPC

What (Wich parameter to be monitored?)	**Where** (Place / monitoring point ?)	**How** (is the parameter to be monitored?)	**When** (Define the frequency / Period)	**Why** (is the parameter to be monitored?)	**Cost**	**Who** (Is responsible for the contrôle?)
Independent environmental audits – Surveillance	-	The auditors will have their own samples and the measurements of the monitoring elements described above for the works and operation phases, if deemed necessary to confirm the validity of the results provided by the contractor or developer	Annual frequency	Independent environmental audits provide assurance of compliance with the measures proposed in SESIA and the ESMP. Audit reports can be provided to the funder	Cost of an independent environmental expert	EPC

8.3 Environmental monitoring plan in operation phase

8.3.1 Objectives and implementation

Environmental monitoring of the operation of the solar complex of Midelt will be placed under the responsibility of MASEN which must designate a person responsible for the environment in the operational phase. At this complex, the project company of the NOOR Midelt I solar power plant will ensure for his part the environmental monitoring suited for this power plant and will designate a person responsible for the environment in the operational phase.

The principal functions of environmental monitoring will be the following:

- Establish an exhaustive list of the measures proposed within the framework of the FESIA and the SESIA of the NOOR Midelt I project and of the commitments of MASEN and the concerned developer;
- Establish a detailed schedule of activities to be carried out in order to meet the commitments and the implementation of the proposed measures;
- Document actions taken (letters, written reports, photographs, etc.);
- Prepare Quarterly Environment Progress Report of activities carried out within the framework of environmental monitoring ;
- Announce the results of the monitoring to the concerned administrations of the Developer, ministries involved with the management and protection of the environment, international moneylenders, and to the local population.

In addition, a Quarterly Environment Progress Report on environmental monitoring will be prepared. Nevertheless, in the event of an incident or an activity likely to have significant impact on the environment during operation, an immediate report will be produced in order to put in place, as rapidly as possible, the appropriate corrective measures.

The Quarterly Environment Progress Report and eventual immediate reports in case of an incident will be addressed to MASEN.

The Quarterly Environment Progress Report in the operational phase may contain the following elements:

- Status of electrical production;
- Status of water consumption;
- Status of fluid consumption;
- Possible incidents observed;
- Elements of synthesis of possible complaints.

The table of contents of this report is[3] hereafter :

[3] This content is required by MASEN and templates are provided by MASEN.

Abbreviations

1. *Introduction*
2. *Project Overview*
3. *Scope*
4. *Monitoring and Reporting process*
   - *4.1 Air*
   - *4.2 Noise and vibration*
   - *4.3 Wastewater*
   - *4.4 Waste*
   - *4.5 Biodiversity*
   - *4.6 Recruitment*
   - *4.7 Complaints*
5. *Measurements & Mitigation measures*
   - *5.1 Air*
     - *5.1.1 Dust and emissions from solar power facilities*
     - *5.1.2 Volatile emissions*
     - *5.1.3 Indoor air quality*
   - *5.2 Soil*
   - *5.3 Noise and vibration*
   - *5.4 Waste Management*
   - *5.5 Water*
     - *5.5.1 Wastewater discharge*
     - *5.5.2 Storage, use of chemicals and raw process materials*
     - *5.5.3 Irrigation water (if used)*
     - *5.5.4 Water use minimization*
   - *5.6 Traffic and transport*
     - *5.6.1 Off-site traffic*
     - *5.6.2 On-site traffic*
   - *5.7 Biodiversity*
   - *5.8 Social Management*
     - *5.8.1 Labor and work conditions*
     - *5.8.2 Trainings*
     - *5.8.3 HSE statistics*
     - *5.8.4 Recruitment statistics*
     - *5.8.5 Complaints*
   - *5.9 Social development activities*

8.3.2 Content of environmental monitoring plan in operation phase

Environmental evaluation has shown that impacts in the operational phase were limited; also environmental monitoring will only concern a few elements of the environment.

The technology adopted for the NOOR Midelt I solar power plant status of the CSP – Solar tower. For these technologies, monitoring of the environmental parameters is the following:

- **Monitoring of accidental pollution:** the risks of accidental pollution by leaking of fossil hydrocarbons, maintenance products or again from molten salts. Pollution monitoring will be done by:
  - Monitoring of quantities of topping up. The frequency will be monthly;

- Visual control of pollution at the concerned component, at the storage areas or areas for manipulation of these products. Visual control will be carried out on a monthly basis
- Potential leakage/spillage areas for HTF ((flange, seal, pumps, etc.)

- Continous **monitoring of water consumption**;
- It is also proposed to establish **monitoring of fauna and flora.** Monitoring of the following should be carried out at least once a year (twice for avifauna) , and could be carried out by experts in the natural environment and qualified ornithologists, designated by the Developer. This monitoring includes:
  - Vegetation: a follow-up of evolution of the vegetation, carried out during a visit of 3 days, will be carried out; each season (some visit will depend on local rainfall);
  - Avifauna :
    - Field observation during migratory periodsto assess the presence of migratory species and to assess the level of presence on the site .
    - Avifauna mortality monitoring in solar field. This monitoring must be done daily through the trained employees of solar power plant.
    - Monitoring Outarde Houbara (population on the living space)

Monitoring and staff training must be carried out by specialists (academics, scientists), for a minimum period of 3 years. Each year, specialists will propose adaptive management measures.

