

ENVIRONMENTAL AND SOCIAL Study for Benban Project

January 2016

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1.1. INTRODUCTION AND METHODOLOGY

A thorough analysis of environmental and social impacts is important to detail an effective management and monitoring plan, which will minimize negative impacts and maximize positives.

The main objectives of the assessment are to identify, prevent and evaluate the potential impacts and, if it is the case, propose mitigation measures to minimize the impacts detected before the project start.

The impact assessment methodology adopted for this ESIA is a “cause-effect” matrix modified from Leopold; and Buroz’s Relevant Integrated Criteria to evaluate the impacts. The environmental impact assessment methodology encompasses a semi-quantitative assessment that considers the following:

- Probability of the impacts
- Spatial and temporal scale
- Intensity of the impacts (which also considers the sensitivity of receptors, and the reversibility nature of the impact)

This matrix is two-dimensional, where the stages of the project (activities) are assessed in relation to the existing environmental characteristics and conditions that may be affected during the execution of those actions.

1.1.1. Identification of Environmental and Social Impacts

Based on the analysis of the expected activities to perform the project, such as to preparing the area, building the infrastructure necessary for proper operation, operating and maintenance of the PV Power Plant, the impacts were identified. The impacts were classified into:

*Impacts during the **Mobilization phase** related to:*

- Hauling of construction materials and equipment

*Impacts during the **Preparation of the site phase** related to:*

- Fencing the area for controlling the access
- Roads and corridors construction
- Leveling and preparing the land for setting the structures

*Impacts during the **Planning and Construction phase** related to:*

- Assembling structures
- Placement of temporary infrastructure
- Construction of infrastructure

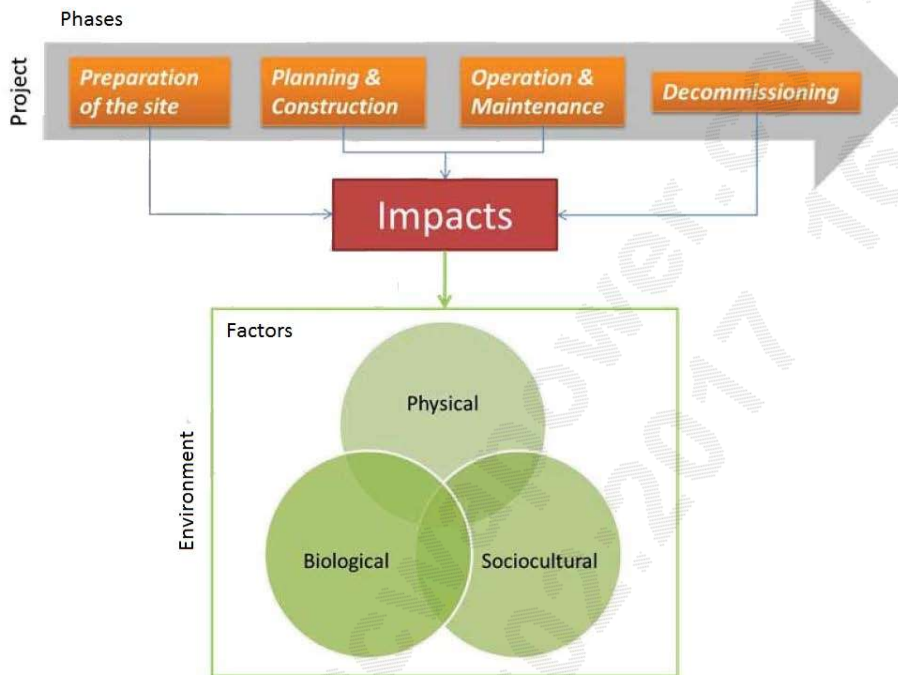
*Impacts during the **Operation and Maintenance phase** related to:*

- Operation of the Plant and energy generation
- Maintenance of the Plant

*Impacts during the **Decommissioning** related to:*

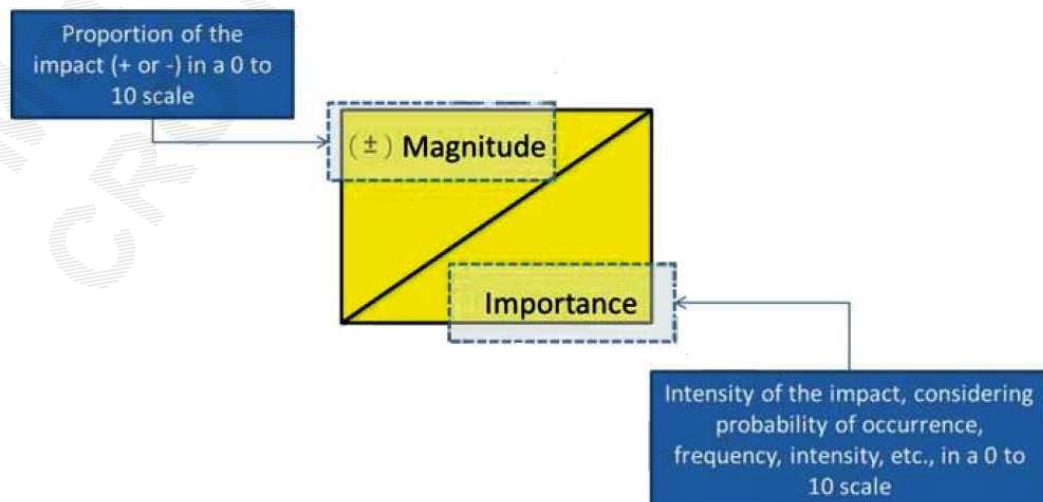
- Disassembling the plant
- Cleaning the land

The “cause-effect” matrix identifies the impacts during the mentioned phases, considering the elements of the environment and social context (*receptor of the impact*).



Each impact was identified considering:

- **Type of impact:** The negative or positive influence on the receptor.
- **Magnitude:** The extent of the impact within a scale (0-10)
- **Importance:** That includes the probability of occurrence, frequency, intensity of the impact, etc., within a scale (0-10)



1.1.2. Importance of the impacts identified

After the impacts are identified, the matrix of importance of the impacts by each phase reveals that the Preparation and Construction Phases are those who have more impacts, but according with the methodology, are moderated impacts. The importance of the impact reveals the relation through the impact is measured qualitatively in function of the grade of incidence or intensity of the alteration produced, and the characterization of the effect with some attributes such as extension, type of effect, persistence, accumulation, etc.

- **Sign:** The sign of effect, and therefore the impact refers to the beneficial character (+) or harmful (-) of the various loads acting on the various factors considered. There is the possibility of including, in some duly justified specific cases and argued, a third character (*), reflecting effects associated with the activity outside circumstances, so that only through a comprehensive study of all would be possible to know its harmful or beneficial nature.
- **Intensity (IN):** This term refers to the degree of impact of the action on the factor, in the specific field that acts. The rating scale will be between 1 and 12, in which 12 expressed total destruction factor in the area in which the effect occurs, and 1 minimal involvement. Values between those two terms reflect intermediate situations.

It should be noted that this assessment is made based on a percentage of the project area (project area and / or their catchment areas, if applicable) being directly affected. Extension (EX)

It refers to the theoretical area of influence of impact in relation to the environment of the activity (area percentage, relative to the environment, in which the effect manifests itself). Area of Direct Influence (AID) is used as a reference for quantification

If the action produces a much localized effect, the impact is considered to have an ad hoc basis (1). If, however, the effect does not allow a precise location within the environment of the activity, taking a widespread influence on the whole, the impact will be Total (8), considering the intermediate situations, by gradation, as partial impact (2) and large (4).

- **Momentum (MO):** The term refers to the manifestation of the impact time between the onset of action (to) and the beginning of the effect (tj) on the factor / environmental aspect considered.

If the effect is fully recoverable, and if so immediately, is assigned a value of 1 or a value of 2, if it is the medium term, if the recovery is partial and the effect is mitigated, it takes a value 4; when the effect is unrecoverable assign the value of 8. In the case of unrecoverable (impossible to repair, both natural action such as human disturbance), but there is the possibility of introducing countervailing measures, the value is 4.

Synergy (SI): This attribute provides the reinforcement of two or more simple effects. The total component of the manifestation of the simple effects caused by actions acting simultaneously is higher than one would expect from the manifestation of effects when the actions that causes act independently and not simultaneously.

If action acts upon a factor, is not synergistic with other actions that act on the same factor, the attribute takes a value of 1, if you have a moderate synergism, it is set to 2 and if it is highly synergistic should be assigned a value of 4. Where cases of weakness occur, the present assessment of the effect of negative values, ultimately reducing the value of the significance of the impact.

Accumulation (Ac): This attribute gives the idea of the progressive increase of the demonstration effect, when it persists continuously or repeated action that generates it.

If action does not produce cumulative effects (simple accumulation), the effect is evaluated as (1). If the effect is cumulative value increases. (4)

Effect (EF): This attribute refers to the cause-effect in terms of its directionality, ie the form of manifestation of the effect of a factor as a result of an action. An impact may be direct or indirect at the same time, although various factors, since the scale is exclusive, and not the fact that it can be directly and indirectly is valued, it should be the exclusive rating.

