

Energy Valley Company

ESIA for Energy Valley Solar Power and Battery Storage Project in East Minya

(Non-Technical Executive Summary)

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September 2026

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Executive Summary

1. Introduction

Energy Valley is planning to develop the Energy Valley Solar Power and Battery Storage Project in the East Minya Region of Minya Governorate, Egypt. The project represents a strategic contribution to Egypt's renewable energy transition and supports the objectives of Egypt Vision 2030 through the promotion of low-carbon energy generation and sustainable industrial development.

The proposed development comprises a utility-scale photovoltaic (PV) power plant with a total installed capacity of approximately 1,950 MWp (DC) and an estimated 1,700 MWac export capacity, integrated with a Battery Energy Storage System (BESS) with a storage capacity of approximately 1,500 MWh. The project will utilize high-efficiency mono-crystalline bifacial PV modules mounted on single-axis tracking systems to maximize energy generation and operational efficiency.

The project is located on government-owned desert land within the East Minya renewable energy concession area allocated by the New and Renewable Energy Authority (NREA). The total project usufruct area is approximately 41 km², situated in a remote desert setting east of Minya Governorate, with no permanent residential settlements within the project footprint.

The generated electricity will be collected through an internal medium-voltage network and transmitted to an on-site 33/500 kV pooling substation, from which power will be evacuated to the national transmission grid through a new 500 kV overhead transmission line connection. The project is designed to provide a continuous renewable electricity supply to support the green industrialization of the Sarirya Industrial Zone and enhance grid reliability while reducing dependence on fossil-fuel-based power generation.

Envionics has been commissioned by Energy Valley and Scatec to prepare the Environmental and Social Impact Assessment (ESIA) for the East Minya Hybrid Facility in accordance with the requirements of the Egyptian Environmental Affairs Agency (EEAA), as well as the environmental and social requirements of international financial institutions, including the International Finance Corporation (IFC) Performance Standards, the European Bank for Reconstruction and Development (EBRD) Performance Requirements, the African Development Bank (AfDB) Integrated Safeguards System, the European Investment Bank (EIB) Environmental and Social Standards and Cassa depositi e prestiti S.p.A. (CDP).

This ESIA specifically addresses the East Minya Hybrid Facility, while associated facilities located in Nagaa Hammadi and Abu Qir are being assessed under separate ESIA studies in accordance with applicable national and international requirements.

Goals and Specific Objectives

The project aims to contribute to Egypt's renewable energy goals by generating clean electricity and enhancing grid stability through the integration of BESS.

The broad goal of the Environmental and Social Impact Assessment (ESIA) is to provide decision-makers and project proponents with information on potentially significant

environmental and social impacts and risks associated with the proposed PV Power Plant and BESS project in Nagaa Hammadi.

The specific objectives are:

- To identify potential positive and negative impacts of the proposed project.
- To suggest mitigation and enhancement measures for the identified significant adverse and beneficial impacts.
- To provide management and monitoring plans.
- To ensure that the proposed project complies with the national environmental regulations and international funding institutions' requirements.

2. Institutional and Legal frameworks

This framework includes both national legislation and international standards and guidelines.

National Legislation

The project must comply with Egyptian environmental and social laws and regulations, including:

Environmental Impact Assessment (EIA): The national Environmental Law 4/1994 (as amended by Laws 9/2009 and 105/2015) and its Executive Regulations require an EIA study for new projects. The EIA is to be submitted to the environmental authority for review and approval. According to the national regulations, this project is categorised as a Category Scoped-B projects.

The Egyptian Environmental Affairs Agency (EEAA) is the national authority responsible for reviewing and approving Environmental Impact Assessment (EIA) studies and monitoring compliance with applicable environmental legislation and permit conditions throughout project implementation and operation.

Air Quality and Atmospheric Emissions: Law 4/1994 and its associated regulations set maximum limits for ambient air pollutants and exhaust gases. The project will need to comply with these limits during both construction and operation.

Noise and Vibration: Environmental Law No. 4/1994 specifies maximum permissible noise levels for occupational and ambient environments.

Waste Management: The Waste Management Law 202/2020 and its Executive Regulations set requirements for managing non-hazardous and hazardous waste generated from the different activities.

Biodiversity Protection and Nature Conservation: Article 28 of Environmental Law 4/1994 prohibits activities that harm specific wild animals and plants and their habitats. Annex 4 of this law lists protected species. The project site is located within a desert environment of relatively low ecological sensitivity; however, biodiversity protection measures will be implemented where required.

Cultural Heritage: Law No. 117 of 1983 for the Protection of Antiquities, as amended by Law No. 3 of 2010, protects archaeological and cultural heritage resources. Chance-find procedures will be implemented during construction, and coordination with the Ministry of Tourism and Antiquities will be maintained where necessary.

Occupational Health and Safety: Labour Law No. 14 of 2025 and its associated ministerial decrees establish requirements for worker welfare, occupational health and safety, working hours, emergency preparedness, and the prevention of occupational hazards. These requirements apply to all project contractors and subcontractors.

Land Allocation and Renewable Energy Development: The project is being developed on land allocated by the New and Renewable Energy Authority (NREA) in accordance with national regulations governing renewable energy projects and land use in desert areas.

Community Health and Safety: Relevant provisions of Environmental Law No. 4/1994, Labour Law No. 14/2025, and other applicable legislation establish requirements for protecting nearby communities and road users from construction-related risks, traffic impacts, dust, noise, and emergency situations.

Institutional Framework

Several governmental entities have regulatory and oversight responsibilities for the project, including:

- **Egyptian Environmental Affairs Agency (EEAA):** Responsible for reviewing and approving the ESIA and monitoring environmental compliance.
- **New and Renewable Energy Authority (NREA):** Responsible for land allocation and oversight of renewable energy developments.
- **Egyptian Electricity Transmission Company (EETC):** Responsible for grid connection arrangements and electricity transmission infrastructure.
- **Ministry of Electricity and Renewable Energy (MoERE):** Provides strategic oversight of the electricity sector and renewable energy development.
- **Ministry of Labour:** Responsible for enforcement of labour and occupational health and safety requirements.
- **Minya Governorate and Local Authorities:** Responsible for local administrative coordination and permitting requirements.
- **Ministry of Tourism and Antiquities (MOTA):** Responsible for the protection of archaeological and cultural heritage resources.

International Standards and Guidelines

In addition to national legislation, the project will align with international standards and guidelines, particularly those of international financing institutions:

IFC Performance Standards (PS): The project will align with the International Finance Corporation's Performance Standards on Environmental and Social Sustainability, covering environmental and social assessment and management, labour and working conditions, resource efficiency, community health and safety, land acquisition, biodiversity conservation, cultural heritage, and stakeholder engagement.