- **Monitoring of complaints:** In addition, a notebook for recording complaints must be placed in the commune. People will be invited to record all observations in this notebook. The Developer will be responsible for responding to all complaints emitted.

Environmental monitoring reports will be produced annually and forwarded to the concerned authorities.

8.3.3 Monitoring plan

The following table is a proposal for an environmental monitoring plan.

Table 23 : Monitoring plan in operation phase

What (Wich parameter to be monitored?)	**Where** (Place / monitoring point ?)	**How** (is the parameter to be monitored?)	**When** (Define the frequency / Period)	**Why** (is the parameter to be monitored?)	**Cost**	**Who** (Is responsible for the contrôle?)
Noise	Site boundaries, at sensitive receptors and at the site, close to equipement generatingnoise	Standard methodology for noise monitoring by sound level meter	At the start of the site	Equipement generating noisemust be controlled	Integrated with the operating (ex :sound level meter costs 2000-5000 MD)	O&M Co
Water consumption	Before Water Treatment Plant	Flow rate measurement	Continous	Assess water consumption	Integrated with the operating cost	O&M Co
Industrial effluents (Flow rate, pH, T°C, Conductivity, BOD/TOD, concentration oil, MS, Nitrogen, Phosphrous, heavy metals, coliform bacteria)	Neutralization station and deoiling unit (before evaporation pond)	Sampling and analysis according to a standardized methodology	Continuously for Flow Rate, pH, Temperature and conductivity Bi-weekly for BOD/TOD, Oil, Suspended elements, Nitrogen, Phosphrous, Tota coliform bacterie Once each three months for heavy metals	Predicted performance control prior to evacuation into the evaporation pond	Integrated with the operating cost	O&M Co
VOC (concentration, mass flow, individual VOCs, rate flow & T°C)	Air point emission after carbon filter	Sampling and analysis according to a standardized methodology (fixed equipement and portable equipment)	Continuous for rate flow and T°C Quarterly for VOC concentration	To be compliant with Moroccan regulations and MFS	Integrated with the operating cost	O&M Co

What (Wich parameter to be monitored?)	Where (Place / monitoring point ?)	How (is the parameter to be monitored?)	When (Define the frequency / Period)	Why (is the parameter to be monitored?)	Cost	Who (Is responsible for the contrôle?)
			and mass flow and individual VOCs (Benzene, phenols and others if applicable)			
Air emissions from Auxiliary HTF heater (Rate flow, T°C, SOx, NOx, CO, CO_2 & MP)	Air point emission from the Auxiliary HTF heater	Portable equipment	At least once a year (the heater will work only few hours per day (Low T°C and CSP field long outage period). : 38 hrs per year in worst case	To be compliant with MFS and Moroccan regulations and IFC's standards	Integrated with the operating cost	O&M Co
Waste management		Identifying the waste, classifying and reported Waste Management Plan (approved by MASEN)	Whenever waste is reported off-site or on-site recycling	Monitor compliance with law 28-00, IFC's standards waste recycling goals and off-site disposal by approved subcontractors.	Integrated with the operating cost	O&M Co
Ecological status of the site	Power plant site (evaporation ponds and surrounding, areas between PV or PT arrays)	Counting wildlife species (Herpetofauna) Flora monitoring	Each season (3 days/season)	Monitor the ecological atmosphere on the site and assess positive impact	100 KMAD/year	PROJECT COMPANY

What (Wich parameter to be monitored?)	**Where** (Place / monitoring point ?)	**How** (is the parameter to be monitored?)	**When** (Define the frequency / Period)	**Why** (is the parameter to be monitored?)	**Cost**	**Who** (Is responsible for the contrôle?)
Avifauna (migrant)	Site of the power station and the surrounding	avifauna monitoring(Migrator birds)	Migration seasons - for 3 years	Monitor the importance of migrants	250 KMAD	PROJECT COMPANY
Avifauna mortality	Site of the power station and powerline	Counting and identifying dead birds or injured	Employees training for dead birds acounting Daily for field observation by employees and expert assess quarterly	Assess impact assessment of PV/PT	30 KMAD for training 40 KMAD/year	PROJECT COMPANY
Houbara Ostard	Site of the power station and the surrounding	Monitoring of the Outarde Houbara population	from april to june during 5 years	Monitor the population of the Houbara Ostard	250 KDHS for the 5 years	PROJECT COMPANY
Job offer	Not applicable	Local Labor Report	Whenever there is a need for recruitment	Ensure jobs for the local population, reduce the use of foreign labor as much as possible	Not defined	O&M Co
Register of grievances	Mailbox at the entrance of the site	Register complaintsand how they are handled	Weekly and treatment within one month	Registration, address and complaint tracking	Integrated with the operating cost	O&M Co
Emergency supervision	Not applicable	Register the emergency case and follow-up of its support	Whenever there is an emergency	Register the emergency case and follow-up of its support	Integrated with the operating cost	O&M Co
Quarterly Environment Progress Report	-	Reporting of all activities carried out within environmental	Quarterly	Provide to MASEN activities carried out within	Integrated with the operating cost	O&M Co