The effect can be direct or primary, and in this case the impact of the direct result of this action, it is assigned a value of 4. If an indirect or secondary effect is present, that is taking place from a primary, and there is no direct effect associated with the same action, the impact is assigned a value of 1. Its manifestation is a direct result of the action, but occurs from a primary effect, is acting as a share of second order.

Frequency (PR): The periodicity refers to the regularity of manifestation of the effect, either cyclic or recurrent (periodic effect) way, sporadically in time (irregular effect), or constant over time (continuous). Continuous effects are assigned a value of 4, to a value of 2 newspapers, and irregular appearance, which discontinuous a value of 1 to be assessed in terms of probability of occurrence, as well.

Importance of the impact (I): It has already been suggested that the significance of the impact, that is, the importance of the effect of an action on a factor / environmental aspect, not to be confused with the importance of the affected environmental factor.

$$I = \pm(3IN + 2EX + MO + PE + RV + SI + AC + EF + PR + MC)$$

The importance of impact has values between 13 and 300 points. It has intermediate values when any of the following circumstances:

- Total current and minimum condition of the remaining symbols.
- High or very high intensity, high or very high condition of the remaining symbols.

- High intensity, high unrecoverable effect and condition of any of the remaining symbols.
- Medium or low intensity, effect and high unrecoverable condition of at least two of the remaining symbols. Impacts with values lower than 25 are irrelevant or importance is compatible or environmental measures contemplated in the project design.
- Minor have an important impact between 26 and 50. They will be severe when the importance is between 50 and 75 and critical when the value exceeds 76.

IRRELEVANT	0	25
MINOR	26	50
SEVERE	51	75
CRITICAL	76	300

ACTIVITIES		Project Phases																												IMPORTANCE				
		MOBILIZATION			PREPARATION			PLANNING & CONSTRUCTION										OPERATION & MAINTENANCE							DECOMMISSIONING									
CHARACTERISTICS	Type of impact	Transport of equipment	Transport of machinery	Temporary storage	Area delimitation & fencing	Construction of main and secondary access road	Land leveling & topographic labors	Receiving equipment & materials (heavy trucks & transporters)	Assembling structures	Energy supply	Placement structures and platforms	Placement of temporary buildings & services	Placement wiring, electrical connections & excavation	Construction of Infrastructure & Permanent Buildings	Superficial Water (Infrastructure & Pipelines)	Groundwater (Infrastructure & Well construction)	Tank trucks & waster deposit	Sanitary facilities	Commissioning Tests	Receiving Equipment & Materials (Heavy Trucks & Transporters)	Operation of the Solar Panels	Connection to the distribution grid	Inspection of routine civil engineering quality records	Preventive Maintenance	Corrective maintenance	Disassembly of structures	Transport materials out of the area	Disassembly of connections	Disassembly of buildings	Land clearing & waste generation				
		Type of impact		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Intensity (I)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Extension (EX)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Momentum (MO)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Persistence (PE)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Reversibility (RE)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Sinergy (SI)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Accumulation (AC)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Effect (EF)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Periodicity (PE)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Recoverability (MC)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		13	13	13	34	34	34	24	24	28	24	13	40	43	37	52	75	56	38	31	13	25	17	17	13	13	15	25	16	16	22	22	22	
		13.0	30.0																	40.9	16.4							18.8						

After the analysis of identification and importance of impacts, it is clear that the *Preparation of Land and Construction Phases* will be the most critical phase that can have negative consequences on receptors, especially on soil and water. It is expected that other phases generate impacts but minor and irrelevant.

Regarding positive impacts, the project will provide job opportunities and, especially considering the PV Benban Project as a whole, the economic impact on the area of influence will be significantly positive.

1.2. Description of the Impacts by Receptor and Phase of the Project

The identified impacts were organized according to the phase where they will be generated and the receptor of the impact.

1.2.1. SOIL

Landscape and Visual Impact

Mobilization and Construction Phase: Considering that the plot (3-1) of ALCOM ENERGY is part of the Benban PV Solar part that will be covering 37.2 km, Benban will be a large construction site with considerable traffic movements during the construction period, clearly visible from the Aswan – Luxor Highway. Increased dust levels from Lorries driving on unpaved roads and from excavation; works for foundations of panel frames and buildings are likely.

Operations Phase: Once completed, the Benban PV site will be an important feature of this largely flat and uniform landscape. However, as structures are low (arrays of panels; single story maintenance and storage buildings), this will not be visually dominant from a longer distance, but will be clearly visible from the Aswan – Luxor Highway which runs parallel to its eastern border, at a distance of approximately 1 km and for a length of 7 km. A potential issue is glare (and glint) caused by sunlight reflected off the PV panel arrays. PV Panels are designed to absorb sunlight (rather than reflect it), and are not usually reflective. Typical panels are designed to reflect only 2% of incoming sunlight. To further minimize nuisance from reflections an antireflective coating is commonly added to the surface of PV cell.

Limited glint and glare can be experienced momentarily (as the sun keeps moving) at sunrise and / or sunset. The effect can be described as a 'shine' or 'glow'. At these times the sun is low in the sky and reflection could be at a low level. At other times reflection is upwards, towards the sky.

In general, there are no aircraft landing strips in the immediate vicinity of Benban; the nearest commercial airport is in Aswan. Road users on the Aswan – Luxor Highway are highly unlikely receptors for glint/glare from Benban panel arrays.

Land Use

The Benban PV site is currently vacant, unused desert land, thus land use will change completely from desert to a high technology solar park.

Soil and Groundwater

Impacts on soil and groundwater can occur during construction and operation if hazardous substances such as oils, paints, cleaning agents and other chemicals are spilled in larger quantities. This can be easily controlled by good working practices, worker and contractor training and supervision, and overall good site management practices.

Soil erosion and possible changes in albedo/surface temperature were deemed insignificant for the site due to the shallow and limited nature of the excavations.

Mobilization Phase: During hauling of materials and equipment to the site and storage on site, compaction of the soil result of Lorries and vehicles can be presented.

Construction Phase: During this phase, land leveling and earth works will be necessary to place the PV structures. Generation of dust and compaction of the soil result of reception of Lorries and equipment will be presented.

Regarding to groundwater, during construction large quantities of wastewater from sanitary facilities and possibly on-site food production will occur. Unless treated on site (e.g. in small waste water treatment facilities) this has to be stored in suitable septic tanks and transported off-site. Any facilities, temporary or permanent, will have to comply with sanitary and environmental requirements and have to be controlled by the individual Benban Project companies (if on their plot) or by overall Benban PV site management.

Similarly, other liquid wastes (inclusive of hazardous chemicals) and solid wastes need to be controlled; stored in adequate containers; and disposed of properly according to the applicable legislation. This also requires good working practices and site control and management.

If generators are to be used on site during construction there will be need for fuel transport to the site; for fuel storage; and for regular refueling of generators. This will have to be handled carefully to avoid any spillages and accidents (e.g. fire hazard). Storage facilities have to have a concrete base and bunding; spillage protection needs to be in place; spillage clean- up needs to be organized.

Operations Phase: Once completed the site will have comparatively small numbers of workers and contractors on site at any given time. Sanitary wastes and waste from maintenance and food production will occur only in small quantities. Site management practices introduced during construction should be continued (e.g. storage and disposal of wastes; training and supervision of staff and contractors).

Decommissioning Phase: High probability of having the mentioned impacts.

Proposed Mitigation Measures

- Develop and implement waste management plans for liquid waste; solid waste; hazardous waste;
- Install suitable sanitary facilities with appropriate septic tanks; ensure regular disposal of liquids;
- Install proper food preparation facilities with waste collection;
- Construct an impermeable protective base layer underlying areas with potential hazardous liquids storage or use.

Proposed Monitoring Measures

- Regular checks of waste collection and storage sites;
- Regular checks of storage of chemicals (e.g. cleaning fluids);
- Regular checks and maintenance of any sanitary facility with liquid waste storage (e.g. septic tanks).

Waste Generation

Waste will be generated during all the phases of the project however, is predicted that some phases will have less generation of waste than others. Mobilization, Construction and Decommissioning phases will generate the highest rates; meanwhile Operation will generate the lowest.

The waste generated will include municipal solid waste; paper and plastic packaging waste; and waste from construction and maintenance of the PV installations (e.g. construction materials; hazardous materials such as cleaners, solvents; paints and their containers, etc.).

Likely Construction waste:

- Building Waste: Volumes are not known but construction of buildings (for security; control and maintenance; storage; sanitary facilities; food preparation and canteen facilities, etc.) is likely to be limited as many developers indicated that prefabricated structures or containers are a preferred option.
- Paper/packaging/plastics: Mainly from the transport packaging for frames, panels and electrical equipment.
- Hazardous wastes: Mainly cleaning fluids, solvents, paints and their containers; will include others than solder from electrical connections.
- Municipal waste: Mainly from food production and plastic waste. Assuming that in labor conditions, each worker produces 1.3 kg/day, the generation of MSW will be as follows:

Phase	No. of Workers	Estimated Waste Generation (ton)		Total During Phase (ton)	Phase Duration (months)
		Daily	Monthly		
Mobilization & Preparation Phase					
	70	0.091	2.73	5.46	2
Construction Phase					
	300	0.39	11.7	81.9	7
O & M Phase					
	8	0.104	0.312		

Proper waste collection and storage plus regular (preferably twice a week) waste collection by licensed contractors will need to be arranged by developers or site management. To coordinate and control this, site management should develop a waste management plan for municipal solid waste and a plan for hazardous solid and liquid waste.