EBRD Performance Requirements: The project will adhere to the EBRD Environmental and Social Policy and associated Performance Requirements governing environmental and social management, labour, resource efficiency, biodiversity, cultural heritage, and stakeholder engagement.

African Development Bank Group's Operational Safeguards (AFDB OS): The project will comply with the African Development Bank's Operational Safeguards and Environmental and Social Assessment Procedures, including requirements relating to environmental and social risk management, labour conditions, biodiversity conservation, pollution prevention, community health and safety, and stakeholder engagement.

European Investment Bank (EIB) Environmental and Social Standards: The project will be designed and implemented in accordance with applicable EIB Environmental and Social Standards, including those relating to environmental assessment, biodiversity, climate action, labour standards, and community health and safety.

World Bank EHS Guidelines: The General EHS Guidelines and relevant sector-specific guidance will be applied as Good International Industry Practice (GIIP) throughout the project lifecycle.

International Labour Organization (ILO) Conventions: The project will respect applicable ILO conventions ratified by Egypt, including those relating to occupational health and safety, non-discrimination, forced labour, child labour, freedom of association, and collective bargaining.

3. Project Description

Project location

The usufruct land allocated for the Energy Valley PV Plant covers an area of approximately 41 km² and is located in the eastern part of Minya Governorate, Egypt. The Project Site is situated within an undeveloped desert environment characterized by flat to gently undulating terrain, with no significant existing land use, permanent settlements, or infrastructure.

For spatial definition and accurate georeferencing of the Project boundary, the coordinate system used is Africa_Lambert_Conformal_Conic, as presented below.

Table 1: Coordinates of the Project Site (Africa_Lambert_Conformal_Conic)

Point	Easting (Longitude)	Northing (Latitude)
1	632032.4921602416	3035807.5252274573
2	624695.9596219833	3035706.2761660814
3	624414.0993877718	3034922.366002381
4	624483.9767640651	3033605.109857768
5	624537.3388341365	3033527.9947473705
6	624689.2237992727	3033096.5491323173
7	624938.7207172832	3032878.0961324275
8	625291.5657612912	3032878.325832367
9	626828.8022436886	3031715.6398382485
10	626834.7831908315	3030485.2029592395
11	635075.9186972552	3030596.964916587
12	635039.9421693081	3033316.4403622746

Figure 1 below illustrates the surrounding land uses and activities in the vicinity of the proposed Project Site.

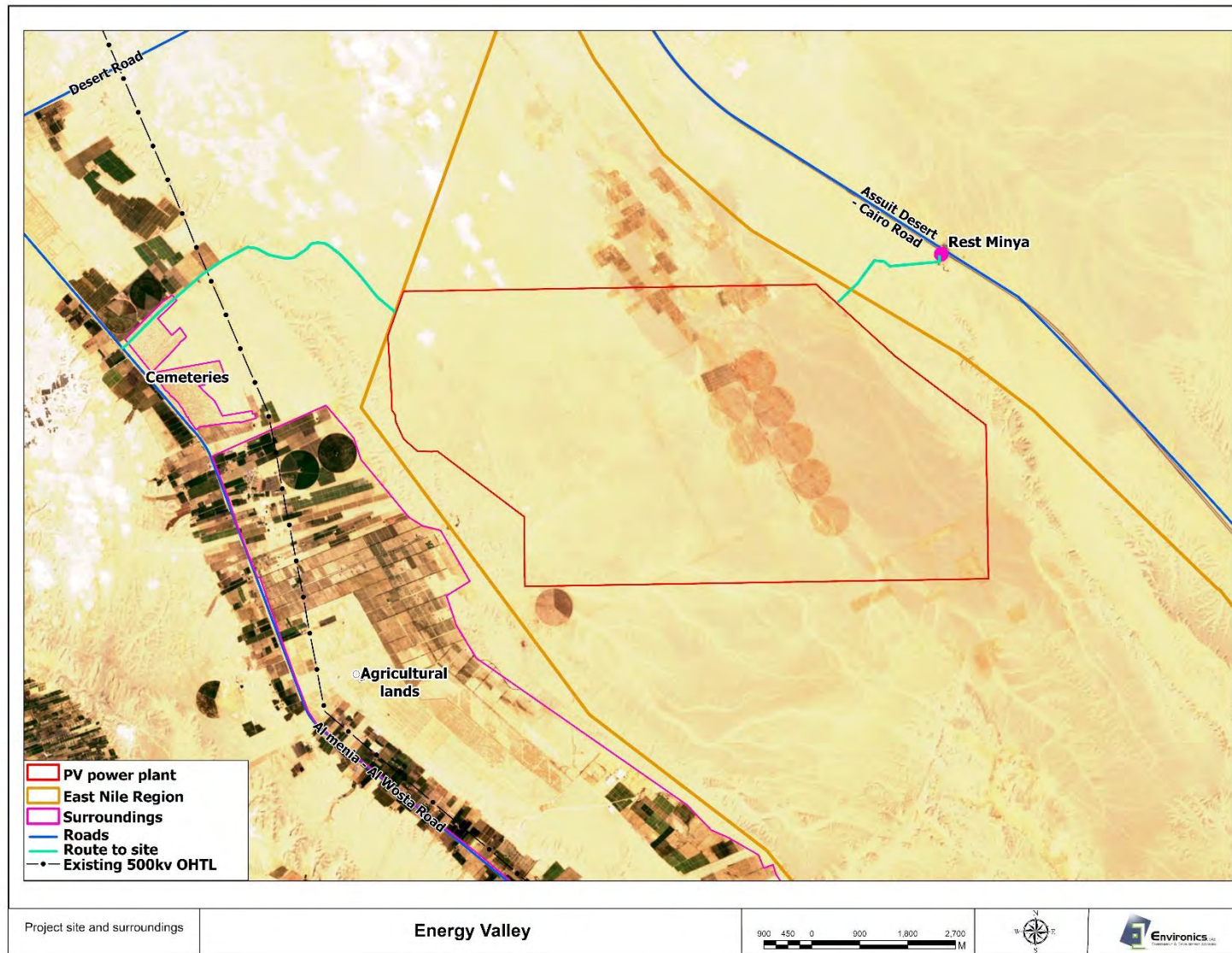


Figure 1: Activities/land uses surrounding the proposed site

Access to the Project Site is provided via the regional road network serving Minya Governorate, primarily the Cairo–Assiut Desert Road located approximately 1.2 km east of the site and the Ras Gharib–Minya Road approximately 4 km to the north, which will facilitate the transport of materials, equipment, and personnel during construction and operation phases.