What (Wich parameter to be monitored?)	Where (Place / monitoring point ?)	How (is the parameter to be monitored?)	When (Define the frequency / Period)	Why (is the parameter to be monitored?)	Cost	Who (Is responsible for the contrôle?)
		monitoring.		environmental monitoring		
Independent Audits of the Environment -Documentation	-	The auditors review the environmental documentation kept at the plant, verify the proper implementation of the environmental procedures in place in the ESMP (OESMP) and the application of the mitigation and monitoring measures cited in SESIA, including results of monitoring	Quarterly during the first year of operation, bi-yearly in the second year of operation and yearly thereafter.	Independent environmental audits provide assurance of compliance with the measures proposed in SESIA and the ESMP. Audit reports can be provided to the funder	Cost of an independent environmental expert	Project Company
Independent Environmental Audits - Site Inspection	-	Auditors visit the plant site to ensure that environmental procedures are properly applied	Quarterly during the first year of operation, bi-yearly in the second year of operation and yearly thereafter.	Independent environmental audits provide assurance of compliance with the measures proposed in SESIA and the ESMP. Audit reports can be provided to the funder	Cost of an independent environmental expert	Project Company
Independent environmental audits – Surveillance	-	The auditors will have their own samples and the measurements of the monitoring elements described above for the works and operation phases, if deemed necessary	Annual frequency	Independent environmental audits provide assurance of compliance with the measures proposed in SESIA and the	Cost of an independent environmental expert	Project company

What (Wich parameter to be monitored?)	Where (Place / monitoring point ?)	How (is the parameter to be monitored?)	When (Define the frequency / Period)	Why (is the parameter to be monitored?)	Cost	Who (Is responsible for the contrôle?)
		to confirm the validity of the results provided by the contractor or developer		ESMP. Audit reports can be provided to the funder		

9. Risk assessment and management

The content of this chapter will be used as a basic requirement of risk assessment during construction and operation phase of the NOOR Midelt I project.

The risk assessment addresses the impacts to the environment that could occur as a result of mishaps or failures during the construction and operation phases of the project. These could be failure of equipment or material or processes. Examples of mishaps are;

- Spills;
- Leaks;
- Fires; and
- Explosions.

To account for, control and avoid such potential hazards, this section provides for;

- Identify the hazards;
- Assess and prioritize risks and hazards;
- Decide on control measures;
- Implement the control measures; and
- Monitor and Review.

9.1 Hazards identification

The first Risk Assessment Process step is to systematically identify the potential health, safety, and environmental hazards and effects of activities and operations. Hazards and effects need to be identified as early as possible and tracked through the life cycle of each activity. It is imperative that sensitive environmental components and conditions are identified and priority protection areas delineated.

Hazards can be identified and assessed in a number of ways:

- Using checklists;
- By referring to codes and standards;
- By undertaking more structured review techniques;
- Previous experience in the area, including that of third parties;
- General observation and HSE awareness;
- Audits;
- Accident / incident investigations;
- Drills and exercises; and
- EHS/Environmental meetings.

Action to be taken by individuals on identifying a hazard include –

- Eliminating or controlling the hazard immediately;
- Isolating the hazard to prevent an accident; and
- Reporting the hazard using the standard form.

It must be noted that all hazards are to be reported, including those eliminated or controlled immediately. Any situation where an Equipment Incident could cause injury or other significant loss under different circumstances will first be reported.

9.2 Analysis of Risk

Every reported hazard is analyzed to decide how serious it is, and this is done by using the risk matrix, based on the knowledge and experience of the person(s) conducting the analysis.

The risk matrix is used to analyze the probability of occurrence (frequency) and severity of consequence or potential consequence, producing a rating as a code. The code is then classified into four (4) risk groups: low, moderate, high, and extreme risk. The level of risk is indicative of how much effort and urgency must be put in to controlling the problem.

Table 24 : Potential EHS Impact and Potential Incidence Consequences Rating

Area impacted (a)	Insignificant consequences (Score = 1)	Minor consequences (Score = 2)	Moderate consequences (Score = 3)	Major consequences (Score = 4)	Catastrophic consequences (Score = 5)
Atmosphere /Waste/Other	Temporary nuisance from noise, dust, odor, other air emissions, greenhouse gases, vibration, visual impact. Results in the generation of significant quantities of non-hazardous wastes.	Minor environmental impact due to contained release of pollutant (including odor, noise and dust) fire of explosion with no lasting detrimental effects. No outside assistance required. Significant use of water, fuels, and energy and other natural resources.	Creation of noise, odor, dust, other controlled/uncontrolled air emissions, greenhouse gases, vibration, and visual impact at significant nuisance level. Results in the generation of significant quantities of hazardous wastes.	Major environmental impact due to uncontained release, fire, or explosion with detrimental effects. Outside assistance required.	Catastrophic environmental impact due to uncontained release, fire or explosion with detrimental effects. Outside assistance required. Extensive chronic discharge of persistent hazardous pollutant. Results in the generation of significant quantities of intractable wastes.
Human health and safety	Minor injuries, which may require self-administered first-aid. Injured personnel can continue to perform normal duties.	Injuries requiring on-site treatment by medical practitioner. Personnel unable to continue to perform normal duties	Serious injuries requiring off-site treatment by a medical practitioner or immediate evacuation to hospital. Potential long term or permanent disabling effects.	Single fatality	Multiple fatalities

The Risk Assessment Matrix helps to focus attention on the risks that matter by considering the following two questions:

- What is the probability of that incident occurring?
- What is the likely consequence of that occurrence?