Operations waste: Waste during normal operations will be minimal and will largely consist of municipal waste (e.g. food; packaging) and over time potentially defunct panels, cabling and control equipment etc. Waste management arrangements for the construction phase should be continued (proper control of collection, storage and final disposal via licensed contractors).

1.2.2. NOISE AND AIR QUALITY

Noise Impacts

Noise will be an issue during construction and, to a much lesser degree, during maintenance of the Benban Projects. Construction on the Benban site consists mainly of:

- Limited construction of maintenance and storage buildings;
- Construction of frames;
- Mounting of panels onto the frames;
- Connections between arrays and the substations (cables in underground ducts).

Mobilization & Construction Phase: Construction of buildings and associated ground-works for foundations are likely to be very limited that custom-made containers are a preferred option for buildings. The Company will use piling for construction of panel frames. Excavation and particularly piling could lead to local noise affecting workers. There is likely to be excavation for cable ducts and there will be significant heavy lorry traffic when containers with frames and panels are delivered onto the site. Unloading will require limited use of heavy machinery and construction of the frames will involve hand-held electrical machinery. There may also be a need for generators unless an electricity supply is provided by the local electricity supply company. All equipment needs to meet Egyptian legal

requirements regarding occupational health and safety and environment (e.g. for noise).

Receptors for noise are predominantly the workers on site. Good working practices inclusive of use of Personal Protective Equipment (e.g. ear protection) have to be mandatory and need to be controlled. There is no residential buildings close enough to be affected. Noise measurements carried out in October 2015 on a representative plot of the Benban site are comparable to those carried out for the Kom Ombo CSP ESIA in 2013. According to the assumed worst case scenario for the Kom Ombo ESIA (extensive use of heavy machinery on the Kom Ombo site), noise modelling showed that the total measured noise at the Ambulance Station location would be around 50 dBA (compliant with national and IFC standards).

Operations Phase: No noise other than wind and very limited noise from vehicles used on site are expected during normal operations.

Proposed Mitigation Measures

Implement an occupational health and safety plan, which includes:

- Provisions of Personal Protective Equipment (e.g. ear protectors);
- Training on how and when to use protective equipment to be part of the workers' induction training;
- Clear instructions in areas where noise emissions are significant;
- Optimize the use of noisy construction equipment and turn off any equipment if not in use;
- Regular maintenance of all equipment and vehicles.

Proposed monitoring activities

- Measure ambient noise levels in noise critical areas, using a portable noise meter;
- Investigate and follow-up on noise complaints from workers and others, on each site and on the Benban PV site as a whole.

Air Quality

It is important to highlight that the impacts generated by the construction of the 50MW PV are *irrelevant/minor* when are considered as an isolated construction. However, considering the project as part of the Benban PV site, the impacts become more intense.

Mobilization: During this phase, local air emissions particularly exhaust gases from large delivery Lorries and dust blow will be presented.

Construction Phase: Construction will include excavation; transportation of construction material and other equipment; assembly of frames and arrays; burial of cables etc. Those activities will lead to local air emissions, particularly from generators and dust blow. This will cause

- Fugitive dust emissions (PM₁₀, PM_{2.5})
- Exhaust emissions from (mainly diesel) vehicles and equipment such as temporary generators.

Impacts of dust emissions from unpaved roads and gaseous emissions from vehicles and electricity generators will be local and can be temporarily significant at site entrances, requiring control and good management of delivery logistics at peak construction time. Residential areas are too far at a distance to be directly affected, unless a large proportion of delivery vehicles use the Benban to Fares road as an alternative to the Aswan – Luxor Highway, this is unlikely.

Operations Phase: Once operational, the most significant environmental impact of the Benban Projects will be the displacement of CO₂ that would occur if, as an alternative to solar PV, thermal generation were to be used to provide the same amount of electricity to the grid. The 45 Benban Projects with a total generating capacity of 1,800MW are estimated to displace approximately 2 million tons of CO₂ per year.

Proposed Mitigation Measures

Implement a construction site management plan, which includes the following measures:

- Use gravel collected on site to improve roads and reduce dust emissions;
- Develop and implement a site delivery plan to regulate traffic and to avoid build-up at the site entrances;
- Regulation of speed to a suitable speed (30 km/h) for all vehicles entering the site;
- Implement preventive maintenance program for vehicles and equipment working on site and promptly repair vehicles with visible exhaust fumes.

Monitoring Activities:

- Investigate dust complaints from workers and residents of Benban village;
- Measure the ambient air quality by active collection of samples on and off-site, including within the nearest communities.

The positive impact of permanent displacement of pollutant gases during the operations phase (including greenhouse gases) when compared with a conventional thermal power station is considered to be MAJOR.

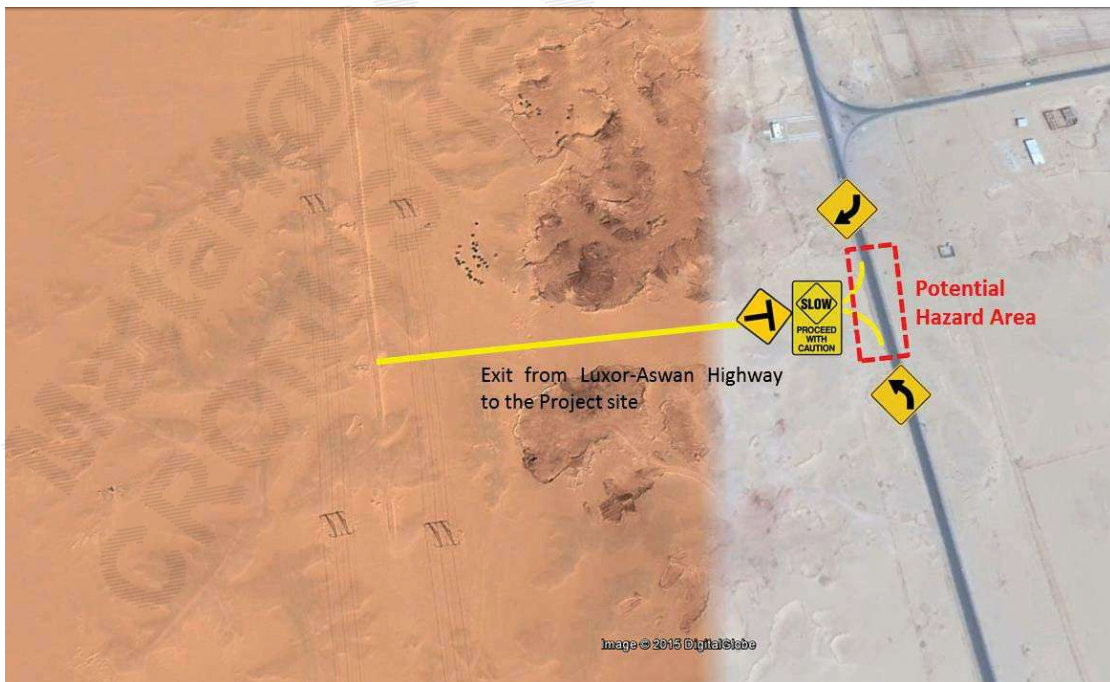
Traffic/Transport

Mobilization and Construction Phase: Transport of materials and workers will have a significant local impact. The highest potential for traffic impacts arises during peak times of construction as the transport of large containers with PV panels, frames and other equipment can require hundreds of vehicle movements per day during peak construction time (2-3 months per plot; construction on many/all plots could occur at roughly the same time). In addition to materials delivery there will be large numbers of buses ferrying workers to and from the site, plus traffic of contractors and deliveries of food etc.

Transportation of construction materials and equipment from sea ports (most likely in the Gulf of Suez) will be mainly via the Luxor-Aswan Highway. It is not likely that much of heavy traffic will use the minor Benban - Fares road. Large parts of the Aswan – Luxor Highway are single lane in both directions and traffic density is generally low (but many vehicles travel at high speed). At peak construction time the increase in overall traffic density can be significant, with associated noise, dust, exhaust fumes and road safety risks.



Aswan – Luxor Highway



Connection of the site with the Aswan - Luxor Highway

ALCOM ENERGY’s project stated that

- They aim to start construction no later than spring 2016;
- The construction period would be between 7-9 months;
- Peak construction time would be 2-3 months;
- Delivery of components would be by road from seaports, in full-size containers (40 ft.);
- The number of containers for panels and frames would be between 600 and 1,000 (for the 50 MW installation with approximately 200,000 panels);
- Containers would normally be stored in front of the plot (according to NREA there is a 7 meters space between the paved main roads and the plots) or on the plot;
- Construction would require between 250 and 1000 workers (direct and indirect) at peak time;
- Workers would generally live off-site and be brought in by bus.

