Environmental and Social Review Summary

Feed in Tariff Program – TK for Solar and Renewable Energy Systems

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

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

Country: Arab Republic of Egypt
Sector: Energy and Extractives
Project Enterprise: TK for Solar and Renewable Energy Systems
Environmental Category: B
Date ESRS Disclosed: August 1, 2017
Status: Due Diligence

A. Project Description

International Company for Water and Power Projects (ACWA Power or developer) is seeking MIGA coverage of the commercial debt tranche for TK for Solar and Renewable Energy Systems (TK), hereafter together referred to as the ‘Project Enterprise’. TK is a Special Purpose Vehicle (SPV) company to be indirectly owned by ACWA Power, Al Tawakol Electrical Co. incorporated in Egypt (Al Tawakol), and Hassan Allam Holding incorporated in Egypt (Hassan Allam). TK will be responsible for managing construction and operational aspects for the project. TK’s project, hereafter referred to as the ‘project’, comprises a 20 Mega Watts alternative current (MWAC) solar PV plant located in the Benban solar complex in the Aswan Province of Egypt. The project forms part of the Egyptian government feed-in-tariff (FiT) scheme aimed at diversifying and securing Egypt’s electricity supply. The European Bank for Reconstruction and Development (EBRD) is also providing long term senior debt financing to the project.

In addition to the TK project, ACWA Power is seeking MIGA coverage of the commercial debt tranche on two other projects within the Benban solar complex: ACWA Benban One for Energy and Alcom Energy. Individual ESRSs have been prepared for each project.
The project is allocated to plot 42-4 (approximately 49 hectares (Ha) contiguous with 43-4, the ACWA Benban One for Energy site) in the Benban solar complex. The project will have alternating current capacity of 20 MW\textsubscript{AC} and peak direct current capacity of 28 MW\textsubscript{DCP}, and will be linked to substation 4 (SS4) on the southeastern corner of the Benban complex via an underground 22 kilovolt (kV) transmission line following the internal routes right-of-way (RoW) installed by EETC. SS4 covers an area of 50 km\textsuperscript{2}.

The Benban solar complex comprises a 37-square kilometer (km\textsuperscript{2}) area allocated to Egypt's New and Renewable Energy Agency (NREA) located in the western desert, 15 km west of the River Nile and approximately 1 km west of Aswan – Luxor highway. The complex is approximately 650 kilometers (km) from Cairo. With the exception of the narrow and densely populated Nile Valley with its intensive agriculture, the area is all desert land, largely unused and unpopulated. The area is mainly flat, with sand and gravel dunes, and with no notable natural vegetation and no human activities. The nearest villages are Benban village, about 12 km east and Fares village about 25 km northeast of the Benban solar complex, with 26,200 and 11,000 inhabitants respectively. The nearest cities are Aswan, 40 km south and Luxor 140 km north.

The Benban solar complex was sub-divided into 39 plots each allowing for a solar plant of up to 50 megawatts (MW) with a total capacity for the entire site of up to 1.8 Gigawatts (GW). All the 39 plots are greenfield, and none have begun construction. One company from FiT round 1 has started preliminary works and constructed some basic facilities on the site including office, dispensary, workers resting area, and installed underground septic tanks, none of which are yet operational. The complex will be managed by a Facilities Management Company (FMC), currently under procurement. The FMC will be collectively appointed by NREA and the Egypt Electricity Transmission Company (EETC) in conjunction with the Benban Developers Association (BDA). In addition, international development finance institutions funding some of the projects within the complex (e.g. International Finance Corporation (IFC) and EBRD) have also provided advice during the procurement of the FMC. Management of the Benban solar complex is further explained under Performance Standard (PS) 1.

As per Government of Egypt (GoE) requirements, each plot in the Benban solar complex is allocated to a separate project company, requiring separate permits to operate; although one company may have ownership stakes in more than one project. ACWA Power is the main developer of the project, but it is incorporated through a separate SPV.