Use of the Risk Assessment Matrix will:

- Enhance appreciation of HSE risk and achieve “As Low As Reasonably Practicable” ALARP at all levels in all PP operations,
- Assist in setting clear risk based strategic objectives,
- Provide the basis for implementation of a risk based EHS Management System,
- Provide a consistency in evaluating risk across all PP activities.

9.3 Deciding on Control Measures

A 'control' is anything used to manage risks e.g. procedures, work permits, Personal Protective Equipment (PPE), training, and on-site supervision.

Once the hazards of activities have been identified and assessed, controls must be put in place to manage the risks. It is also important to put steps in place to be able to recover from an unplanned hazard and return to normal operating conditions.

Information on hazards, effects, and the risks connected to these and requirements to limit ('control') them such as limits of safe operation are prepared and recorded by Management.

Table 25 : Hazard Controlling Measures

Control	Use	Description and example
Preventive measures	To reduce the likelihood of hazards or to prevent or avoid the release of a hazards	a. Examples include guards or shields (coatings, inhibitors, shutdowns), separation (time and space), reduction in inventory, control of energy release (lower speeds, safety valves, different fuel sources) and administrative (procedures, warning, training, drills).
Improvement measures	To reduce or limit the consequences arising from a hazardous event or effect	**Active systems:** **b.** Intended to detect and abate incidents, for example, gas, fire and smoke alarms, shutdowns, deluge **Passive systems:** c. Intended to guarantee the primary functions, for example, fire and blast walls, isolation, separation, protective devices, drain systems **Operational (non physical) systems:** d. Intended for emergency management, for example contingency plans, procedures, training, drills

Control	Use	Description and example
Recovery Measures	Includes top events	All technical, operational and organizational measures which can – e. Reduce the likelihood that the first hazardous event or 'top event' will develop into further consequences. f. Provide life saving capabilities will the 'top event' develop further.

Any hazard and its associated risk are controlled by either reducing probability of occurrence or by reducing the effects. This may be achieved by one or more of the following steps shown in the figures below:

Note that these measures are listed from most effective to least effective. Efforts will be made to use the most effective possible measures to achieve results and several measures may be for each situation.

Once the control measures have been designed, the hazard can be re-analyzed on the risk matrix to ensure that risk has been reduced to acceptable levels.

9.4 Implementing the Control Measures

- The developer shall inform all relevant personnel about the control measures being implemented;
- The developer shall provide adequate supervision to ensure that the new control measures are being implemented and used correctly;
- Any maintenance in relation to the control measures shall be defined in the Work Procedures;

To reduce the risk in a maximum way, consideration shall be given to;

- Legal requirements;
- International standards/guidelines;
- Availability of resources;
- Costs and benefits; and
- The status of scientific and technical knowledge.

The purpose of the implementation plan is to document how the chosen options will be implemented. These plans shall include;

- Proposed actions;
- Resource requirements;
- Responsibilities;
- Timing;
- Performance measures; and
- Reporting and monitoring requirements.

9.5 Monitor and Review

Monitoring and review is an on-going process and will not be considered as a one-off activity.

- Ongoing review is essential to ensure that everything planned is implemented. It is imperative that the Risk Management be considered a continuous process since the environment is always changing, e.g. the consequences of an event could change over time and/or the suitability or cost of mitigating the event;
- Monitoring and review also involves learning lessons from the Risk Management Process; and

- To compare the plans with the actual implementation provides a good performance measurement. Such results shall be incorporated into Performance Management, Measurement and Reporting System.

9.6 Record the Risk Management process

Procedures will be established and maintained to document the process and results of risk assessment and management. The recording shall include the following:

- Statutory requirements and codes applicable to the HSE aspects relevant to operations, products, and services;
- Identified hazards and effects in relation to HSE, Production, Services, Properties, and company reputation;
- Established risk criteria;
- Risks of consequence severity and likelihood of identified hazards; and
- Risk reduction measures..

10. Sectorial management plan

Sectorial management plans will be part of the ESMP in order to implement and manage mtigations measures.

These management plans will have to be prepared by the EPC and O& M as part of of the CESMP and OESMP. The ESMP (construction and operation) with their associated plans and procedures will be subject to Masen's approval 30 days before the start of construction/operation.