	ALCOM ENERGY PLOT (50 MW)
Daily number of workers at <u>peak construction time</u> (90 days)	500
Daily number of workers at <u>normal construction time</u> (5 months)	200-300
Daily number of buses required to transport workers on/off site at <u>peak</u>	10
Daily number of buses required to transport workers on/off site at <u>normal construction time</u> (not peak time)	4 - 6
Total number of containers delivered within 90 days	600
Daily number of containers delivered during 90 days peak construction time	7
Daily number of other vehicles at peak construction time and at normal <u>construction time</u> entering and leaving the site	10
Daily total number of vehicles at peak construction time	27
Daily total number of vehicles at normal construction time (not peak time)	4 – 6
Daily total number of vehicles leaving and entering the highway at normal <u>construction time</u> (not peak time)	8 – 12
Daily total number of vehicle movements (i.e. vehicles leaving or entering the highway) at peak construction time	54

Transport Table Estimation

To minimize risk of collision may well require applying effective traffic management measures that must include training of the drivers; traffic signals placed on site and trained supervisors “traffic marshals” that control the transport activities on the site, considering that many developers will have

the same activities during the same periods.

Mitigation Measures

Implement a traffic management plan including:

- Scheduling of deliveries to avoid bottle-necks (i.e. queues of lorries waiting for site entrance);
- Construction of long slip roads or provision of sufficient space for temporary parking prior to entrance of the Benban site will be necessary; an underpass should be considered;
- Placing of warning signs at 50, 100, 500 and 1000 m north and south of the site entrance/exit. Warning signs to be clear and visible at night;
- Limiting the speed on the road from the highway to the site and on the Benban PV site;
- Coordination of road traffic management with the Ministry of the Interior and the police;
- Use of trained 'traffic marshals' to regulate traffic flow;
- Good road maintenance of the Luxor-Aswan Highway and the Benban – Fares connecting road.

Proposed Monitoring Measures:

- Monitoring of traffic density near the site entrance and exit;
- Monitoring and evaluation of any local traffic accident;
- Recording and documentation of complaints related to traffic congestions from drivers, neighboring communities and other users of the highway and the local road network.

In addition, it is recommended

- To assess the potential of glare at the highway roadside and, if significant, to put a screen or a low landscaped wall of local gravel along the highway or along the southern, eastern and northern borders of the Benban PV site;
- To analyze, during operation of the site, all accidents occurring on this stretch of the highway and to establish whether glare of drivers could have been a cause. If that were a contributory cause the screening of the site will have to be improved.

Operations Phase [PV Benban project as a whole]: Traffic to the Benban PV site and on-site during normal operations will be slight to moderate. The number of workers and contractors on site, plus any other site maintenance staff, is unlikely to exceed 400 per day (based on developer's estimates), unless labor-intensive repair or maintenance work on plots is to be done. The mitigation and monitoring measures recommended for the construction phase should remain in place.

Energy Supply

Construction Phase: Construction works require an electricity supply to each plot; alternatively, the developers will have to use their own generators. A decision on whether a central electricity supply to the site with separate connections to each plot is to be installed has not yet been made (November 2015).

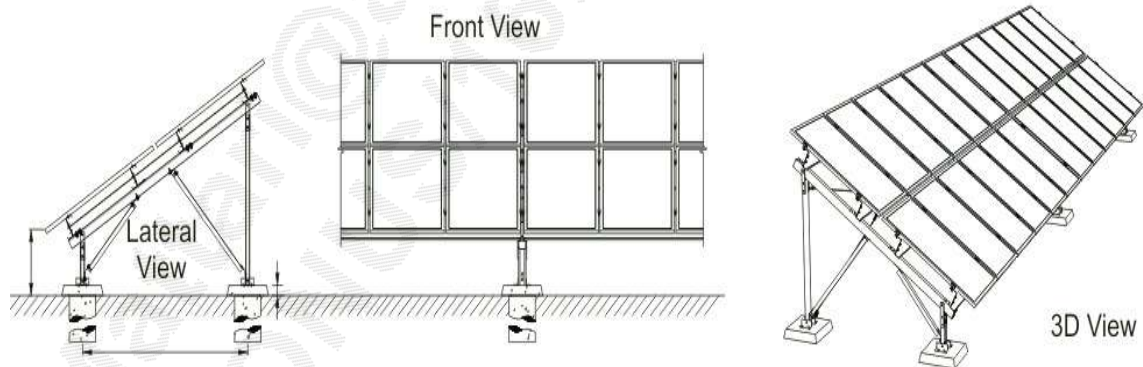
Operations Phase: It is assumed that no generators are in use.

1.2.3. WATER CONSUMPTION

Construction Phase: During construction, large volumes of water will be required for sanitary purposes. Assuming 50 liters per capita this can amount around 3.5 m³ per day during peak time, and any water required for construction (concrete production for building work; equipment cleaning). There can also be a requirement to control fugitive dust (e.g. from vehicle traffic on unpaved roads) by water spraying.

Number of workers	Consumption by worker (liter/day)	Estimated Water Consumption			
		Daily		Monthly	
		Liter	m ³	Liter	m ³
70	50	3,500	3.5	105,000	105

Some structures need to be built before placing the PV supporting structures. Some of these structures need cementation on the base.



Cement Piling for PV Structures

The waste consumption for construction activities and fugitive dust emission control is estimated on 10m³/day

	Estimated Water Consumption			
	Daily		Monthly	
	Liter	m ³	Liter	m ³
Construction Activities	10,000	10	300,000	300
Workers Consumption	3,500	3.5	105,000	105
Total Consumption	13,500	13.5	405,000	405

Operations Phase: During operations, water large quantities could be required for panel cleaning; water requirements for sanitary purposes will be low as the number of control and maintenance workers.

Because of sand-blow, panels will have to be cleaned regularly to prevent dust build-up, which would affect panel performance. Figure below shows a panel exposed at Benban, covered with a thin film of sand, next to a clean one. A realistic frequency for cleaning is not known and depends on weather conditions. Cleaning can be done with or without water (brush cleaning), in commercial PV installations often with automatic or semi-automatic cleaning systems. The figures below show examples of both cleaning methods.



Trial Panels at Benban



Fixed installed brush (dry) cleaning system



Wet Cleaning System

According to developers with PV installations operating in similar conditions (desert environment), cleaning could become necessary once or twice per month. In case of ALCOM ENERGY PV Plant, ‘dry cleaning’ mechanism will be utilized, alternating with ‘wet cleaning’ every two months to optimize the use of water resources and maximizes water use efficiency. Cleaning with water could require between 2 and 4 liters per panel for each cleaning cycle. The estimated water consumption during Operation and Maintenance Phase is presented in the following table.

		Estimated Water Consumption			
		<i>Bimonthly</i>		<i>Annual</i>	
Number of PV panels	Liter / panel	Liters	m ³	liters	m ³
20,000	3.5	70,000	70	420,000	420

Water consumption during O&M phase

Sanitary Installations and Waste Water

Construction Phase: Provision of adequate sanitary facilities during construction will require substantial volumes of water during the construction phase. ALCOM ENERGY will install, at least temporarily during the construction phase, containerized sanitary facilities. Assuming 50 liters per day per person on site this could in total require around 3.5 m³ per day (for 70 workers). These volumes are manageable and could even be brought in by tanker.



Sanitary container

Operation Phase: The much reduced number of permanent staff, temporary staff (e.g. for panel cleaning) and of contractors will be during operation phase, hence the same facility can easily contain and handle the wastewater.

1.2.4. BIODIVERSITY

Flora and Fauna

As part of the Kom Ombo ESIA the Consultant has in 2013 conducted baseline surveys in order to assess the presence and distribution of ecologically sensitive species and habitats; the validity of these findings was confirmed during site visits in 2015. Given the characteristics of the Benban site (desert without vegetation) it is concluded that the construction activities on the site will not affect endangered fauna or flora species or disturb valuable habitats. The few recorded species are common and rarely found on the site.

However, it is unclear if and to what extent migratory birds may be affected. Once completed, Benban is a very large structure which may attract birds migrating along the River Nile. This will need to be monitored at migration periods.

Uncontrolled waste disposal will affect negatively to the fauna. This activity attracts birds, rodents, feral dogs and cats and other vectors, hence the proper control and handling of waste must be applied.

1.2.5. SOCIAL CONTEXT

Project affected People and Project Stakeholders

Consultation with project stakeholders has been carried out as part of the Strategic Environmental and Social Assessment (SESA). This included consultation meetings with local people, individually, in groups, and at formal consultation meetings. In general local communities welcome the project and anticipate its benefits to the local economy.

- 1- Workforce and supply chain
- 2- Socioeconomic impacts
- 3- Community health, safety and security impacts
- 4- Land use, involuntary resettlement and economic displacement
- 5- Risk to existing infrastructure
- 6- Cultural resources impacts
- 7- Overconsumption of community resources

These impacts are in the following presented for the construction phase and the operations phase. Project impacts were discussed with various stakeholders during the scoping and data collection phase as well as during public consultations.