Power evacuation will be the responsibility of EETC. Power will be evacuated from the new substations via an existing 220 kV high voltage line, 12 km east of the Benban solar complex. EETC is currently conducting a grid connection study to assess the various alternatives to evacuate generated capacity. Options being considered at present include: (i) upgrading an existing high voltage line; and (ii) constructing a 180 km double circuit 500 kV transmission line north of the site. The new 500 kV line would be considered an Associated Facility to the Park. Funding and engineering studies are underway and once complete, EETC will also tender for an ESIA for this transmission line. ACWA Power through the BDA will make reasonable efforts to ensure that E&S
issues and risks identified (in particular those related to biodiversity and issues affecting communities) are managed in line with the PS.

Water is needed during construction and for PV panel cleaning during operations. Water supply options are being assessed. Water will either be trucked to site, sourced from the Nile or abstracted from boreholes around the site. Each developer is required to conduct a resource needs assessment and FMC will lead and coordinate the water supply in collaboration with the BDA.

Project construction will last approximately 10 months and the plants are designed for a 25-year operational lifetime. The solar PV panel arrays will comprise polycrystalline solar PV modules mounted on single-axis east-west tracking systems. The design also includes central inverter and transformer stations from which power is evacuated to their designated substations. Ancillary infrastructure includes access roads, storage, laydown areas and office buildings. The majority of the construction materials and equipment will be shipped to either Alexandria or Ain Sokhna and transported to site via trucks. Where possible, some equipment may be sourced locally and transported to site via the existing road. The project plots are in greenfield sites and in pre-construction phase. Construction is anticipated to start October 2017.

A consortium of Astroenergy and CGGC (China Gezhouba Group Corporation) International will be the Engineering Procurement and Construction (EPC) Contractor and First National Operation & Maintenance Co. Ltd (NOMAC), a fully owned subsidiary of ACWA Power, the Operations and Maintenance (O&M) contractor for the project. Astroenergy has over 10 years’ experience in EPC and has completed over 2200 MW PV power plants around the world. NOMAC was founded in 2005 and provides O&M services for power production and water desalination projects in the Gulf Cooperation Council (GCC) countries, Middle East, North Africa and Eastern Europe. In total, NOMAC is responsible for the operation of a portfolio of 17,146 MW of power generation.

ACWA Power is an existing IFC and MIGA client. In addition to an equity investment in ACWA Power, IFC has four existing portfolio projects owned by ACWA Power: (i) Investment in the Central Electricity Generating Company in Jordan; (ii) 60 MW photovoltaic solar project in Bulgaria; (iii) a greenfield natural gas fired combined cycle gas turbine (CCGT) power plant in Turkey; and (iv) a CCGT power plant in Jordan (which also has a MIGA guarantee). These projects are regularly monitored by IFC and MIGA, and to date the environmental and social (E&S) performance has been satisfactory.

B. Environmental and Social Categorization

The project is Category B under MIGA’s Policy on Environmental and Social Sustainability (2013) because the E&S impacts associated with the project are limited, generally project-specific and readily addressed through mitigation measures. Key risks and impacts include water consumption, dust and air emissions, noise occupational health and safety (OHS), community safety.
The project comprises one 20 MW_{AC} solar PV plant and also forms part of a larger development, as such, there are potential cumulative environmental and social impacts such as occupational health and safety, community safety, water consumption, dust, waste associated with the construction, and to a lesser degree the operational and decommissioning phases, which need to be managed in a coherent and coordinated manner. In order to address the potential cumulative impacts, the sponsors have joined the BDA. EETC together with NREA and in coordination with the BDA, will appoint a FMC to manage these common facilities and issues and be responsible for the development and implementation of the Environmental Social Health and Safety Management System (ESHS MS) for the Benban solar complex. This approach will assist in ensuring that ESHS risks are managed consistently by the developers, and that there is a well-managed and coordinated response to cumulative impacts.