The exhaustive list is the table below :

Plan	Content	Schedule
Audit procedure	§ 9.5 : Monitoring and review	Construction and operation phase
Bird Monitoring Plan	§ 10.12 :Biodiversity management plan	Construction and operation phase
Bird Mortality Plan	§ 10.12 :Biodiversity management plan	Construction and operation phase
Chance find procedure	§ 10.11 : Physical cultural resource management plan	Construction phase
Communication plan	Included in the SEP	Construction and operation phase
Demobilization plan	Included in Labour Management Plan (§10.3)	Construction Phase
Safety and security plan	§ 10.1	Construction and operation phase
Blast management plan	§ 10.5	Construction phase after design phase
Emergency response plan	§ 10.10	Construction and operation phase
Environmental emergency preparedness plan	§ 10.7	Construction and operation phase
Environmental monitoring plan	Chapter 8	Construction and operation phase
Grievance mechanism	Included in the SEP	Construction and operation phase

Plan	Content	Schedule
Hazardous materials handling plan	§ 10.4	Construction and operation phase
HSE plan and its associated procedures	§ 10.2 OHS plan	Construction and operation phase
Leak and fire contingency plan	Included in 10.1 : Safety and security management plan	Construction and operation phase
Legislation procedure	§ 10.13	Before construction phase and through out construction and operation period.
Monitoring program	Included in chapter 8	Construction and operation phase
Noise management plan	Included in OHS plan (§10.2)	Construction and operation phase
Recruitment plan	Included in Labour Management Plan (§ 10.3)	Construction and operation phase
Social management plan	Will be defined after Public consultation meeting and dicussion with MASEN according the socio-economic study on progress.	To define
Spill response plan	Included in § 10.10 : Emergency response plan	Construction and operation phase
Traffic management plan	§10.8	Construction and operation phase
Training procedure	Included in Labour Management Plan (§ 10.3)	Construction and operation phase
Vehicule maintenance plan	§ 10.14	Construction and operation phase
Waste management plan	§10.6	Construction and operation phase
Wastewater management plan	§10.9	Construction and operation phase

10.1 Safety and security plan

Leak and fire contingency plan is included in the safety and security plan. This plan will include at least :

- Introduction
- Legal and IFC requirements
- Safety and security organization
- Roles and responsibilities
- Practices and procedures
- Safety requirements for project operation (work permits, safety training, safety meetings, activity hazards analysis, etc.)
- Fire management plan
- Security system report (suitable security systems description, car and truck parking area description, guard house description, perimeter security fence characteristics, siren system characteristics and the protection for the dust, etc.)
- Hazardous area classification report
- Preliminary thermal storage safety plan
- VOC health risk analysis report

10.2 OHS plan

The OHS management plan will include at least :

- Introduction
- OHS regulation and IFC requirements
- Roles and Responsibilities
- Training
- OHS Risk Assessment
- Right of Entry
- General OHS information
  - Emergency Procedures
  - Hazard/Injury/Incident Reporting
  - Reporting of Notifiable Incidents
  - First Aid
  - OHS Training and Induction
  - Risk Management and the Risk Register
  - Workplace Hazard Inspections
  - Purchasing
  - OHS Record Keeping
  - Documents to be displayed
  - Important Contact Numbers
- OHS requirements

  This part will identify the various situation and requirements to manage them. We can identify at least :
  - Dangerous Goods and Hazardous Substances
  - Electrical Safety
  - Confined Spaces
  - Falls from height
  - Manual Handling
  - Personal Protective Equipment
  - Slips, trips and falls
  - Vehicles

10.3 Labour management plan

Training procedure plan, grievance mechanism, recruitment plan and demobilization plan are included in the Labour Management Plan

This plan must be prepared by the EPC. This plan ensures local workforce management will comply with all regulations and international good practices.

It will include at least :

- Introduction
- Description of construction activities and manpowerneeds
- Legal and IFC requirements

- Organisation, roles and responsibilities
- Hiring and Recruitment Procedure
- Training activities and training procedure plan
- Provisions for Drinking Water, Cooking Arrangements
- Medical Facilities
- Transportation organization
- Initial training of foreign employees will include information on the cultural background of local residents
- Skill management plan in solar technologies
- Labour grievance mechanism
- Demobilization plan
- Monitoring and reporting

10.4 Hazardous Materials Management Plan

The hazardous materials management plan will include at least :

- Introduction
- Legal and IFC requirements
- Hazardous materials identification
- Procedures, rules and training for :
  - handling and storage
  - spill response protocols
  - contingency plans

10.5 Blast Management Plan

The blast management plan will include :

- Introduction
- Applicable Legislation and Explosives Permits Required
- Explosives Management Plan Objectives
- Types of Explosives to be used On Site
- Explosives Quantities
- Explosives Preparation
- Explosives Storage
- Onsite Handling
- Blasting Operations
- Environmental Considerations

Blast Management Plan will be prepared after earth movement design

10.6 Waste Management Plan

(which comprises the necessary measures to fully apply the waste hierarchy described in the baseline section);

This plan must be prepared by the Main Contractor. This plan ensures the waste management will comply with all regulations and international good practices.

The waste management plan will include hazardous and non-hazardous waste. The plan will include staff training.

This waste management plan will include :

- The process for identification and classification of solid waste
- The measures to ensure, the minimization of waste (agreement with providers, recycling on site, etc..)
- The measures to sort, store the waste
- The description of the requirements of waste storage areas
- The identification of waste disposal routes for each waste stream
- The agreement with licensed waste collector for waste elimination

10.7 Emergency Preparedness and Response Plan.

It ensures that the project complies with IFC Guideline n°3.7, Emergency preparedness and response.