Workforce Impacts and Benefits

Impacts and benefits are considered for both direct and indirect labor as defined by IFC Performance Standard 2 (PS2) 'Labor and Working Conditions' and in EBRD Performance Requirement 2 (PR2) 'Labor and Working Conditions'. The following definitions have been used:

Employees – includes direct employees (staff/personnel) of developers;

Contractor workers – refers to workers who are engaged with the Project through

contractors or other intermediaries, and who perform work directly related to core functions and activities essential to the project or services for a substantial duration of time; and
The supply chain includes any suppliers of goods and services to the Project. The remit of suppliers is recognized as an area where project developers have no direct authority for interference, but can exert influence in terms of policy and enforcement of good practice (please see the guidelines of workers)

During construction phase: direct and indirect employees

The PV Benban project as a whole is expected to result in the creation of job opportunities, both directly and indirectly. Daily average number of workers during the peak time will be about 300 workers in ALCOM ENERGY's plot. In case of a simultaneous start of all the construction activities in the whole area, this would require 18,000 workers. The local community of Benban and Fares could theoretically provide a proportion of this temporary labor force dependent on skills needed and the strategies of the individual developers in sourcing their workforce. To maximize employment opportunities in the local communities it is anticipated that training will be required for currently unskilled workers. On-the-job training will also supplement opportunities for the local workforce for both temporary construction roles and for long-term operations phase positions, where these are available.

To avoid the potential negative impacts associated with sourcing a local workforce (including but not limited to issues such as discrimination, people trafficking, forced and child labor, community health impacts through worker influx, and avoidance of community tensions) a coordinated and comprehensive policy to Benban workers will be required to be developed. This will be coupled with identifying the exact employment needs of the project, the availability of local communities to provide the workforce and specific training needs.

Additionally, the project is expected to result in a number of backward linkages for local business including food suppliers, other contractors and drivers will benefit from the project that will also result in increasing the revenue of taxes for the state. A coordinated approach to small business development will be required to ensure equitable distribution and suitability of the project benefits.

Operations Phase: Direct and indirect employees

During normal operations only a very limited number of workers will be required. ALCOM ENERGY stated that they need 8 permanent staff on site during daytime, plus additional workers for panel cleaning (around 30 workers). Most permanent staff is likely to live locally and should be sourced on the basis of non-discrimination and in line with internationally accepted employment conditions.

Supply chain: Construction and Operation

In addition to direct and indirect employment, services and resources provided to the project will include the following:

- Implementation of works and provision of supplies related to construction, operation and closure of the site and ancillary facilities;

- Provision of transportation, freight and storage services to the Project;
- Provision of food supplies and cleaning services;
- Provision of building and auxiliary materials and accessories, engineering, installation and maintenance;
- Provision of white goods, electronic appliances, communications and measurement equipment;
- Security personnel;
- Accommodation, laundry and clothing;
- Retail services; and
- Provision of fuel

In-migration to the PV Benban project area triggered by the project development will also result in local businesses benefiting from the growing demand for resources, goods and services. Small and medium-sized enterprises are likely to gain from the movement of people into the area, particularly those engaged in the accommodation, food service and other domestic supply sectors. It is expected that this will lead to some businesses from elsewhere in the region.

Impact significance: The creation of jobs and provision of supplies' contract will be the primary impact of the Benban project that has the potential to result in a positive impact, although there are a number of potentially significant risks that need to be adequately managed to ensure that the project benefits are fully realized. Risks that need to be further assessed and adequately managed include:

- Labor and working conditions covering the full suite of employment issues from contractual terms, setting wages, representation, sourcing workers, avoiding harmful working practices, and contract termination need to be fully considered and applied in a consistent manner between all developers and their contractors. Labor and working conditions will need to be consistent for direct and indirect employees alike without differentiation.
- Inter-tribal issues will need to be carefully considered to avoid discriminatory procedures and community tension when sourcing labor.
- The majority of available work will be on a temporary basis only and expectations will need to be managed accordingly.
- Community impacts of worker influx need to be carefully considered and minimized where possible. This includes domestic and international migrant workers and workers mobilized by the project developers to fill specific roles where local workforce cannot provide such personnel. Housing of influx workers needs to be fully considered before the commencement of construction activities. Additionally, workers should be fully oriented about the norms and traditions of the community people in order to avoid any conflict.

Proposed Mitigation Measures

- In order to mitigate the above impacts project developers, through a collective association, need to agree on minimum standards for labor working practices and a common set of labor and working conditions that meet Egyptian Law, international standards such as ILO conventions and EBRD and IFC Performance Requirements / Standards.
- Following the agreement of a common set of standards an employment census will be required to form a job management plan will be required for all opportunities clearly setting

- expectations.
- Need to fully ensure that the common labor and working conditions established are fully implemented along the supply chain
 - A community liaison team will be required and a central resource for coordination of all labor related activities. This will include a transparency mechanism and to mobilize a Community Based Committee (CBC) representing all tribes which will be responsible for nominating workers.
 - The Developers Association (which ALCOM ENERGY is part of) has the opportunity to coordinate the interaction between the CBC and the contractors which will uphold the common standards, including priority sharing and non-discrimination;
 - The Developers Association should establish a Grievance and Redress Mechanism that enables community people to voice their concerns about the employment process and working conditions To meet IFI requirements a detailed assessment of worker accommodation arrangements for influx or migrant workers is required to be undertaken collectively and by each developer individually, if necessary, in line with EBRD/IFC guidance notes. The extent of which will be determined when developer arrangements become more defined.
 - Advance planning of retrenchment and workforce demobilization. Proposed Monitoring Measures
 - The developers association and / or their advisor will need to monitor the successful implementation of recruitment planning and execution, particularly prior to peak construction activities.
 - A detailed monitoring plan should be developed concurrently with the recruitment plan and include independent verification that the minimum standards are being adhered to.
 - Contractor will report on all aspects of workforce arrangements to the developers' association advisor;

Occupational Health and Safety

Community Health, Safety and Security impacts arising from the construction and operations (and eventual decommissioning) are likely to be as follows:

- Increased risk of traffic hazards and incidents associated with the use of the highway for freight and local roads for workers;
- Increased incidence of communicable disease;
- Risks associated with the presence of security personnel on site (within the project area) and at offsite operations and activities (within the community); and
- Personal safety and well-being impacts associated with worker influx.

The specific risks and associated mitigation measures associated with the construction and operation phases are detailed below:

Mobilization and Construction Phase: Throughout this phase, there will be many occupational health and safety risks to workers on site. These are generic risks associated with construction sites and include slips and falls; moving Lorries and machinery; exposure to chemicals and other hazardous materials; exposure to electric shock and burns; weather related impacts (dehydration; heat stroke). This is short term (9 months) but because of

the large number of mostly unskilled workers a reliable, but simple-to-understand, occupational health and safety management system has to be implemented on ALCOM ENERGY's plot and for the Benban PV. Developer confirmed that they operate their own H&S systems, mainly based on OHSAS 18001.

Site management or the developer group should agree on general H&S standards and working practices to be applied to the site as a whole. This would provide guidance for individual developers. A common H&S Manual and easy-to-follow instructions (inclusive of graphic instructions for illiterate workers) for contractors and visitors should also be developed for use on the entire site. Worker training and site audit protocols could also be standardized to achieve uniformly high standards of performance.

Operations Phase: Permanent staff employed for normal operations are likely to be well trained and aware of H&S requirements and company H&S policies and management systems. The risk of accidents would therefore be much lower and can be managed by continuing to apply the H&S management practices introduced during construction.

Benban village has a medical center and an ambulance station on the Fares - Benban road. This should be sufficient for medical emergencies; it is therefore not necessary to establish a separate medical station on the Benban PV site as long as developers are arranging for on-site medical treatment of minor injuries. If site management decides otherwise, re-opening the abandoned ambulance station at the Aswan – Luxor Highway near the Benban turnoff would be a possibility.

ALCOM ENERGY provided information stating stated that

- Workers will either live locally (own accommodation; Benban, New Benban, New Fares and Fares villages; labour camps on the Benban PV site) or as far away as Aswan, which is 45-60 minutes by car;
- Contractors will have to provide transport.

Operations Phase: During normal operations, only a very limited number of workers will be required. Developers generally stated that they need 8 permanent staff on site during daytime, plus additional workers for panel cleaning. Most permanent staff is likely to live locally.

Proposed Mitigation Measures

- A community development plan should be developed including a strategy to manage a large population influx.
- A definitive, enforceable and standardized worker Code of Conduct is required to ensure community interactions are positive.
- A worker and community health strategy will be required to manage both project related risks and population influx risks.
- A security strategy is required to mitigate any negative interactions between security personnel (especially if armed) and the local communities.
- A road safety strategy is to be developed which is comprehensive in nature and includes

all levels of road safety from training, awareness, vehicle safety, community education and infrastructure improvements.