C. Applicable Standards

While all Performance Standards are applicable to this project, MIGA’s environmental and social due diligence indicates that the project will have impacts which must be managed in a manner consistent with the following Performance Standards (PS):

- PS1: Assessment and Management of Environmental and Social Risks and Impacts
- PS2: Labor and Working Conditions
- PS3: Resource Efficiency and Pollution Prevention
- PS4: Community Health, Safety and Security

The Benban solar complex land was previously open desert. It is now owned by NREA, and will be leased to the developers for a 25-year period. There will be no displacement (physical or economic), thus PS5 on Land Acquisition and Involuntary Resettlement is not applicable. The area comprises desert with minimal vegetation and surveys have not identified any features or species which would trigger PS6 for Biodiversity Conservation and Sustainable Management of Living Natural Resources. There are no Indigenous Peoples in the project area, and therefore PS7 on Indigenous Peoples is not applicable. The studies as part of the ESIs did not reveal cultural heritage, therefore PS8 on Cultural Heritage is not applicable. However, the project will develop a chance finds procedure in case of the identification of cultural/archeological resources in the area.

World Bank Group (WBG) EHS General Guidelines and Guidelines for Electrical Power Transmission and Distribution also apply to this project.

D. Key Documents and Scope of MIGA Review

The following documents were reviewed by MIGA:

- Environmental and Social Action Plan – ACWA 120 MW_{AC} Solar PV Project – Benban, Egypt (OST Energy, May 2017)
• Environmental Impact Assessment Form B - Benban 50 MW Photovoltaic Power Station, Aswan, Egypt (5 Capitals, April 2016)
• ESIA for Al Tawakol Photovoltaic Power Plant in Benban, Aswan (Environics, March 2016)
• Environmental and Social EPC Checklist - Benban 50 MW Photovoltaic Power Station, Aswan Governorate, Egypt (5 Capitals, February 2016)
• Strategic Environmental and Social Assessment – Benban 1.8 GW photovoltaic solar park (NREA), Egypt (Eco Con Serv, February 2016)
• Environmental and Social Study for Benban Project – Alcom Energy, Benban PV Solar Park – Plot 3.1 (Hassan Allam – Alcom Energy, January 2016)
• EPC related documents: (i) Health, Safety, Environmental (HSE) Management Requirement; (ii) Health, Safety, Environmental (HSE) Management Plan; (iii) EPC Contract
• NOMAC Policies and Procedures

MIGA’s E&S due diligence of the project consisted of: (i) review of client’s E&S and independent lender’s E&S advisor documentation, (ii) discussions with the client to assess its capacity to manage ESHS risks and compliance with the Egyptian regulatory requirements and MIGA’s PSs; (iii) discussions with the EBRD regarding their site visit (May 2017), project specific details and an overview of the Benban solar complex.

E. Key Issues and Mitigation

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

_Environmental and Social Assessment and Management Systems:_ ACWA Power has established a risk-based Health, Safety and Environment (HSE) management System that is aligned to international standards and practices. An environmental and social management system (ESMS) will be developed for the project and will include policies, plans, procedures for effective E&S management (ESAP item # 1). The project’s ESMS will be adapted from NOMAC’s Integrated Management System (IMS, see further details below) but will also adopt elements of ACWA Power’s Zarqa CCTG project ESMS and Mafraq PV solar plant ESMS, which conform with IFC/ MIGA’s PS and EBRD’s Performance Requirements (PR), respectively.

NOMAC, the O&M contractor has an integrated management system (IMS) that combines Occupational Health and Safety Assessment Series (OHSAS) 18001, International Standards Organization (ISO) 14001 – Environmental Management System and 9001 – Quality Management System requirements. NOMAC’s IMS will be reviewed and updated for the project to incorporate country-specific procedures and project- level procedures and work instructions. NOMAC has adequate experience, systems and structure in place to successfully operate the project.

As per the requirements of the EPC contract, Astroenergy will implement a Health Safety and Environment Management Plan (HSEMP) and a Construction Environmental Management Plan (CEMP) that may be combined as part of an integrated management system prior to the start of
construction. The EPC contract references compliance with IFC PS/ EBRD PR and WBG EHS guidelines and lists a number of HSE related items such as HSE policy, hazard identification and risk assessment, health and safety standards, environmental mitigation measures, that must be included in the HSEMP which adequately address the HSE management of the project during construction.