The plan must include the following:

- Administration (policy, purpose, distribution, definitions, etc.)
- Organisation of intervention zones (command centres, medical units, etc.) and list of sensitive elements in the immediate surroundings of the work site and potential hazards;
- Roles and responsibilities: line responsibilities must be clearly determined;
- Disclosure: at the beginning of works, the Main Contractor must post the plan so that all the employees can see it; the public must also be informed if public health is likely to be affected;
- Emergency procedures and equipment;
- Emergency resources: list and contact details of everyone to be contacted in an emergency and sequence of action. It is also necessary to plan financing for rescue/relief activities. Fire risk (facilities, farmers' fields, olive groves) and local and contractors' fire prevention resources must be assessed;
- Training and recycling: the employees must be trained so that they are familiar with the procedures for spills, fire, evacuation and any other emergency involving the workers and the local inhabitants. The plan must be revised and kept up to date with all changes in equipment, personnel and facilities;
- Check-lists (lists of roles and measures; equipment check-list);
- Sustaining the various activities and emergency plans: finding the space and additional equipment necessary for the contractor to continue the works activities after an emergency. For example, this often includes seeking alternative sources of water, electricity and fuel;
- Hydrocarbon spills are the main risk of emergency.

The Contractor must also have an emergency kit ready in the event of accidental pollutant spills. It must contain equipment that is suitable for use in the work place(s) concerned.

For example, an emergency kit for spills should usually contain the following:

- 1 drum or box containing emergency equipment for spills;

- 10 polypropylene pillows - size 430 cm3;
- 200 absorbent polypropylene pads;
- 10 absorbent polypropylene socks;
- 5 10 litre peat fibre bags for oil spills;
- 10 polyethylene 6mm thick 205 litre disposal bags for soiled absorbent equipment.

The Contractor will immediately warn the Project Manager's officially appointed representative in the event of contaminant spills whatever the size of the spill.

In the event of pollutant spills, the Contractor must immediately proceed as follows, at his own expense:

- Bring the leak under control;
- Check the extent of the spill;
- Start off the emergency procedure;
- Confine and collect the pollutant;
- Excavate and replace contaminated soil, if any;
- Handle contaminated waste accordingly depending on the degree of contamination;
- Write a report on the spill.

10.8 Traffic and transportation management plan

The traffic and transport management plan examines the routes of the parts and machinery and assesses the actions necessary to bring them to their destination.

- • The first stage consists of planning transport requirements:
  - the number of trucks necessary for the blades, towers, living quarters and equipment;
  - the human resources necessary;
  - the number of vehicles and trucks using the roads;
  - analysis of rail transport capacities;
  - approval of routes by the authorities.
- • Route planning
  - study of alternative routes and fuel consumption;
  - number of return journeys planned;
  - analysis of route-related constraints: weak points in the road system, improvements considering bend radius, maximum load, maximum headroom;
  - study of traffic and the most favourable periods for transport;
  - identification of owners and negotiations to lease land likely to be necessary for the transport and storage of the wind turbines.
- Permits and authorization planning
  - applications for permits for trucks and large convoys will be necessary;
  - Gendarmerie escorts may also be necessary in certain urban areas.

10.9 Waste water management plan

This plan must be prepared by the Main Contractor. This plan ensures the wastewater management will comply with all regulations and international good practices.

The wastewater management plan will include domestic wastewater, effluents from cleaning operation, and effluents from cleaning concrete.

This plan will identify:

- Potential quality and quantity of the effluent
- Reuse water (quantity and site irrigation)
- Way to reduce wastewater
- Treatment equipment and storage
- Monitoring and report

10.10 Emergency response plan

Emergency Response Plans (ERP) plans are general action plans to tackle emergencies that may occur within a construction site. This will enable lives to be protected and damage to be kept to a minimum in an emergency at the construction site. Contingency plans also serve as a guide to the workers at the construction site to respond to emergencies in an orderly and effective manner.

The most common environmental emergency in construction site is the oil and chemical spill, which is a potential cause for soil contamination, groundwater and water pollution. Spills of hazardous materials may include:

- Gasoline;
- Diesel;
- Adhesives;
- Hydraulic oil;
- Lubricating oil and grease;
- Cleaning solvents;
- Paint and paint thinners; and
- Concrete from release agents.

The ERP must be prepared to cover any potential risks of accidents or spills and will be made known and available to all workers within the construction site. Key personnel will know and understand their responsibilities as well as coordinate their response actions with their subordinates.

This plan serve as a guideline to organize a prompt and effective response to oil spills affecting or likely to affect the area of the site and to ensure preparedness, response and reporting following an oil and chemical pollution incident.

For this purpose the following specific actions are listed:

- Preparedness;
- Response; and
- Reporting.

10.10.1 Preparedness

Each individual will be introduced to their prospective Supervisor and Environment Coordinator within their introduction and training. Emergency services shall be notified as necessary by the Supervisor or Environment Coordinator.

A variety of equipment and personal protective equipment may be needed to support a chemical or oil spill incident response. A list of equipment is detailed below:

- Sand;
- Sand bags;
- Buckets and shovels;

- Storage containers; and
- Spill kit.