Proposed Monitoring Measures

- Each of the strategies related to community Health, safety and security will need to include detailed monitoring plans

Impacts on the existing infrastructure

- 1- **Impacts on road and traffic:** As it was previously mentioned in the environmental section roads and will be a major impact and traffic will be affected due to moving the vehicles and equipment of the constructing area. That will necessitate a detailed traffic management plan to be prepared in full collaboration among the developers, and ALCOM ENERGY has stated the fully participation. That plan should be based on the regular activities of the community and the seasonal activities related to crop harvest and the annual horse festivals. Additionally, the project will construct a network of roads inside the site that will serve the developers. In the meantime, water intake that might be constructed will result in cutting the roads. That will necessitate rehabilitation of the roads in order to restore their normal conditions.
- 2- **Impacts on water supply:** The main pressure on water supply will occur during the operation phase due to panel cleaning and human water requirements. The environmental section discussed water needs for cleaning panels. Water intake at the abstraction point may lead to damage of existing water pipelines that are already fragile. A comprehensive impact assessment has been carried out on the water intake and pipeline as part of the Kom Ombo CSP ESIA.

Water for activities other than panel cleaning are estimated at around 50L per person per day. These are insignificant compared to the water pipeline capacity required for panel cleaning. Drinking water of acceptable quality must be provided either through treatment of the intake water or through bottled water. In case of bottled water, the empty bottles must be included in the site, and plot, waste management plans.

- 3- **Impacts on electricity:** During the construction phase, it is not anticipated to result in any impacts on the electricity supply due to relying upon generators that will be installed inside the construction site. However, the project will inject the produced electricity in the national grid. This process will result in a certain level of enhancement on the electricity supply on the regional level

Proposed Mitigation Measures

The developers will identify, evaluate and monitor the potential traffic and road risks to workers and potentially affected communities throughout the project life cycle and, where appropriate, will develop measures and plans to address them. This will only be possible once developers have clear and specific plans for their requirements during the construction as well as operation phases.

- The developers will take into consideration relevant EU road and traffic safety management standards; identify road safety measures and incorporate*¹ technically and economically feasible and cost-effective road safety components into the project design to mitigate potential road safety impacts on the local affected communities.
- All underground utility maps should be obtained prior to the construction phase by the contractors;
- Contractors should coordinate with the local governmental units in order to secure quick repairs in case of damage.
- Proposed Monitoring Measures
- Regular checks of the contractors log related to impact on the infrastructure;
- Regular checks of the complaints related to infrastructure damages.

Over-consumption of community resources

As previously mentioned, the 50 MV PV plant to be constructed by ALCOM ENERGY will be part of the Benban PV Project. As plot-specific project, the consumption of community resources, especially water resources does not have mayor impact, but considering the Project as a whole, where all developers will be performing Construction and Operation activities during the same period, the impacts become significant.

In this section, the impacts will be described considering the whole Benban PV Project, but the analysis of the impacts was made based on plot-specific bases.

During construction: Having up to 18,000 workers on a site close to Benban and Fares villages will have an impact of the available resources, e.g. accommodation, food, health care and medication and potable source of water. The availability of these resources needs to be investigated by Benban site management and site management, developers and contractors should be instructed to work with the community to prevent any negative impact (and to act immediately on complaints). The various studies and strategies mentioned above should incorporate these together.

During operation: Given the limited number of workers within each site, overconsumption of community resources is not envisaged. The majority of workers will be recruited from the local community. Thus, there is no such impact during the operation.

Proposed Mitigation Measures

A guideline should be prepared by the developers association about procurement procedures and sources of supplies and suppliers;

¹ Consistent with the objectives of Directive 2008/96/EC of 19 November 2008 on Road Infrastructure Safety Management

The developer association should negotiate with the governorate in order to increase the quota of potable water in the area in order to satisfy worker needs;
Contractors should be committed to provision of food and water to workers from various sources.

Proposed Monitoring Measures

Regular checks for supplies vouchers and address of suppliers;
Regular checks of complaints raised due to the overconsumption of community resources;

Impact significance: This is expected to be MINOR and temporary impact during construction phase. In order to mitigate that effect, it has been recommended in the ESAP to secure supplies from many food contractors. Additionally, the contractors should obtain food and water supply from various districts and the main city of the governorate.

The Benban Projects are expected to require an intensive yet short-term construction program. If all 45 Benban projects were to be carried out at the same time, and all were to require 500 workers per plot at peak construction time (2-3 months) then the site would temporarily receive up to 18,000 workers. Even if the individual projects were staggered over a year, this could lead to the need for 4,500 temporary workers (i.e. equal peak manpower requirement spread over the whole year). These calculations are based on 36x50MW facilities, to equalize for different plot sizes.

It is expected that a proportion of these jobs will be filled by the local people, temporarily alleviating the high rate of local unemployment. Discussions held with local authorities and community leaders in Benban village indicated that the local communities in Benban are expected to provide around 2,000 workers, while Fares village may contribute an additional 1,000. The termination of work for most of the workers employed during the peak construction phase (who will be informed that these jobs are temporary but may still hope they turn into permanent) will have to be handled carefully. It has to be absolutely clear that this is short-term work and that the prospects for long-term employment on the Benban Projects are quite limited. The end of temporary work and income can be a social problem as it impacts on the individual and the entire community. This can lead to resentment and opposition to the Benban Projects. A participatory community support program could help alleviate such impacts.

Cultural Resources / Heritage

During construction: Potential impacts on cultural resources might occur as workers from outside the community and with different behavioral patterns might affect the norms and traditions of the community people. This may not be a significant concern in urban areas, but in the conservative rural and Bedouin areas, this may affect the local people's cultural privacy. Further assessment of population influx and worker code of conduct should be fully cognizant of local sensitivities.

During operation: Impacts during operation phase are likely to be similar to those during construction although on a smaller scale. However, if construction related risks are not managed sufficiently the residual risks associated with operational phases may be exacerbated.

Proposed Mitigation Measures

- Worker code of conduct and population influx studies required need to be
- A guideline should be prepared by the developers association about norms and traditions that workers need to follow;
- Contractors need to be informed about norms of the local community;
- Direct contacts with women should be avoided;
- Contractors should coordinate with the community-based committee in order to identify, avoid, or mitigate any violations.
- A chance finds procedure is required in the event that any items of potential cultural heritage are discovered during construction activities.

Proposed Monitoring Measures

- Regular meetings of Benban site management with the community based committee;
- Regular checks of the instructions provided to workers.

Impact significance: This is expected to be a minor and temporary impact. It has been recommended in the ESAP to develop a plan to maximize the use of local labour and to maximize benefits to the local communities to win their trust and support. Additionally, workers recruited from outside Aswan should be informed about the norms and traditions of the community.

Women and Vulnerable groups

The term “vulnerable groups” refers to people who, by virtue of gender identity, ethnicity, age, disability, economic disadvantage or social status may be more adversely affected by project impacts than others and who may be limited in their ability to claim or take advantage of project benefits. Vulnerable individuals and/or groups may also include people living below the poverty line, the landless, the elderly, women- and children- headed households, refugees, internally displaced people, ethnic minorities, natural resource dependent communities or other displaced persons who may not be protected by national and/or international law. It is important to identify and address these groups during the early consultation phases of the projects in order to avoid placing additional strains on these groups as a result of the project.

Ethnic and Religious Groups

The population of Benban and Fares are largely homogeneous with no religious or ethnic minorities. They all have originated from the same ancestors and are bound by values and morals which encourage the support of economically deprived relatives. These values add more cohesion among members of the community.

Workers recruited from outside Aswan to work in the bricks factory and food canning industry are in most of cases also Muslims and face no vulnerability due to their religious background.

Children and Youth

Children and youth constitute the biggest strata of population in Benban (about 30.0) and Fares (38.5%).

Some of the workers recruited from outside Aswan are under 18 years of age and are thus officially classified as children. They work under summer sun in extreme temperatures above 47 degree. They suffer from malnutrition and diseases. Their hygienic attitudes are below standards. These children can be classified as vulnerable groups and may benefit from the project, which is foreseen to follow better working conditions and provide protection from any potential forms of exploitation.

As a conclusion, Benban and Fares male young population are not marginalized or voiceless; however, the workers recruited from outside Aswan are poor, voiceless and vulnerable groups.

Elderly People

There are no reliable statistics available for the number and conditions of elderly people in Benban and Fares. On site observation and discussions within the community indicate that old people are respected cared for within the community. As per old Arab traditions, a heavy weight is placed on the wisdom of elders, making their contribution is essential in solving disputes in Aswan governorate.

Elderly groups are not marginalized in both Benban and Fares as they take the lead among their community. They have access to health care and the entire family is committed to their welfare.

Women's Rights and Participation

Men and women have the same rights under Egyptian constitution and laws. Women are increasingly holding positions in Government, politics, media, private business and universities.

However, older tribal communities such as Benban and Fares still follow a strongly patriarchal and conservative ideology. Women are generally expected to take on the traditional role as wife and mother in running the household and raising children, rather than pursuing a career or participating in the labor force.

Women's social status and rights have frequently been disregarded during the consultation process. In practice, women continue to suffer limitations to their rights to expression, association, movement, speech and personal freedom.

Men and women generally socialize in separate circle. It was reported that males are of better conditions than females, as they are empowered and enabled to get into the social networks. Females are still marginalized and not fully engaged in the society due to norms and traditions constrains. The mobility of females is still limited.

However is it worth noting that females who participated in the consultation activities did not seem to complain from the patriarchal system but rather conformed to these beliefs and regarded them as "the norm".