Project components and main activities

The proposed Minya Hybrid Facility comprises four main integrated components, including a large-scale photovoltaic (PV) power plant, a battery energy storage system (BESS), internal electrical infrastructure, and grid evacuation facilities, supported by access and site development works.:

Solar Field (PV Modules): The Project includes a 1,950 MWp (DC) solar PV plant using mono-crystalline bifacial PV modules mounted on single-axis tracking systems (1P) to maximize energy generation.

The system comprises approximately 3 million PV modules (640–660 Wp each) connected through 2,496 inverters across 208 inverter/MV stations.

A 33 kV MV collection network aggregates power from PV blocks before step-up to a higher voltage.

The PV system represents the primary electricity generation source of the Project.

Battery Energy Storage System (BESS): The Project includes a 1,500 MWh lithium-ion (LFP) BESS designed to enhance grid stability and enable energy shifting.

The system consists of containerized battery units equipped with thermal management, SCADA, and safety systems.

It is designed for continuous 24-hour dispatch operation in line with the offtaker requirements.

The BMS provides monitoring, protection, and performance optimization of battery operation.

Cooling, fire suppression, and auxiliary systems ensure safe and reliable operation.

Internal Medium Voltage (33 kV) Collection System: An internal 33 kV MV network collects power from inverter stations and transfers it to the on-site substation. The system consists of interconnected MV circuits supported by overhead structures within the Project boundary. It is designed in accordance with IEC and Egyptian grid standards. The MV network ensures efficient aggregation of PV-generated electricity across the site. The entire system is located within undeveloped desert land with no permanent receptors.

Grid Connection Infrastructure: A 33/500 kV on-site substation steps up electricity for evacuation to the national grid. The substation includes multiple 330 MVA transformers providing redundancy and operational flexibility. Key components include switchgear, protection systems, and SCADA control. Electricity will be exported via 500 kV OHTLs to the national transmission network. External transmission lines are covered under separate ESIA studies.

Access Roads and Site Development: A 3.9 km access road connects the Project Site to the Cairo–Assiut Desert Road. The road supports the transport of materials, equipment, and personnel during construction and operation. Internal roads, drainage systems, and

temporary facilities will be developed within the site. Construction will follow national and international engineering standards.

Construction and Operational Facilities

Temporary construction facilities include offices, storage areas, worker accommodation, and sanitary units.

These facilities will support construction activities and will be dismantled after completion.

During operation, permanent O&M buildings, control rooms, and warehouses will be established.

Facilities will include security, administrative, and support services such as kitchens and prayer rooms. All structures will comply with Good International Industry Practice (GIIP) and applicable labor standards

4. Baseline conditions

Physical Environment:

- **Climate and Meteorology:**

The Project Site is located within an extremely arid desert climate characterised by high temperatures, negligible rainfall (annual average ~12.6 mm), abundant solar radiation (peak global radiation 755 W/m² in summer), moderate northerly winds (10–20 km/h), occasional sandstorms (up to 227 hours of events in March), and persistently low humidity.

- **Air Quality:**

Ambient air quality is generally good owing to the remote, sparsely inhabited setting and the absence of nearby industrial emission sources; however, windblown dust and particulate matter (PM₁₀, PM_{2.5}) can be elevated during sandstorm events.

- **Geology and Geomorphology:**

- **Geological Formations:** The Project Site is underlain by a dissected limestone plateau providing a stable foundation for the PV plant and BESS; soils are predominantly shallow, stony lithosols of limited fertility.
- **Topography:** Elevations range from 90–170 m amsl in the northern part to 170–265 m amsl across the remainder of the site; the generally flat terrain minimises the need for extensive earthworks.
- **Geomorphological Features:** The landscape is characterised by bare rocky desert with no sand dune fields onsite; the nearest dune field is approximately 35 km to the northwest across the Nile River.
- **Hydrology and Hydrogeology:** Surface water is absent, with no perennial rivers or streams; the nearest surface water is the Nile River ~13 km to the west. Groundwater lies at depths of 120–180 m below ground. Two wadi systems (Wadi Ibadah and Wadi Al-Birshawi) traverse the wider region but do not intersect the Project Site; flash flood risk to the site is therefore low.

Biological Environment:

The Project Site is largely composed of bare, homogeneous desert habitat. This was confirmed by satellite image analysis and validated by field surveys conducted by Environics in February 2026 across 18 survey points. The site is poor in terms of plant diversity and vegetation cover. Perennial plant life is confined to wadi systems, none of which extend to the Project Site. No critical habitats or protected areas are present within the Project's Area of Influence; the nearest protected area is Wadi El Assiuty, approximately 103 km to the southeast.

- **Habitats:** The Project Site falls within the Middle Section of the Inland Eastern Desert, characterised by flat, bare sandy soil and lithosolic substrate with sparse and highly localised vegetation. Portions of the site were formerly used for agricultural reclamation but have been fully dismantled by Minya Governorate. No significant water bodies, wetlands or ecologically distinct micro-zones are present.
- **Flora:** The site is almost entirely devoid of vegetation in non-reclaimed areas; a small number of native desert species were recorded during the February 2026 survey, with slightly more vigorous growth adjacent to previously reclaimed zones. No endemic or threatened plant species were recorded.
- **Fauna:** Based on species distribution maps, at least 10 reptile species may occur in the wider East Minya Region; no reptile signs were recorded during the February 2026 survey. Mammals potentially present in the site vicinity; however, mammal diversity and density are very low, and no signs of mammal presence were detected during the survey.
- **Avifauna:** Based on the Migratory Soaring Birds Tool (MSBT), the sensitivity of the Project Site to soaring migratory birds is very low (potential score: 0.000). Thirteen migratory species are potentially associated with the area. Under normal conditions, bird presence at the Project Site is expected to be extremely low as the site provides no food, water, shelter, perching or nesting resources. The Project Site is not suitable for resident breeding birds.

Socio-Economic Environment:

The Project Site is uninhabited, with the nearest residential community, New Minya City, located approximately 11.5 km to the west..

- **Population Density and Distribution:** The Project Site lies within Markaz El Minya, Minya Governorate, which has an estimated population of 6,511,377 (2025 CAPMAS estimate), 81% of whom reside in rural areas; the East Minya Region itself contains no settlements.
- **Labor Force and Economic Activities:** The local economy is predominantly agricultural (approximately 32% of the workforce) supplemented by mineral extraction, textiles and food processing; regional unemployment is estimated to exceed 10%, with low female labour force participation (~29%).
- **Land Use:** The Project Site is within the NREA East Minya concession designated for renewable energy development. Informal agricultural activities previously conducted within the site have been dismantled by Minya Governorate since January 2025; reclaimed agricultural lands exist immediately west of the concession boundary.
- **Infrastructure and Services:** No dedicated access roads, water supply network, natural gas, sewerage or communications infrastructure exist at the Project Site; access is via the Cairo–Assiut Road (~1.4 km east) and Cairo–Aswan Eastern Desert Road (~4.4 km west). The nearest power substation is New Al-Minya, approximately 9.7 km from the site.