Identification of Risks and Impacts: A Strategic Environmental and Social Assessment (SESA) for the Benban solar complex was prepared for NREA with funding from EBRD and in consultation with IFC with the objective of providing an overarching assessment of the E&S impacts of the Benban development. The SESA considered cumulative impacts with respect to the additional impacts expected beyond the development of a single solar power plant with individual developers responsible for defining and implementing site specific mitigations/recommendations as appropriate within their environmental management plans. Due to the development of the SESA, the individual projects within the solar park were categorized as requiring a Form B EIA by the Egyptian Environmental Affairs Agency (EEAA). As a result, the SESA supported the ESIA process for the project, resulted in a more consistent approach at the individual project level for the Form B EIA preparation, and reduced the need for, and cost of, additional baselines. It also removed the need for a project-specific consultation process.

In order to address project-specific impact assessment requirements anESIA was undertaken for the project, and covered the construction, operation and decommissioning phases and included an Environmental and Social Management Plan (ESMP) which will be updated in line with MIGA’s PS, WBG EHS Guidelines, SESA commitments and permit requirements (ESAP item #2). The ESMP will have a clear plan of action for the identified risks/impacts with assigned responsibilities and deadlines.

Cumulative Impacts: The SESA concluded that the ESHS risks from individual solar developments at the Benban solar complex could be adequately managed through standard application of good practices, but the cumulative impacts from several developments advancing in the same area at the same time could pose potential significant challenges and risks related primarily to traffic and transportation, occupational health and safety, accommodation, labor management, waste management, security and the management of stakeholder expectations from nearby local communities. The SESA also concluded that to address these common issues, a coordinated aligned approach was needed. It further noted opportunities for positive impacts related to engagement with the local communities and community investment efforts if carried out strategically and in a coordinated manner.

As such, the BDA was created in 2016 and reactivated in February 2017 to coordinate the various developers’ responses with regards to the management of common or shared facilities, activities or issues across the entire Benban solar complex. ACWA Power is a member of the BDA and was selected through a voting process to have a representative as one of the seven board members of the BDA.
Under an amendment to the Cost Sharing Agreement (CSA) between the EETC, NREA and the BDA, a FMC will be appointed by EETC and NREA on behalf of the developers to manage cross cutting construction and operation activities for all the Benban solar complex. These activities include: managing labor and workers’ strategy which includes sourcing workers, establishing a common set of standards on employment (wages and benefits) among others, water and wastewater services, waste management services, logistics and security services, stakeholder engagement and worker accommodation and community investment. This approach will ensure that ESHS risks are managed consistently, and there is a coordinated response to cumulative issues. The FMC will also be responsible for the development and implementation of an overarching ESHS management plan. The FMC will be contractually obligated to provide construction and operation services in line with MIGA/IFC PS, EBRD PR, and European Investment Bank (EIB) E&S Standards.

The FMC will also provide “mandatory” services to all developers (whether they are in the BDA or not) during construction, including EHS management, traffic management, community stakeholder engagement and grievance management and waste management. The Project Enterprise and Astroenergy will coordinate with the FMC to comply with all required items outlined in the SESA as “common issues”.

Management Programs: As mentioned above, a framework ESMP is included in the ESIA. The framework ESMP includes an outline of monitoring and control procedures, as well as organizational responsibilities for E&S management tasks. The framework ESMP will be incorporated into a uniform ESMP that provides more detailed, site-specific measures and monitoring plans. The ESMP will include plans to manage air quality, noise, soil, water resources, solid waste, and health and safety among other topics. Astroenergy will prepare a HSEMP /CESMP aligned with ACWA Power’s ESMS, MIGA’s PSs and FMC’s ESHS MP prior to the start of construction (ESAP item #3).

Workers are to be made aware of the requirements, measures, and protocols stipulated within the: (i) HSEMP /CEMP during construction and (ii) ESMP during operations through induction training and a workers’ manual that is translated into Arabic. The Project Enterprise must also ensure that all HSE personnel are competent to carry out their duties through the hiring and selection process, or, where necessary, arrange for suitable training to be undertaken to achieve this level of competency before construction starts.