Despite the rise in political participation for females all over Egypt in the wake of 25 January uprising, Fares and Benban women still show little interest in political participation.

It was reported that some women might work in the field with their spouses but they can never declare that they work in the field out of cultural and traditional limitations on women's work outside of the house.

Elder woman are fully respected in the community, they can run the house with no interference from males. Women always take care of all family members and socialize with all other women in the village.

Aside from females of Benban and Fares, almost all food-canning products are operated by migrant females who work hand in hand with migrant males. They suffer due to poor quality of life, poor health conditions, and working under extreme temperature with limited access to sanitary facilities

Males managed to maintain their right to work abroad, which is entirely prohibited for females. The majority of young females were not allowed to continue education, particularly, due to the absence of transportation. The needs assessment workshop reflected that the female young people are keen to perform some works inside their house.

Vulnerability Status

The investigation of vulnerable groups in the Benban and Fares showed that the main vulnerable groups are as follows:

- Economically underprivileged local females who have no access to jobs due to community norms and traditions. However, well off male relatives are responsible of securing financial support to those groups;
- The second category is marginalized young people who are voiceless. Female young people are more marginalized than males;
- There is no ethnic group or marginalization based on the community people origin and religion
- Male and female migrant workers who work under extreme conditions and remain unprotected

All previous impacts discussed will be more severe for the vulnerable groups. Thus, special attention should be paid to those categories and the following is proposed:

- Special attention should be placed on local women and vulnerable groups require particular attention. Females should be encouraged to apply to temporary and permanent jobs announced by the investors. There may be discrimination against women when temporary and permanent jobs are offered.
- The developers should also invite migrant women from outside the villages (not the residents of Benban and Fares) to apply for these jobs and should avoid any gender

discrimination. However, woman themselves might be reluctant to work in the project due to norms and traditions constraints. Young marginalized and voiceless people who have limited skills should be engaged in the project through providing them with job opportunities. No discrimination should take place based on gender, religion or social groups. Therefore, all job opportunities should be advertised on the level of the community based committee and the local governmental unit (Benban and Fares) in visible places.

Vulnerable Groups Related To Impacts on Livelihoods and Source of Income

As the project might result some unfavorable economic impacts during the construction and operational phase. The potential loss of income might result due to the construction activities that might affect the flow of traffic. Daily wageworkers who work on vehicles might be affected due to the traffic jam.

Vulnerable Groups Due To Accumulation of Wastes

Accumulation of construction wastes in the sites might result many hazards on the surrounding communities and project workers. The hazardous effect will be high among those who have a fragile health condition, particularly, if they are of poor living conditions and uncovered with medical insurance umbrella ,

Vulnerable Groups Due To Health and Safety Impacts

Children, elder people and those who suffer due to any accidents or health problems resulted from the project, including laborers. These groups will be considered as vulnerable in case if they belong to poor families and if they are not covered by health care insurance.

1.3. Potential Aggregate and Cumulative Impacts

From a purely environmental point of view, the land-take of each project does not constitute a significant impact on the natural habitat and its components, given the characteristics of the site. Similarly, there is no negative impact on archaeology and cultural heritage.

The situation is different for the use of resources (from sanitary water usage during construction to water required for panel cleaning during operations); generation of liquid and solid waste (mainly during construction); and the impact of the workforce (mainly during construction). The Benban Projects will use comparable technology but are likely to differ in plot layout; in construction schedule; in manpower used during construction, and in the infrastructure required for their temporary workforce (e.g. housing); plots they may have different support structures such as types of panel mountings; there may be different maintenance schedules and methodologies; and plot infrastructure may differ (temporary and permanent facilities for storage; collection of waste; sanitary facilities; control and maintenance buildings etc.). This has a significant social environmental and social impact on the construction phase and a smaller impact on the operations phase.

Individually, construction of a Benban project does not have an appreciable impact on the natural environment. Construction impacts are temporary and can be mitigated by appropriate management. Operational impacts are generally low, with the exception (optionally) of water use for panel cleaning. The social impacts of operations are small, given the limited number of

staff necessary for security and maintenance.

Analysis of the scarce preliminary data available shows that whilst the environmental and social pressure of constructing a single Benban Project might be low and easily mitigated and managed, the aggregated impact of all projects are significant and can put a high level of pressure on resources and the socio-economic baseline. The feedback from developers indicates that all companies want to start project implementation as soon as possible. If all projects were to be carried out at the same time, with peak construction times overlapping, there could easily be an estimated 20,000 workers on site - albeit for a short period of time. Delivery of components could reach a total of 39 x 1,000 lorry loads (39,000 single 40 ft. containers), many of which will have to be securely stored for a period of time.

In addition, during operations large volumes of water may be required – if this is the preferred cleaning option for panels.

The IFC defines cumulative impacts as ‘those that result from the successive, incremental, and/or combined effects of an action, project, or activity when added to other existing, planned, and/or reasonably anticipated future ones. For practical reasons, the identification and management of cumulative impacts are limited to those effects generally recognized as important on the basis of scientific concerns and/or concerns of affected communities.

The IFC proposes, where appropriate, Cumulative Impact Assessments (CIAs). Such assessments would focus on the impact on Valued Environmental and Social Components (VECs).

VECs are environmental and social attributes that are considered to be important in assessing risks and may be:

- Physical features, habitats, wildlife populations (e.g., biodiversity),
- Ecosystem services,
- Natural processes (e.g., water and nutrient cycles, microclimate),
- Social conditions (e.g., health, economics), or
- Cultural aspects (e.g., traditional spiritual ceremonies).

While VECs may be directly or indirectly affected by a specific development, they often are also affected by the cumulative effects of several developments. VECs are the ultimate recipient of impacts because they tend to be at the ends of ecological pathways.

A CIA would have six objectives in relation VECs:

1. Assess the potential impacts and risks of a proposed development over time, in the context of potential effects from other developments and natural environmental and social external drivers on a chosen VEC.
2. Verify that the proposed development’s cumulative social and environmental impacts and risks will not exceed a threshold that could compromise the sustainability or viability of selected VECs.
3. Confirm that cumulative social and environmental effects do not limit the proposed development’s value and feasibility.

4. Support the development of governance structures for making decisions and managing cumulative impacts at the appropriate geographic scale (e.g., air shed, river catchment, town, regional landscape).
5. Ensure that the concerns of affected communities about the cumulative impacts of a proposed development are identified, documented, and addressed.
Manage potential reputation risks.

A CIA is beyond the scope of this ESIA. However, ALCOM ENERGY should anticipate accommodating the E&S mitigation and monitoring measures in its own ESM/AP should a strategic CIA for the solar park be needed.

1.3.1. Impact and Risk

From a purely environmental point of view the aggregate land-take for all projects on the Benban site does not constitute a significant impact on the natural habitat and its components, given the characteristics of the site. Similarly, there is no negative impact on archaeology and cultural heritage. As there are no plans for any other future development on or near the site, cumulative environmental impacts are also unlikely.

1.3.2. Exceedance of thresholds

Similarly, the aggregated effect of the Benban site on physical features, habitats, wildlife, biodiversity, ecosystem service, archaeology and cultural heritage is limited and does not constitute a significant impact. The assessment is different for potential water use both during construction and particularly during operations. Large –scale water abstraction of water from the River Nile or from groundwater resources would be a significant impact and would have to be carefully managed, Minimization of water use through alternative techniques (e.g. dry brushing of panels) will need to be evaluated and should be the preferred option.

1.3.3. Reputational risks

The reputation of the overall Benban project depends on the performance of individual Benban Projects and, more importantly, the perceived overall performance of the entire projects with its aggregate potential impacts. As mentioned above, this requires competent site management and compliance of individual Benban Projects with all national laws; compliance with the requirements of IFIs (as most projects are likely to seek such finance); and adherence to best industry standards.