Based on the review of the socio-economic baseline and stakeholder consultations conducted in February 2026, the wider area presents adequate infrastructure and services to support

the Project during construction and operation, and there is an available local labour force with the capacity to support maximisation of local hiring. No current land ownership claims exist within the NREA concession.

Tangible Cultural Heritage

No known or potential archaeological, historical or cultural heritage sites are present within the Project Site or within a surrounding buffer of more than 5 km. The nearest significant sites are Beni Hassan Rock-Cut Tombs (~14 km southwest) and the ancient capital of Tal El Amarna (~41.5 km southwest), both located along the Nile's eastern bank and outside the Project's Area of Influence.

5. Analyses of Project Alternatives

The analysis evaluates key project alternatives, in line with Egyptian legislation and applicable international standards.

- I. **No Project Alternative** :Under the No-Project Alternative, the anticipated contributions to Egypt's renewable energy and GHG emission reduction targets would not be realized, and associated local employment and procurement benefits would be lost.

The no-project alternative is not considered suitable and has been rejected.

- II. **Alternative Site Location** : The Project Site (41 km², East Minya) has been formally allocated by NREA, is free of conflicting land uses, and is technically suitable for large-scale solar PV development.

No alternative site has been considered; the allocated site is confirmed as appropriate.

- III. **Alternative PV Types**

- **Monocrystalline bifacial**: Highest efficiency, no hazardous substances, lowest land requirement (4–5 acres/MW). Selected.
- **Polycrystalline**: Lower cost but reduced efficiency and larger land footprint (7.5–9 acres/MW).
- **Thin-Film (Amorphous Si / CdTe / CIS)**: Good temperature performance but lower efficiency; CdTe and CIS contain hazardous substances (cadmium).

Monocrystalline bifacial modules selected for superior efficiency and environmental profile.

- IV. **Alternative Tracking Systems**

- **Fixed-Tilt**: Lowest cost and simplest maintenance; cannot follow the sun's path, yielding less energy.
- **Single-Axis Tracking**: Increases annual output by 15–25% over fixed-tilt; one motor per row. Selected.
- **Dual-Axis Tracking**: Higher yield but significantly more expensive and maintenance-intensive due to two motors per unit.

Single-axis tracking selected, balancing energy yield with cost and maintenance requirements.

- V. **Alternative Module Cleaning**

- **Manual / Semi-Automated Dry**: No water required but risks glass scratching, generates cloth waste, and demands high labour input.

- **Wet Cleaning (cloth or pressure washing):** Effective but requires 0.4–1.0 L/module per cycle, generates wastewater; not suitable for arid sites.
- **Automated Robotic Dry Cleaning (ARCS):** Waterless, no glass damage, minimal waste, remote-controlled, only 2 workers/shift required. Selected.

Automated robotic dry cleaning selected; eliminates water consumption and wastewater generation from module cleaning.

VI. BESS Alternatives

- **Lithium-Ion NMC / LFP:** Best-proven grid-scale technology; balanced energy density, safety, cycle life and cost. Selected.
- **Vanadium Redox Flow (VRFB):** Long cycle life but low energy density requires a large footprint and poses corrosive electrolyte spill risk.
- **Molten Metal (AMBRI):** Requires continuous heating to maintain electrode melt state, resulting in parasitic energy consumption.
- **Sodium-Ion (Na-ion):** Electrodes must be kept at 300–400°C, necessitating a permanent heating system.

Lithium-ion NMC or LFP is selected for the BESS.

VII. Water Sources Alternative

Water is required during construction approximately 4 m³/day of bottled mineral drinking water, 97 m³/day of municipal water for sanitary and domestic uses, and approximately 76 m³/day of water for construction-related activities. And for the operation (75–100 m³/month, sanitary use only; PV cleaning will be dry). Drinking water will be supplied as bottled water.

- **Groundwater Abstraction:** Occurs at >120 m depth with high salinity, requiring pre-treatment, brine disposal and Ministry permits. Not preferred.
- **Water Trucking:** Water is trucked from the nearest treatment plant and stored in on-site tanks; simple, flexible and consistent with the modest project demand. Preferred.

Water trucking was selected as the preferred supply option for construction and operation.

6. Assessment of Environmental and Social Risks and Impacts

This chapter evaluates the potential environmental and social risks and impacts of the project. It includes a detailed analysis of the project's risks and impacts and emphasizing the mitigation hierarchy: avoiding, minimizing, mitigating for impacts.

Positive impacts include the production of a clean, renewable solar energy from a 1,950 MWp (DC) plant, reducing GHG emissions by approximately 1.22 million tCO₂e per year compared to fossil fuel-based grid generation, and avoiding air pollutants. Additionally, the project conserves water resources in this desert area, integrates renewable energy into the national grid via a BESS, and provides approximately 5,000 direct construction jobs at peak, with more than 50% targeted from local Minya communities, approximately 30 permanent operational positions, and more than 500 indirect jobs¹ in the supply chain.

¹ The estimate of more than 500 indirect jobs is indicative and based on experience from previous Scatec projects rather than a Project-specific modeled figure. It includes potential employment supported through suppliers and service providers and wider Project-related economic activity.

Summary of the potential negative impacts on the environment and society during the construction, operation and decommissioning phases of the project illustrated in table below.

Table 2: Summary of the social and Environmental Aspects, Mitigation Measures, and Residual risks and Impacts

Environmental and social Aspects	Expected Impacts	Mitigation Measures Summary	Residual Impacts
Construction Phase			
Air Quality			
Air Quality	MINOR	- Implement policies/procedures to reduce idling times for vehicles and machinery. - Maintaining machinery and vehicles in good working conditions to minimize fugitive emissions and exhaust. - Ensuring workers are aware of safe driving and maintain good practices in machinery usage. - Emissions from power generator stacks will comply with Law 4/1994 and its relevant ERs. - Implement dust suppression measures	INSIGNIFICANT
Ambient Noise			
- Equipment and machinery - Vehicle Movement - Power Generators	MINOR	- Ensuring regular maintenance of construction equipment and machinery to minimize noise emissions. - Use low-noise machinery and equipment where possible. - Schedule high-noise activities to avoid simultaneous operations that could amplify noise levels. - Provide hearing protection equipment to workers exposed to high noise levels.	INSIGNIFICANT
Impacts on Soil			
Domestic wastewater tanks, material and wastes storage, and accidental spills	MINOR	- Maintain good housekeeping practices to ensure a clean and organized construction site. - Conduct maintenance of vehicles, trucks, and construction equipment off-site to reduce on-site effluents and spills. - Collect and dispose of spillages from tank filling or generator operation through licensed/authorized waste contractors. - Develop and implement a spill management plan - Collect and transport wastewater by authorized contractors to ensure proper disposal and prevent contamination. - Collect waste at designated collection points and store it in appropriate containers following regulations. - Use licensed contractors for the collection and disposal of non-hazardous waste.	INSIGNIFICANT