Organizational Capacity and Competency: The E&S organizational structure is not yet fully developed. The Project Enterprise will provide a description of the organizational structure for the implementation of all E&S and labor requirements (ESAP item #4). As a minimum, the Project Enterprise will appoint a suitably qualified HSE manager in advance of the start of works for both the construction and operations phase of the projects as well as a site HSE officer supported by additional HSE staff (as required) to manage the risks identified and will be responsible for the implementation of the ESMS. The EPC contract specifies qualification and competence requirements for EPC HSE personnel which include the following positions: HSE manager, HSE advisor, HSE supervisor, HSE engineer and HSE officer. The Project Enterprise’s HSE site officer
will liaise, coordinate and monitor Astroenergy as well as liaise with the FMC to coordinate all common issues needed between the project and the Benban solar complex.

Emergency Preparedness and Response: An Emergency Preparedness and Response Plan (EPRP) that is project specific but aligned with the EPRP for the Benban Solar Complex will be developed (ESAP item #2). The project specific EPRP will be prepared to similar plans developed for previously constructed solar PV projects and will conform to internationally recognized standards. The EPRP will also describe reporting requirements and roles and responsibilities in relation to the FMC’s EPRP.

Monitoring and Review: During construction, the Project Enterprise will be responsible for reviewing and auditing Astroenergy’s HSE performance and compliance against its ESMS, Egyptian legislation and MIGA’s PS and WBG EHS guidelines. ESHS monitoring requirements will be included in the ESMP for the construction and the operations phases of the project. MIGA will require that the Project Enterprise submits annual monitoring reports (AMR) containing relevant E&S information throughout the guarantee period.

Grievance Mechanisms: The FMC will develop a community grievance mechanism for the Benban solar complex in alignment with PS1, and will be responsible for responding to any grievances which are raised in relation to the overall site or individual developers. The Project Enterprise will develop a community grievance mechanism at the project level which will include details of how it will be record and respond to any grievances identified by FMC as being caused by the activities of the project, or of its sub-contractors. All responses to grievances will be processed by the FMC to ensure a consistent approach to stakeholder consultation from the whole complex. The community grievance mechanism will be created prior to the start of construction to ensure that the developers can respond to any stakeholder issues reported to FMC at any stage in the project cycle.

PS2: Labor and Working Conditions

The project is expected to employ 50 - 100 workers during peak construction and 4 to 6 personnel during operations. The recruitment of workers will comply with the recruitment procedures to be developed by the FMC, which will seek to place jobs locally, before recruiting from further afield in Egypt. The FMC may establish offices in Benban and Fares to channel all local labor subcontracting for the various projects.

Human Resources Policies and Procedures: ACWA Power’s existing HR policies and procedures from the Zarqa CCTG and Mafraq PV solar projects (which are aligned with PS2/ PR 2) will be adapted to comply with Egypt Labor law. The Project Enterprise will ensure that its contractors align their HR policies and procedures with their own overarching HR policy which will be extended to sub-contractors given the high likelihood of them being responsible for hiring workers (ESAP item #5). These will also be aligned with FMC’s to be developed Labor and Working Conditions Strategy and Employment Plan (LWCSEP). It is proposed that the LWCSEP will include: (i) the setting of common standards for labor and working conditions; (ii) a code of conduct for workers; (iii) assessment of the local labor market; (iv) worker influx strategy and (v)
monitoring plan during labor sourcing. The LWCSEP will be shared with the Ministry of Labor and International Labour Organization (ILO) representatives in Egypt for consultation and approval.

A training plan will also be put in place for employees and contractors. Induction training on the HR policy and procedures and basic safety awareness training will be provided to all newly hired workers. Other types of technical skills training will be identified for staff on an as-need basis. ACWA Power funds a training initiative in Aswan and is in the process of establishing a solar PV training program with the Renewable Energy Academy (RENAC) for around 250 technicians and laborers on how to install, operate and maintain a PV solar plant. This program will also aim to enhance 80 engineers’ experience on systems fundamentals, design and installation of PV plants.