Sand stocks will be dry and buckets and shovels readily available. Mechanical loading shovels, excavators and dump trucks may also available for sand distribution and clean up.

Storage containers for contaminated materials and earth will be bonded, located in the waste storage area, and labeled and treated as hazardous waste.

All equipment will be stored in a safe location on site in close proximity to the storage and waste areas. This material is to be used to contain and clean up pollution/spills, care will be taken to dispose of any absorbent materials properly. The Supervisor and Environment Coordinator will keep stocks well maintained and replenished.

10.10.2 Response

In the event of a chemical or oil spill the following measures will be employed:

- Notify Supervisor or Environment Coordinator;
- Only attempt containment and cleanup operations of spilt substances when it can be performed safely;
- If spilled material is flammable, eliminate sources of ignition near spill area;
- Evacuate personnel and neighbors if they are at risk; and
- Secure the area and establish perimeter control at a safe distance from the spill.

Oil Spill Response Options

Remedial action to collect and remove all materials contaminated by the oil spillage or leakage event is to be taken immediately. The following actions are required:

- Any oil remaining on the ground is to be collected using oil spill kit. The spill is to be surrounded by the kit and then the area of the spill is to be slowly reduced by enclosing the absorbent. The absorbent pads will be used to absorb the oil. Once all of the oil on the ground surface has been collected, the absorbent agents themselves are to be appropriately stored and disposed;
- All contaminated materials are to be handled as hazardous waste. The contaminated material shall be collected and appropriately stored. A hazardous waste vendor will collect this;
- Contaminated materials will be stored in plastic barrels with tightly closing lids. These barrels are to be stored in a concrete lined bund if available. In absence of such a bund at the site as a short-term storage alternative, a double plastic lined bund will be used. Barrels will be placed on plastic or wooden pallets in the temporary double plastic lined bund and not directly on the plastic; and
- Conventional metal barrels will not be used, however if there are no alternatives the materials may be stored in them providing they are covered with plastic sheet tightly fastened to prevent Aeolian distribution and again are stored in an appropriate waterproof platform to prevent leakage.

All contaminated materials that cannot be collected and disposed are to be cleaned in-situ. This cleaning is to be undertaken by an approved service providers.

Chemical Spill Response Options

The following actions are to be taken in case of a chemical spill;

- Only attempt containment and cleanup operations of spilt substances when it can be performed safely;
- If spilled material is flammable, eliminate sources of ignition near spill area;

- Liquid spills – If the spill is liquid its path will be blocked or diverted and then soaked up using an absorbent material such as sand;
- Gaseous spills/leaks – A gaseous leak must be stopped at the source as soon as possible and will then disperse in the air;
- No spills will be rinsed away;
- Contaminated soils and clean-up materials from spills will be handled properly using personal protective equipment, stored in a suitable container that is then labeled and stored in the appropriate location for subsequent disposal;
- Any stockpiles of remnant contaminated materials will be covered;
- Contaminated materials will be stored in plastic barrels with tightly closing lids. These barrels are to be stored in a concrete lined bund if available. In absence of such a bund at the site as a short-term storage alternative, a double plastic lined bund will be used;
- Barrels will be placed on plastic or wooden pallets in the temporary double plastic lined bund and not directly on the plastic; and
- Conventional metal barrels will not be used, however if there are no alternatives the materials may be stored in them providing they are covered with plastic sheet tightly fastened to prevent Aeolian distribution and again are stored in an appropriate waterproof platform to prevent leakage.

All contaminated materials that cannot be collected and disposed are to be cleaned in-situ. This cleaning is to be undertaken by an approved service providers.

10.10.3 Reporting

Any person involved in construction works that witnesses an incident must be able to report the incident to the responsible supervisor. The Environmental Coordinator shall be responsible for ensuring a report is filed describing the cause of the incident, action taken, the incident and recommended actions for ensuring the incident will not reoccur.

10.11 Physical cultural resource management plan

This plan must be prepared by the EPC. This plan ensures heritage cultural resources management will comply with all regulations and international good practices.

This plan will include:

- Awareness of the workers for the importance of cultural heritage respect
- Process in case of chance discovery: interruption of work, decision chain, security area implementation, etc.
- Workers training for process in case of chance discovery

10.12 Biodiversity management plan

This plan will include actions before construction, construction and operation phase. It will include at least :

- Introduction
- Stakeholders for biodiversity (expert identification)
- Mitigation measures in construction phase and operation phase for flora, flauna and avifauna
- Key indicators identification

- Training activities for employees
- Monitoring plan with methodology associated
- Procedures identification in case of bird carcass discovery
- Report
- Biodiversity management plan

10.13 Legislation procedure

This plan aims to idenfity all Moroccan legislation applicable to the project. It will base on legislation identified in the SESIA.

It aims to identify :

- all permits required before construction but also through out construction and operation phase.
- Permit process
- Permit schedule
- Regulatory monitoring process
- Reporting

10.14 Vehicle maintenance plan

The vehicle maintenance objectives is to provide safe, comfortable, and reliable transportation for passengers, and efficient operation for all the equipement to avoid work stoppages.