Environmental and social Aspects	Expected Impacts	Mitigation Measures Summary	Residual Impacts
		- Establish marked and physically separated storage areas for hazardous waste. - Use licensed contractors for the collection and disposal of hazardous waste	
Impacts on the Biological Environment			
• Habitat loss, modification, and fragmentation	MINOR	- Limit construction activities strictly to the approved project footprint to avoid unnecessary disturbance of surrounding areas. - Implement strict housekeeping practices onsite and offsite to prevent degradation of adjacent habitats. - Avoid disturbance of offsite areas where any vegetation may be present. - Enforce speed limits for all project-related vehicles to minimize fauna disturbance and collision risks. - Provide environmental awareness training to workers on the importance of protecting natural habitats and avoiding wildlife disturbance. - Where feasible, implement wildlife-friendly fencing designed to allow the safe movement of small fauna, including visible fencing and clearance at the lower fence line.	Insignificant
Disturbance to wildlife	MINOR	- Develop and implement solid waste, hazardous waste, and wastewater management plans to prevent attraction of fauna. - Maintain good housekeeping practices across all construction areas. - Provide environmental awareness training to workers on minimizing wildlife disturbance. - Enforce speed limits and prohibit off-track driving by construction vehicles. - Ensure regular maintenance of construction equipment to minimize noise and vibration emissions	Insignificant
• Attraction of pests and propagation of invasive species	MINOR	- Develop and implement a solid waste, hazardous waste, and wastewater management plan covering collection, storage, transport, and disposal. - Ensure food storage and eating areas are secured and inaccessible to animals. - Enforce strict housekeeping practices across all construction and accommodation areas. - Provide worker awareness training on the environmental risks associated with improper waste and wastewater management	Insignificant

Environmental and social Aspects	Expected Impacts	Mitigation Measures Summary	Residual Impacts
Impacts on the Social Environment			
• Water Resources	INSIGNIFICANT	- The Contractor will source water only from licensed and approved water supply facilities and transport it to the site using authorized tanker trucks. - A Water Management Plan will be implemented as part of the Construction Environmental and Social Management Plan (CESMP), including procedures for water supply, storage, monitoring, and reporting. - Water consumption will be regularly monitored and recorded . - Water-saving practices will be applied during construction activities, including controlled use of water for dust suppression and equipment cleaning - Storage tanks and distribution lines will be regularly inspected to prevent leakage or water losses.	No Residual impacts
• Worker Influx	MINOR	- Prioritise hiring local workers not only to increase benefits to local communities, but also to reduce the number of incoming workers and minimize social disruption. - Prohibit "hiring at the door" to control speculative job seekers. Job advertisement and applications receipt will be through the governorate labour office. - Provide adequate on-site accommodation facilities for workers to prevent overburdening local infrastructure. - Implement and monitor site-specific waste management procedures for on-site camp, including segregation, safe storage, and proper disposal of waste through licensed contractors. - Develop Workers' Code of Conduct to ensure respectful behavior toward local communities, compliance with health and safety standards, and prevention of GBV/SH incidents	INSIGNIFICANT
Infrastructure			
• Land use	INSIGNIFICANT	No land ownership claims or other types of land uses exist at the project site. This was confirmed during stakeholders' meetings with local government representatives and nearby land uses and no risks are perceived in this regard	No Residual impacts
• Traffic	MODERATE	Scatec shall develop Transportation Management Procedures that apply to Scatec projects and operations, as well as their contractors and subcontractors. The procedure defines the minimum safety requirements for Scatec's transportation	MINOR

Environmental and social Aspects	Expected Impacts	Mitigation Measures Summary	Residual Impacts
		activities. The requirements are supplementary to national regulatory specifications and project or business unit specifications and/or insurance requirements	
Occupational Health and Safety			
Impacts on workforce health and safety	MODERATE	- The excavation sites will be surrounded with warning signs to prohibit access to these places; - Contractors will ensure that construction workers will be continuously supervised through the continuous presence of on-site supervisor(s) for close inspection and management of the construction activities; - Ensure proper training for operators, regular maintenance of equipment, and implementation of safety protocols. - Provide adequate hydration, schedule work during cooler parts of the day, and allow for regular breaks in shaded areas. - Restrict vehicles speed so that they do not exceed the safety limit inside the site premises (15-20 km/h) - All equipment will be inspected before the start of the job to ensure the safety of the workers; - Use of personal protective equipment (PPE) - Provide hearing protection, implement noise control measures, and schedule regular breaks for workers. - Provide training on proper lifting techniques, and the use of mechanical aids. - Implement fire prevention measures, maintain fire extinguishers on-site, and conduct fire safety training.	MINOR
Site Security	MINOR	The security personnel will be adequately trained, have appropriate conduct toward workers and the community, and to act within the applicable law. Furthermore, a grievance mechanism will be developed to allow the potentially affected community to express concerns about the security arrangements and acts of security personnel	INSIGNIFICANT
Impact on Cultural Heritage	MINOR	- Implement a Chance Find Procedure consistent with national legislation and IFC Performance Standard 8, to be applied in the event that any archaeological remains or culturally significant materials are discovered during construction. - Ensure that all construction contractors and site personnel are informed and trained on the Chance Find Procedure prior to the commencement of ground-disturbing activities.	INSIGNIFICANT

Environmental and social Aspects	Expected Impacts	Mitigation Measures Summary	Residual Impacts
		- In the event of a chance find: - o Immediately suspend work in the vicinity of the discovery; - o Secure and demarcate the area to prevent damage or unauthorized access; - o Notify the relevant competent authorities; and - o Resume work only after clearance and guidance are provided by the competent authority. - Limit excavation and ground disturbance activities strictly to approved areas and depths	
Operation Phase			
Air Quality			
• Emissions from emergency generator	MINOR	- Optimize the operation of backup generators to reduce usage and emissions. - Conduct annual stack emission measurements for the emergency generators - If SF6 is used as an insulator instead of air insulation, the mitigation measures will include leak detection and repair, use proper chamber vacuums during filling the SF6 into the GIS, and employee education/training.	INSIGNIFICANT
Ambient Noise & Vibration			
• Operation of Transformers, and other operational components of battery energy storage systems. • Use of backup generators during power outages	MINOR to Insignificant	- Potential noise-generating machines and equipment are designed to meet statutory regulations concerning noise. - Workers at noise-generating machinery and equipment will be provided with suitable personal protective equipment (PPEs).	INSIGNIFICANT
Impact on the Biological Environment			
• Disturbance to wildlife (excluding avifauna)	MINOR	- Utilize motion sensors, timers, and smart lighting controls. Use lighting with reduced blue-spectrum emissions to minimize nocturnal fauna disorientation - Develop, implement and update a solid waste, hazardous waste and wastewater management plan ;	INSIGNIFICANT I