**Working Conditions and Terms of Employment:** The project’s HR policies, procedures will stipulate the terms of employment (wages and benefits, hours of work, overtime arrangements and overtime compensation, annual and sick leave, maternity and paternity leave, vacation and holiday, health insurance and end of service benefits) and will also include provisions on restrictions to child labor and prevention of forced labor as well as commitment to non-discrimination and equal opportunities for employees and contractors and will be shared with all new hires.

Workers employed for the project during construction will be transported from the local communities and Aswan, or accommodated in FMC managed worker accommodation (preferred option). The worker’s accommodation will follow the IFC/EBRD workers’ accommodation guidelines (ESAP item #6).

**Worker’s Organizations:** In line with PS2, the project’s HR policies and procedures will not impede workers from freedom of association and collective bargaining. Workers will be able to organize among themselves and will not be intimidated, punished or discriminated against for doing so. Workers will be allowed to join unions or otherwise allow collective bargaining. The project will communicate with the workers’ organizations and their representatives.

**Non-Discrimination and Equal Opportunity:** ACWA Power is committed to non-discrimination based on the age, gender, sexual orientation, health, race, nationality, political opinions or religious beliefs of its counterparties. The requirements of non-discrimination and equal opportunities will be extended to all contractors and sub-contractors as part of contractual obligations.

**Grievance Mechanism:** A workers’ grievance mechanism will be developed and made available to all workers including contractors and sub-contractors. The grievance mechanism will among others clearly define the response timeframes to grievances and incorporate a grievance log as part of the grievance redress mechanism process.

**Occupational Health and Safety:** Key Occupational Health and Safety (OHS) risks for a PV solar project include slips and falls, potential hazards from on-site moving machinery, heavy load lifting, exposure to electric shocks and burns, safety issues related to PV module assembly. Considering
In the hot and arid project location, construction workers might be at risk of dehydration, heat exhaustion and heat stroke if not properly hydrated.

Prior to the start of construction activities, the Project Enterprise will ensure that Astroenergy develops project OHS procedures (ESAP item #7). These procedures will cover the following issues: hazard identification and assessment; construction site safety (barricades, safety nets, access control, clear demarcation of areas and provision of safety information to visitors); specific procedures for hazardous works; workers’ safety and training plan; personal protective equipment needs; site supervision and audit procedures; incident intervention measures and reporting. The procedure will be designed to be specific to the PV solar sector (in terms of industry-specific hazards) and the project. The OHS procedure will also link with the project’s EPRP which will include fire risk assessment and control systems, fire alarm systems and drills, emergency preparedness and planning. The project’s OHS performance will be tracked, recorded and reported to the Project Enterprise on a regular basis. OHS procedures will be revised and updated for operations where the risk is reduced.

Workers Engaged by Third Parties: the Project Enterprise will take reasonable efforts to ascertain that the third parties who engage these workers are reputable and legitimate enterprises and have an appropriate ESMS that will allow them to operate in a manner consistent with the requirements of MIGA’s PS and will establish procedures for managing and monitoring the performance of such third-party employees in relation to MIGA’s PS as well as incorporate these requirements in contractual agreements, as identified in ESAP item #8.

Supply Chain: the Project Enterprise will conduct a supply chain assessment of the nominated primary PV supplier to identify key E&S risks/impacts and ensure the supplier complies with the principles of MIGA’s PS to appropriately manage these risks. Consideration in the assessment should be given to confirming the adequacy of the manufacturing facility’s management of hazardous material storage, waste storage/disposal, compliance with working conditions and occupational and community health and safety requirements to demonstrate that the project’s suppliers are complying with MIGA’s PS and EHS Guidelines (ESAP item #9). The Project Enterprise and Astroenergy will include a clause to comply to MIGA PS requirements in main supplier contracts.

PS3: Resource Efficiency and Pollution Prevention

Resource Efficiency: Resource consumption on a PV project is expected to be minimal, with the main resource utilized during construction being water for dust suppression, concrete production, and domestic usage. During operations, the main water use will be cleaning the PV modules and domestic usage.