It will include at least :

- Roles and responsibilities
- Applicable regulation
- Vehicles and equipment inventory and process to update it regularly
- Preventive maintenance and repair activities
- Vehiclescleaning
- Vehicles and equipment maintenance to promote cost-efficiency
- Vehicle operations, repairs, and cleaning in compliance with applicable regulation
- Key indicators
- Monitoring and report.

11. Environmental and Social Safeguards Plan (ESSP)

The Environmental and Social Safeguard Plan (ESSP) ensures that environmental and social measures and actions are taken in order that the project will be compliant with environmental and social performance standards (PS).

For NOOR Midelt I, the main environmental en social performance standards concerned are :

- PS 1: Assessment and Management of Environmental and Social Risks and Impacts
- PS 2: Labour and working conditions
- PS 3: Rational use of resources and pollution prevention
- PS 6: Biodiversity conservation and sustainable natural resource management

The table below presents the actions implemented to ensure environemental and social safeguard.

Table 26 : Environmental and social safeguards plan

PS Targets	Actions implemented	Resources and responsabilities	Schedule	Indicators and monotoring
PS 1: Assessment and Management of Environmental and Social Risks and Impacts				
Identify the environmental and social risks and impacts of the project; Adopt a hierarchy in mitigation: anticipate, avoid, minimise, compensate Improve performance through an environmental and social management system; Engagement with affected communities or other stakeholders throughout the project cycle: Communication and	Environmental en social impacts are identified and managed through SESIA ans ESMP. The level of impacts after the implentation of mitigations measures are low or zero for the environmental and social components.	Project society	Design phase	SESIA and ESMP avalaible and approved
	EPC and O&M and their subcontractors set up an organization to manage environmental and social risks. EPC and O&M prepare : - Solid waste management plan - Hazardous materials management plan including blast management plan - Wastewater management plan - Traffic management plan - Risk management plan - Emergency response plan	EPC and O&M Co	construction and operation phases	CESMP and OESMP

PS Targets	Actions implemented	Resources and responsabilities	Schedule	Indicators and monotoring
grievance mechanisms.	A public consultation meeting is organized before the implementation of the project	EPC	Before the contract signature	Minutes of public consultation
	EPC and O&M set upt a grievance management mechanism (cf ESMP).	EPC	Construction and operation phases	CESMP and OESMP
	An environmental and social monitoring plan is implemented and audits are regularly conducted to ensure the proper management of environmental and social risks.	EPC	Construction and operation phases	CESMP and OESMP
PS 2: Labour and working conditions				
This criterion aims to establish, maintain and improve the working relationships between the workers and the management. It requires equal opportunities and fair treatment of workers and prohibits child labour and / or forced labour. Workplace conditions must provide safe and healthy working conditions that promote the health and well-being of employees. The environmental and social assessment must take into account the protection of workers and promote measuring processes that protect the health and safety of workers and local communities.	The EPC sets up a recruitment policy to integrate the local workforce. Training actions to strengthen skills could be proposed. The EPC sets up the following plans – Management plan of working and employment conditions, including workforce reductions; – Safety Management Plan (incorporated in the ESMP - construction) The EPC sets up the equipment (toilets, showers, canteen), supply of drinking water, to ensure healthy working conditions. For all work areas where risk can occur (dust, noise), employees will have the appropriate safety equipment (masks, hearing protection, etc.).	EPC	Construction phase	CESMP

PS Targets	Actions implemented	Resources and responsabilities	Schedule	Indicators and monotoring
PS 3: Rational use of resources and pollution prevention				
Avoid, minimise or reduce project-related pollution; Sustainable use of resources, including energy and water; Reduction of greenhouse gas emissions related to the project...	The design of the project allow to save water resources (Dry cooling system and dry cleaning for PV panels)	EPC	Design	OESMP
	The solid waste management plan aims to identify all the waste recycling actions either on site or towards external operators	EPC	Construction phase	CESMP
	Wastewater is treated. No effluents sent to natural environment. Monitoring of the treatment system is ensured	O&M Co	Design and operation phase	OESMP
PS 6 : Biodiversity conservation and sustainable natural resource management				
Protection and conservation of biodiversity Maintaining the benefits of ecosystem services; Promotion of sustainable management of living natural resources; Integration of conservation needs and development priorities.	The EPC and the O & M develop awareness actions for the employees and and more specifically on Houbara Bustard.	EPC and O&M	Construction and operation phases	CESMP and OESMP
	Mitigations measures for Houbara Bustard are : The living space of the Houbara Bustard (especially feeding, laying and breeding area on project's site) will certainly be affected and recommendations measures could be implemented such as the rehabilitation of the Halfah or Sage bush steppe on a limited area and/or around the space occupied by the solar park subject to discussion and agreement of all stakeholders In case of potential presence, eggs collection before works in coordination with Missour ECWP project that has implemented a rehabilitation programme for The Houbara Bustard (refer chapter 11.3.4 in SESIA report) Adding high viz tape to any fences to make them more obvious to flying or running birds	Project societyStakeholders	Construction and operation phases	OESMP
	Biodiversity monitoring in general and for birdlife in particular are set up to assess the impacts and identify if additional mitigation measures are necessary.	Project Society/EPC/O&M	Construction and operation phases	CESMP and OESMP