Environmental and social Aspects	Expected Impacts	Mitigation Measures Summary	Residual Impacts
		- Provide awareness to the workers on the negative impacts of disturbing any wild fauna; - Ensure proper housekeeping practice; - Ensure that food storage areas are inaccessible to animals; - Avoid high intensity light that may disturb offsite fauna; - Ensure speed control and the prohibition of off-track driving; - Ensure the proper maintenance of equipment and any other equipment with high noise and vibration potential; - Ensure that the generators are properly insulated to avoid noise emissions; and - Ensure that workers do not disturb native fauna potentially encountered.	
Risks and Impacts on Avifauna			
• Bird collision with internal 33 kV MV OHTL conductors during operation	Insignificant	- Proper waste and wastewater management to avoid attracting birds to the site. - Monitoring of bird mortality incidents and implementation of corrective measures if required.	Insignificant
Electrocution Bird electrocution at substations and internal electrical infrastructure	MODERATE	- Adequate separation distances between energized components and earthed structures, in line with international good practice; - Increase the use of insulated conductors and fittings at locations where birds could potentially perch; - Cover exposed conductive elements with insulating materials where required, subject to engineering design constraints; and - Conduct regular inspections and maintenance to ensure the continued effectiveness of avifaunal protection measures	MINOR to INSIGNIFICANT
Impact on the Social Environment			
• Water Resources	INSIGNIFICANT	No specific mitigation measures are required given the limited water consumption and wastewater generation during the operational phase. However, management measures are implemented, whereby wastewater generated during operation will be collected by a licensed contractor and transported to designated and approved treatment plants	No residual impact

Environmental and social Aspects	Expected Impacts	Mitigation Measures Summary	Residual Impacts
• Waste generation	INSIGNIFICANT	No specific mitigation measures are required given the low volumes of waste generated during operation. However, the following management measures are implemented : - Collection of non-hazardous waste at designated points in appropriate containers and disposal through licensed contractors. - Establishment of segregated, clearly marked storage for hazardous waste, with collection and disposal by licensed contractors. - End-of-life batteries and damaged PV modules will be returned to suppliers or sent to authorized recycling facilities, following sustainable recycling strategies where available	
• Visual effects/ Glint and Glare	INSIGNIFICANT	No visual or ocular hazards are expected under the current system design and operational parameters. Therefore, no additional mitigation measures are required beyond standard operational and maintenance practices, such as ensuring the cleanliness of panels and maintaining their anti-reflective coatings	No residual impact
Impacts on Occupational Health and Safety			
• Impacts on the workplace	INSIGNIFICANT	- Development and maintenance of a comprehensive OHS Management Plan, including risk assessment, incident reporting, and emergency preparedness. - Implementation of a formal Health and Safety Policy. - Compliance with all relevant national occupational health and safety regulations, including Labour Law 12/2003 and 14/2025. - Provision of appropriate personal protective equipment (PPE) to all operational staff	No Residual Impacts
Potential Fire and Thermal Runaway Risks			
Presence and conduct of contracted security personnel and their interaction with workers and the surrounding community.	INSIGNIFICANT	- Implement battery management and monitoring systems. - Maintain fire detection and suppression systems in accordance with manufacturer requirements. - Develop and implement emergency preparedness and response procedures. - Conduct periodic inspection and maintenance of battery systems and associated safety equipment.	No Residual Impacts

Environmental and social Aspects	Expected Impacts	Mitigation Measures Summary	Residual Impacts
Impacts of Site Security			
Presence and conduct of contracted security personnel and their interaction with workers and the surrounding community.	INSIGNIFICANT	- Ensure security personnel are adequately trained and comply with applicable laws, company procedures, and recognized codes of conduct. - Establish a grievance mechanism for workers and community members to report concerns regarding security personnel or operations. - Implement continuous monitoring and supervision of security activities to ensure compliance with procedures and standards.	No Residual Impacts
Impacts On Climate Change			
- Minor vehicle emissions - Emergency backup diesel generator emissions	INSIGNIFICANT	- Use modern GIS equipment with strict SF₆ handling, leakage prevention, and maintenance protocols. - Implement preventive maintenance for all electrical and mechanical systems to minimize emissions risks. - Ensure efficient operation of vehicles and limit unnecessary site movements - Comply with IPCC methodologies and applicable reporting thresholds (e.g., EBRD 20,000 tCO₂e criteria).	No Residual Impacts
Impacts of the Environment on the Project			
Dust and Sand	MODERATE	- Implement periodic PV module cleaning and preventive maintenance. - Select abrasion-resistant modules. - Adjust tracking system tilt during high wind/sand events to reduce exposure	MINOR
Extreme Heat	MINOR	- Use liquid-based active cooling and real-time temperature sensors for BESS. - Implement heat stress management for workers (shaded areas, hydration). - Continuous performance monitoring to identify efficiency losses	INSIGNIFICANT
Flash Floods	MINOR	- Design foundations to account for mapped scour risk (depth ≥ 0.5 m). - Implement minor internal drainage interventions to manage localized runoff.	INSIGNIFICANT

Environmental and social Aspects	Expected Impacts	Mitigation Measures Summary	Residual Impacts
Cumulative Impacts (Construction & Operation)			
• Traffic, Air, Water, Worker Influx)	INSIGNIFICANT	- Coordinate construction schedules with other foreseeable projects to avoid peak overlaps. - Utilize regional desert roads with low traffic density. - Adhere to the Program-wide Transportation and Labor Management Plans	INSIGNIFICANT
Decommissioning Phase			
Soil, Water, Air, Noise, OHS	MINOR	- Focus on proper handling, management, and disposal of hazardous and non-hazardous waste streams - .Restore the site to its original condition where feasible	Insignificant
Waste Management End-of-Life Batteries and Hazardous Waste	MINOR	- Development of Battery Waste Management Procedure. - Temporary storage in dedicated hazardous waste areas. - Use of licensed hazardous waste transporters and recyclers. - Battery take-back arrangements with suppliers where feasible.	Insignificant

7. Stakeholders' Consultation

The process included early stakeholder identification, continuous engagement during ESIA preparation, and transparent information disclosure to ensure meaningful participation.