Water Consumption: The estimated water consumption during the construction phase is to be 2000 m³ per year for the project which includes water for drinking, site activities and civil activities (concrete production, equipment cleaning, dust suppression). During operations, water consumption is estimated to be 1,500 m³/ year for modules cleaning and 400 m³/year for general...
sanitarian use for the project. Wet cleaning technology will be used to ensure that dust and other particles accumulated on the panels do not compromise the efficiency of the PV facility and the cleaning cycle is estimated to be 18 cleanings every year. ACWA Power is looking at the possibility of dry cleaning and has requested the PV suppliers to supply panels that can also be cleaned with brushes but wet cleaning is currently the preferred option. A water management plan will be developed for the project which will include water quantity estimates and reporting of water use (ESAP item #10).

_**Greenhouse Gases:**_ Greenhouse gas emissions from the project during construction are expected to be predominantly associated with the use of fuels such as in generators, transport, on-site equipment, and machinery. Although the emissions have not been calculated, these are expected to be low and significantly less than 25,000 tonnes CO₂e per year.

Based on the International Energy Agency (IEA) data for Grid Lifecycle Emissions in Egypt, and a 30-year project lifespan with a 1 per cent annual degradation factor, the combined 120 MW<sub>AC</sub> capacity of the project is estimated to save approximately 3,971,500 tonnes CO₂e over the lifetime of the three ACWA projects.

_Wastes:_ Solid waste generated during construction mainly consists of municipal and construction wastes that will be collected by a FMC approved contractor to be disposed of in designated landfill sites. The overall volumes of both solid and hazardous waste generated by the project during construction are expected to be low. It is anticipated that solid waste will comprise paper, wood, plastic, scrap metals, and glass, and hazardous waste will be likely to comprise fuel, oils, lubricants, hydraulic/insulating fluids and batteries, tires, metal drums and empty chemical containers. A limited number of waste PV modules are expected to require disposal during the construction phase. During operations, waste generated will be largely limited to domestic waste, and waste generated from maintenance. These waste streams will be segregated as per the Waste Management Plan to be developed for construction and NOMAC’s waste management plan during operations. Waste management procedures will be revised to be aligned with those of the FMC and requirements of relevant sections of the applicable WBG EHS Guidelines. When the plant is decommissioned, the priority option of disposal of the PV panels will be through recycling.

_Wastewater Treatment:_ During construction phase, wastewater from sanitary facilities will be stored in suitable septic tanks and transported off-site. The FMC will have the overall responsibility for the management, collection and disposal contracts for sewage and other wastewater from the Benban solar complex. Management of wastewater will be addressed in the waste management plan.

_Pollution Prevention:_ During the construction of the three ACWA projects power needs will be met via two 100 kilo-volt-amper (KVA) diesel generators (one on standby) and four 50 KVA diesel generators (two on standby). Diesel generators will locally impact air quality and require fuel management and containment. These impacts, however, will be short in duration and temporary. During operations electricity, will be back-fed from the grid. The Project Enterprise and Astroenergy will put in place plans/ procedures that manage pollution related aspects of the project.
in line with the requirements of relevant sections of the applicable WBGEHS Guidelines (ESAP item #11). Aspects should cover, among others air quality/dust, spills, occupational noise, among others.

PS4: Community Health, Safety and Security

The project is located on desert land which is owned by the NREA and project access is along the newly constructed NREA roads from the local public highway. There will be no road or land impacts on the local villages, and there are no stakeholders directly affected by the project.

Community Health and Safety: The FMC will develop a community health and safety study and population influx plan as per the SESA requirements to address the influx of construction workers coming into the Benban area for the project development, and their impact on the community at large including the risk of infectious diseases. Astroenergy will develop and implement a worker’s code of conduct which will also apply to all sub-contractors to ensure they maintain high standards within the community, and meet the requirements of PS4.

As noted in the SESA, during peak construction there will be an estimated 1,400 vehicles/day accessing the various plots within the Benban solar complex, which could present a potentially significant risk to the workers and personnel on site, and the local community along the main and access roads unless it is well managed.