E&S Scoping Activities

Scoping meetings were held between January and March 2026, with discussions covering environmental, social, and economic aspects of the Project. Stakeholders broadly expressed strong support for the Project, particularly due to its contribution to renewable energy, improved energy security, and job creation.

Key issues raised included: Employment opportunities, prioritization of local labor, Worker accommodation and social impacts, Utility demand, Community benefits, training, and capacity building, grievance mechanism and community engagement

ESIA Disclosure

Although national guidelines for Category scoped B projects do not require formal public disclosure meetings, a disclosure process will be implemented in line with lender requirements.

The disclosure approach includes:

- Targeted invitations to local, municipal, and governorate-level stakeholders, including vulnerable groups
- Public announcement of the meeting 10–15 days in advance
- Distribution of an Arabic Non-Technical Summary (NTS) and online access
- Availability of comment forms for feedback during and after the meeting (up to 2 weeks)
- A disclosure venue in Minya Governorate (to be confirmed)

All stakeholder feedback, attendance records, and meeting outcomes will be documented and included in the ESIA Annexes.

8. Environmental and Social Management Plan

The project will develop and implement an Environmental and Social Management Plan (ESMP) outlining specific mitigation and monitoring measures to ensure compliance with all applicable legal and institutional requirements.

Institutional Arrangements:

Defined roles and responsibilities for implementing the ESMP, involving the project proponent, contractors, and relevant government agencies to ensure accountability and effective coordination among stakeholders.

Several governmental entities have regulatory and oversight responsibilities for the project, including:

- **Egyptian Environmental Affairs Agency (EEAA):** Responsible for reviewing and approving the ESIA and monitoring environmental compliance.
- **New and Renewable Energy Authority (NREA):** Responsible for land allocation and oversight of renewable energy developments.

- **Egyptian Electricity Transmission Company (EETC):** Responsible for grid connection arrangements and electricity transmission infrastructure.
- **Ministry of Electricity and Renewable Energy (MoERE):** Provides strategic oversight of the electricity sector and renewable energy development.
- **Ministry of Labour:** Responsible for enforcement of labour and occupational health and safety requirements.
- **Minya Governorate and Local Authorities:** Responsible for local administrative coordination and permitting requirements.
- **Ministry of Tourism and Antiquities (MOTA):** Responsible for the protection of archaeological and cultural heritage resources.

Environmental and Social Management Plans include the following:

- Health, Safety and Environment (HSE) Plan
- Transportation Management Plan
- Noise Management plan
- Hazardous and Non-hazardous waste management plan
- Water and wastewater management
- Chance Find Procedure
- Preventive and corrective maintenance
- Wastewater Management Plan
- Housekeeping and Cleanliness
- Social Management Plan includes Energy Valley 's SEAH and GBV Management Plan

Capacity Building:

- Provisions for training and capacity building for project staff and contractors on best practices in environmental and social management, enhancing their ability to effectively implement the ESMP.

Table 3: Overview of the ESMP Plans

Aspect	Issues of concern	Actions	Party Implementing the Action	Indicator of completion	Estimated Cost (USD)	Required Completion Date
Construction Phase						
Air Quality	Dust emissions	- Reduce idling times for vehicles and machinery; - Maintaining machinery and vehicles in good working order - Speed restriction on sites; - Ensuring workers are aware of safe driving and maintaining good practices in machinery usage; and - Periodic measurements for stacks of generators	Construction contractor	- Monitoring plan - Air quality measurements	15,000 – 20,000 / year	Throughout the construction phase period
	working conditions of machinery	- Ensure good working conditions through frequent inspection of all construction equipment - Implementation of OHS plans	Construction contractor	Maintenance logs OHS plan	50,000 – 70,000 (included in EPC O&M allowance)	
Noise Level	working conditions of machinery	- Regular maintenance of construction equipment - Use low-noise equipment, where possible; - Schedule high-noise activities to avoid simultaneous operations that could amplify noise levels; - Schedule high-noise activities to take place in morning hours - Implementation of OHS plans	Construction contractor	OHS plan Noise measurements and Maintenance logs	10,000 – 15,000 / year	Throughout the construction phase period
	Provision of PPEs	- Providing necessary PPE for workers	Construction contractor		20,000 – 40,000 (PPE supply - total project period)	
Soil	housekeeping practices	- Develop and implement site management plan, solid waste management and wastewater	Construction contractor Developer (include provisions in the construction contracts.	- Waste and wastewater management plans	6,000 – 80,000 (depends on waste volume)	Throughout the construction phase period

Aspect	Issues of concern	Actions	Party Implementing the Action	Indicator of completion	Estimated Cost (USD)	Required Completion Date
Construction Phase						
	Waste/wastewater management	management plans and spill prevention plan - Proper collection, containment, and disposal of sanitary wastewater - Proper collection, containment, and disposal of sanitary wastewater - hazardous materials storage and handling according to the WBG General EHS Guidelines, - Transportation and disposal to be carried out through authorized waste contractors	Developers to ensure contractors' compliance)	- Solid/hazardous waste and wastewater management contract - Contractor follow-up documents - Contracts with authorized waste contractors		
Occupational Health and Safety	Site Staff and Workplace Safety	- Developing OHS plan and HSE procedures according to national requirements and international standards	Contractor	OHS plan and procedures HSE provisions in the construction contracts	60,000 – 80,000	Before construction activities
Emergency Response plans	Site Staff and Workplace Safety	- Develop procedures for emergency control	Contractor	Emergency response plan	30,000 – 80,000	Before project commissioning
Waste management	Worker's health	- Developing a solid and hazardous waste management plans in line with the WBG General EHS Guidelines." - Developing OHS plans - Different types of waste to be stored in designated waste areas, and transported by licensed contractors	Construction contractor	Solid waste management contract with authorized contractors Waste manifest OHS plan	200 – 600 EUR/ton (hazardous waste) 80 – 150 EUR/ton (non-hazardous)	Throughout the construction phase period

Aspect	Issues of concern	Actions	Party Implementing the Action	Indicator of completion	Estimated Cost (USD)	Required Completion Date
Construction Phase						
Biological Environment	Pests and invasive species	- Good housekeeping and proper waste management	Construction contractor	Waste management contract	10,000 – 25,000 (one-time)	Throughout the construction phase
	Disturbance to wildlife	- Awareness (toolbox talks and awareness signs) - Implementation of mitigation measures - Supervision and implementation of deterring measures	Construction contractor	Requirements specified in contracts		Throughout the construction phase
Social Environment	Workers influx	- Prioritize hiring local workers - Implement and maintain a community grievance mechanism; and, - Selection of labour accommodation, away from existing communities, as possible, and considering establishing a labour camp on site. - Develop HR policies including GBV and SEAH plans	Developer/Construction contractors	Labour management plan, workers accommodation inspection checklist GBV and SEAH policies Workers Awareness	50,000 – 150,000 / year	Throughout the construction phase period
	Community health, safety and security- risks from road traffic accidents	- Develop Traffic Management Plan (TMP) and associated procedures	Construction contractors	TMP and procedures	40,000 – 100,000	
	Cultural heritage	- develop chance find procedure	Developer/Construction contractors	Developed procedures	5,000 – 15,000	Before construction activities

Aspect	Issues of concern	Actions	Party Implementing the Action	Indicator of completion	Estimated Cost (USD)	Required completion Date
Operation Phase						
Air quality	Backup generator emissions	- Optimize the operation of backup generators to reduce usage and emissions. - Conducting regular maintenance and periodic emissions monitoring of generators to ensure efficient operation and minimize air emissions	Developer	Emission measurements Maintenance records	15,000 – 20,000 / year	Periodically throughout the operation stage
Noise	Transformers and BESS	- Workers at noise generating machinery and equipment will be provided with suitable (PPEs). - A grievance mechanism will be adopted for assessing complaints	Developer	Noise measurements	10,000 – 15,000 / year	Periodically throughout the operation stage
Biological Environment	Same as for the construction phase	- Same as for the construction phase	Developer	Reports	10,000 – 25,000 (one-time)	Throughout the project lifetime
Impact on the social environment	Water consumption	- Water demand stewarter generated during the operation phase is minimal and will be collected coordination between the project and the water company to plan the sources of waterby an approved contractor and discharged to designated treatment plants	Developer	Water management plan	10,000–30,000 / year (mainly contractor fees)	Throughout the project lifetime
	Wastewater management	- Wastewater generated during the operation phase is minimal and will be collected by an approved contractor and discharged to designated treatment plants	Developer	Wastewater management plan		Throughout the project lifetime
Labour rights and welfare	working conditions	Develop Human Resources policy	Developer	Contracts (with workers)	Included in OPEX (negligible direct ESMP cost)	Throughout the project lifetime
Training and Awareness	competence of the project personnel	training for the personnel according to their particular responsibilities	Developer	Training plans	10,000–25,000 / year	Throughout the project lifetime

Aspect	Issues of concern	Actions	Party Implementing the Action	Indicator of completion	Estimated Cost (USD)	Required completion Date
Occupational Health and Safety	Site Staff and Workplace Safety	- Developing HSE procedures	Developer	Development of HSE policies	15,000–40,000 / year	Before project commissioning
Emergency Preparedness and Response	Operational risk management	- Adopt a probabilistic risk assessment framework	Developer	Emergency response plan	5,000–20,000 / year	Before project commissioning
Community health, safety, and site security	- risk of road traffic accidents - Site security	- Develop site security and safety plan - Develop a grievance mechanism	Developer	- security plan - SEP and grievance mechanism and register	25,000–70,000 / year	Throughout the project lifetime
Decommissioning Phase						
Decommissioning Planning	- Inadequate planning and coordination	- Prepare and implement a Decommissioning Plan.	Energy Valley	- Approved Decommissioning Plan	40,000 – 80,000	Prior to decommissioning
Air Quality	- Dust and air emissions from dismantling and demolition	- Apply dust suppression measures	Decommissioning Contractor	Emission measurements	20,000 – 40,000	Throughout decommissioning
Noise	- Noise from demolition and equipment removal	- Limit noisy activities, maintain equipment in good working condition, and provide PPE where required.	Decommissioning Contractor	- Noise measurements	15,000 – 30,000	Throughout decommissioning
Waste Management	- Generation of hazardous and non-hazardous waste	- Segregate, reuse/recycle where feasible, and dispose of wastes through licensed facilities.	Decommissioning Contractor	- Waste management contracts	150,000 – 300,000	Throughout decommissioning
Occupational Health and Safety	- Worker injuries during dismantling and demolition	- Implement OHS procedures, provide PPE, training, and emergency preparedness.	Decommissioning Contractor	- No major incidents - OHS inspection records	60,000 – 120,000	Throughout decommissioning
Site Restoration	- Residual contamination and disturbed land	- Remove remaining structures, clean up the site, remediate if required, and restore the site where feasible.	Decommissioning Contractor / Energy Valley	- Site restoration completed and approved	500,000 – 1,500,000	Before project closure

Aspect		Issues of concern	Actions	Party Implementing the Action	Indicator of completion	Estimated Cost (USD)	Required completion Date
Consolidated Estimated Annual Environmental and Social Monitoring Budget							
		Construction Phase	Operation Phase	Decommissioning Phase			
Estimated Total Annual Cost	(USD)	≈ 845,000 USD	≈ 380,000 USD / year	≈ 785,000–2,070,000 USD			
	(EGP)	≈ 42,250,000 EGP	≈ 19,000,000 EGP / year	≈ 39,250,000–103,500,000 EGP			

9. Conclusion

The Energy Valley Solar Power and Battery Storage Project represents a strategic contribution to Egypt's national objectives for energy diversification, security of supply, and increased penetration of renewable energy resources, thereby reducing reliance on imported fossil fuels. In this context, the No-Project Alternative is not considered a viable option, as it would forego significant environmental and socio-economic benefits associated with the development.

The ESIA has identified and evaluated the potential environmental and social impacts associated with the Project across its construction, operation, and decommissioning phases. To ensure environmental and social sustainability, the project will implement rigorous dust suppression, waste management, and spill prevention protocols throughout the construction phase.

Operational risks are mitigated through specialized avifaunal protection, such as insulated fittings, alongside BESS safety systems featuring continuous thermal monitoring and automated fire suppression. Furthermore, socio-economic integrity is maintained by prioritizing local labor to minimize influx disruption and ensuring transparent communication through a robust, accessible grievance mechanism.

To support the effective implementation of all Environmental and Social (E&S) mitigation, monitoring, management, and reporting measures identified in the Environmental and Social Management Plan (ESMP), the Project has allocated adequate financial resources. The estimated ESMP implementation budget is approximately USD 845,000 during the construction phase and approximately USD 380,000 per year during the operation phase, covering environmental monitoring, occupational health and safety, waste management, biodiversity conservation, stakeholder engagement, emergency preparedness, training, and other environmental and social management requirements.

With the implementation of the proposed Environmental and Social Management Plans (ESMPs), monitoring frameworks, and mitigation measures, the residual impacts are expected to remain within acceptable limits.

The Project is therefore considered environmentally and socially feasible, provided that all ESIA commitments are fully implemented and continuously monitored throughout its lifecycle.