Project traffic will need to be coordinated with the BDA and FMC and aligned with the FMC’s traffic management plan to ensure that risks to workers and community members are mitigated. As such, a project specific traffic management plan, which aligns with the FMC’s overarching traffic management plan will be prepared as identified in ESAP item #12.

Security: The FMC will be responsible for the security of the Benban solar complex and will develop a security management plan for the Benban solar complex, however a project-specific security risk assessment and security management plan that captures key elements of PS 4 that aligns with FMC’s security management plan is required for both construction and operations (ESAP item # 13). The security management plan will include the following: hiring of security personnel (making reasonable inquiries to ensure that those providing security are not implicated in past abuses), rules of conduct, training in the use of force and appropriate conduct toward workers and affected communities, equipping and monitoring.

F. Environmental Permitting Process and Community Engagement

Environmental Permitting Process: The EEAA is the primary regulatory body responsible for environmental matters in Egypt and operates in accordance with the Law of Protection of the Environment (Law No. 4, 1994) and its executive regulations established by Prime Minister Decree no. 338/1995. The national law for environment requires that an EIA be completed and submitted to the competent administrative authorities (CAA) which in the case of PV power plants is NREA.
The EEAA categorizes projects in accordance with the predicted environmental impacts in the form of:

- Category A: projects with minor environmental impacts
- Category B: projects which may have substantial impacts and require a scoped EIA
- Category C: projects which require a full EIA due to their potential severe impacts.

PV power plants are generally categorized as B (requiring an abbreviated environmental approval process), however EEAA has the authority, depending on the scale of the project to request a more detailed assessment and to classify it as category C (requiring an ESIA and Public Consultation meeting). In consultation with EEAA, NREA reached an agreement with EEAA to conduct an overall SESA study for the Benban solar complex that meets the requirements of C category projects. All individual power plants were considered components under the SESA and required only submission to the EEAA of Form B which is a scoped ESIA with project/plot specific information which could be completed either by the developer or their consultants and without the need for additional public consultation. The approval of the Form B, together with the SESA approval, constitute the Environmental Permit required for the project.

**Stakeholder Engagement:** Stakeholder engagement activities were carried out as part of the development of the SESA. Moving forward, all stakeholder engagement will be managed through the FMC and will build on the engagement undertaken as part of the SESA which included meetings with local villagers, both individually and as a group. FMC will develop a Stakeholder Engagement Plan (SEP) for the Benban Solar Complex in order to coordinate efforts and resources. At the project level a stakeholder strategy is required to outline how the project will interact and implement the FMC’s SEP.

A number of potential opportunities for community development was identified in the SESA including training (for local employment), health services (improving health units), and infrastructure (including schools and roads). ACWA Power funds a training initiative described under PS2, however the opportunities for community investment cannot all be addressed by one investor/project and are more effectively addressed through collaborative efforts of the different developers. The Project Enterprise will develop a Corporate Social Responsibility (CSR) plan in line with the strategic community investment efforts of the BDA through the FMC to ensure a coordinated effort on the part of the Benban solar complex.

**G. Availability of Documentation**

The documentation listed below is available electronically as PDF attachments to this ESRS at www.miga.org.

- ESIA for Al Tawakol Photovoltaic Power Plant in Benban, Aswan (Environics, March 2016)
- Strategic Environmental and Social Assessment – Benban 1.8 GW photovoltaic solar park (NREA), Egypt (Eco Con Serv, February 2016)
Environmental and Social Action Plan

The documentation is also available for viewing at the following locations:

ACWA Power Egypt for Energy
Plot 176, 2nd sector
Cairo - Egypt
Giza Systems Building
P.O. Box 351, New Cairo
Cairo, Arab Republic of Egypt

and

ACWA Power
22nd Floor, Nasseema Tower
Sheikh Zayed Road
P.O. Box 30582
Dubai, United Arab Emirates

For additional information, please contact:

- Marie-Clotilde Brianchon - MBrianchon@acwapower.com
- Mohamed Attari - Mattari@acwapower.com

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

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

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

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

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