ALCOM ENERGY
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT
BENBAN 1.8 GW PV SOLAR PARK
CHAPTER 1 - ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT



Receptor	Phases of The Project					Impacts Identified	Mitigation Actions	Impact Rating
	Mobilization	Preparation of Land	Construction	Operation & Maintenance	Decommissioning			
Landscape and Visual Impact	X	X	X	X		<ul style="list-style-type: none"> Visual impact for PV infrastructure on desert land close to highway 	<ul style="list-style-type: none"> Follow in the original design without additional structures or buildings 	Negative Minor
Land Use	X	X	X		X	No significant impacts		Irrelevant
Soil and Ground Water	X	X	X		X	<ul style="list-style-type: none"> Compaction of soil & Earthworks. Probability of spills of substances and wastewater. 	<ul style="list-style-type: none"> Develop & implement waste management plans for liquid waste; solid waste; hazardous waste; Install suitable sanitary facilities with appropriate septic tanks; ensure regular disposal of liquids; Install proper food preparation facilities with waste collection; Construct an impermeable protective base layer underlying areas with potential hazardous liquids storage or use. 	Negative Minor
Waste Generation	X	X	X	X	X	<ul style="list-style-type: none"> Waste generation can affect soil conditions 	<ul style="list-style-type: none"> Prepare waste management plan 	Negative Minor
Noise Impacts	X	X	X			<ul style="list-style-type: none"> Worker can be affected for heavy equipment operations 	<ul style="list-style-type: none"> Restrict activities to designated areas Provisions of Personal Protective Equipment and training on the proper use. Clear instructions in areas 	Irrelevant

Receptor	Phases of The Project					Impacts Identified	Mitigation Actions	Impact Rating
	Mobilization	Preparation of Land	Construction	Operation & Maintenance	Decommissioning			
							where noise emissions are significant. <ul style="list-style-type: none"> Optimize the use of noisy construction equipment and turn off any equipment if not in use. Regular maintenance of all equipment and vehicles 	
Air Quality	X	X	X			<ul style="list-style-type: none"> Generation of dust Air emission from vehicles and machinery 	<ul style="list-style-type: none"> Develop & implement a site delivery plan to regulate traffic and to avoid build-up at the site entrances. Speed restriction (30 km/h) for all vehicles. Implement preventive maintenance program for vehicles and equipment working on site and promptly repair vehicles with visible exhaust fumes 	Negative Minor
Transport/ Traffic	X	X	X			<ul style="list-style-type: none"> Risk of collisions Increase of vehicular traffic Increase of air emission 	<ul style="list-style-type: none"> Implement Traffic Management Plan 	Negative Minor/Severe
Energy Supply		X	X			<ul style="list-style-type: none"> Air emissions from generators 	<ul style="list-style-type: none"> Air emissions from generators 	Irrelevant
Water Consumption		X	X	X	X	<ul style="list-style-type: none"> Monthly: 105 m³ of water needed 	<ul style="list-style-type: none"> Controlling wastewater with sanitary facilities. 	Negative Minor

Receptor	Phases of The Project					Impacts Identified	Mitigation Actions	Impact Rating
	Mobilization	Preparation of Land	Construction	Operation & Maintenance	Decommissioning			
of Workers						<ul style="list-style-type: none"> • Generation of wastewater 	<ul style="list-style-type: none"> • On Human consumption: • Avoid disposable cups and bottles to prevent waste generation. • Water dispensers 	
Water Consumption (Construction and O&M Phases)			X	X		<ul style="list-style-type: none"> • Monthly: Approx. 405 m³ of H₂O during Const. Phase • Bimonthly: Approx. 70 m³ of H₂O during O&M. • Consumption of water resources 	<ul style="list-style-type: none"> • Applying preferably 'dry cleaning' • Optimize 'wet cleaning' with proper equipment. • Usage of tank trucks & storage tanks on site 	Negative Severe
Biodiversity	X	X	X	X	X	<ul style="list-style-type: none"> • Probability of disturbance in some species. • Probability of attraction of animals and vectors because of inappropriate waste management. 	<ul style="list-style-type: none"> • Restrict construction and material storage activities to the project's site. • Implement a waste management plan and prohibit dumping/uncontrolled disposal of any types of wastes. • Restrict activities to designated areas. 	Negative Minor
Social Workforce Impact	X	X	X	X	X	<ul style="list-style-type: none"> • Job creation and opportunities • Probability of conflict 	<ul style="list-style-type: none"> • Apply labor working practices and international standards such as EBRD 	Positive Major

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Receptor	Phases of The Project					Impacts Identified	Mitigation Actions	Impact Rating
	Mobilization	Preparation of Land	Construction	Operation & Maintenance	Decommissioning			
						between different resident groups	and IFC Performance Requirements/Standards	
Workforce, Occupational Health and Safety	X	X	X	X	X	<ul style="list-style-type: none"> • Increase of risk of accidents 	<ul style="list-style-type: none"> • Apply EBRD and IFC Performance Requirement/Standards • Provide constant training and supervision 	Positive Major
Impacts on the existing infrastructure	X	X	X			<ul style="list-style-type: none"> • Impacts on road and traffic • Impacts on water supply • Impacts on electricity 	<ul style="list-style-type: none"> • Apply road safety management standards • Developers association must coordinate with local authorities in order to secure quick repairs in case of damage. 	Negative Minor
Over-consumption of resources		X	X			<ul style="list-style-type: none"> • Consumption of water • Consumption of other resources 	<ul style="list-style-type: none"> • Maximize resources for each activity in the plot 	Negative Minor
Cultural Resources /Heritage						<ul style="list-style-type: none"> • Change of habits on population, especially Bedouins 	<ul style="list-style-type: none"> • Workers recruited should be informed about the norms and traditions 	Negative Minor

1.4. Conclusions

- The Mobilization, Preparation and Construction phases will have MODERATE impacts.
- The Operation and Decommissioning phases will have IRRELEVANT impacts.
- Most of the impacts will be on the *Physical Factors*, especially in the “Soil and water Component” due the construction, operation and the activities related. Mitigation actions must to be focused to prevent and minimize the negative impacts on the Soil.
- The project will have a positive impact in the *Socioeconomic Factors* due the local consumption of products, the need of local manpower and the generation of energy.
- The project will have a MODERATE impact.
- **The overall conclusion on aggregate and cumulative impacts** is that the Benban project as a whole does not present environmental or social impacts and risk that cannot be mitigated and minimized by appropriate management and supervision during construction and operations. This requires an effective site management system with regular performance control and a mechanism to correct non-compliances quickly and effectively.

Chapter 2 - ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

2.1. Objectives of the ESMP

The objective of the Environmental and Social Management Plan is to outline a mechanism for minimizing or eliminating potential negative impacts and for monitoring the application and performance of mitigation measures. The ESMP identifies roles and responsibilities for different stakeholders for implementation and monitoring of mitigations. This section also presents an assessment of the institutional capacity for implementing the ESMP.

2.2. Environmental Management Plan (EMP) during the Construction Phase

Environmental Management Matrix during CONSTRUCTION

Impact	Mitigation Measures	Responsibility of Mitigation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Mitigation / Supervision
Air Emissions	Best practice in controlled wetting and compaction of excavations to minimize dust emission	Contractor	Site HSE	Contractual clauses + Field supervision	Contractor management costs (included in bid price) ALCOM ENERGY management costs
	Sound isolation, storage, transportation and disposal of stockpiles	Contractor	SITE HSE	Contractual clauses + Field supervision	Contractor management costs (included in bid price) ALCOM ENERGY management costs
	Compliance to legal limits of air emissions from all relevant equipment	Contractor	SITE HSE	Review manufacturer catalogues and exhaust certificate or request emission measurements	Contractor management costs (included in bid price) ALCOM ENERGY management costs
Noise	Ear muffs, ear plugs, certified noise PPE	Contractor	SITE HSE	Contractual clauses + Field supervision	Contractor management costs (included in bid price) ALCOM ENERGY management costs

Impact	Mitigation Measures	Responsibility of Mitigation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Mitigation / Supervision
	Avoid noisy works at night whenever possible	Contractor	SITE HSE	Field supervision	Contractor management costs (included in bid price) ALCOM ENERGY management costs
Damage to U/G Utilities	Pre-planning and coordination with central, regional, and local departments of potable water, wastewater, electricity, and telecom authorities to obtain maps/ data on depth and alignment of underground utilities	Contractor	SITE HSE	Official coordination proceedings signed by representatives of underground utility authorities Examination of site- specific reports and records Field supervision	Contractor management costs (included in bid price) ALCOM ENERGY management costs
	Limited trial pits or boreholes to explore and identify underground utility lines Non-intrusive Radio- cable and pipe locator to detect underground utilities	Contractor	SITE HSE Supervisor	Contractual clauses + Field supervision	Contractor costs (included in bid price) ALCOM ENERGY management costs
	Preparation and analysis of accidental damage reports	Contractor	SITE HSE	Review periodic HSE reports	Contractor costs (included in bid price) ALCOM ENERGY management costs

Impact	Mitigation Measures	Responsibility of Mitigation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Mitigation / Supervision
	Repair and rehabilitation of damaged components	Contractor	FIRST SOLAR HSE Local Government Unit Local Police	Contractual clauses + Field supervision	Included in contractor cost but must be evaluated on a case-by-case basis
Effects on Cultural Sites	Preserve any found antiquity	Contractor + SITE HSE supervisor	ALCOM ENERGY HSE	Field inspection throughout works and review field reports	Contractor costs (included in bid price) ALCOM ENERGY management costs
	Supervise intensity and locations of construction activities	Expert from Supreme Council of Antiquities	ALCOM ENERGY HSE	Review field reports + field supervision	ALCOM ENERGY management costs

Impact	Mitigation Measures	Responsibility of Mitigation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Mitigation / Supervision
Waste disposal	Identify distances to disposal sites and facilities nearest to the work area Classify disposal sites and facilities by type of waste accepted by the disposal. Estimate the amounts expected from each type of wastes Identify and contract certified hazardous waste handling and transportation contractors. Estimate handling and disposal fees according to type and amount of waste Estimate size of fleet required to transport wastes. Estimate tipping fees according to specific disposal sites Design a comprehensive handling and transportation plan for all waste types	Contractor	ALCOM ENERGY HSE	Contractual clauses + review of comprehensive waste management plan	Contractor costs (included in bid price) ALCOM ENERGY management costs
	Management of excavation waste according to the waste management plan	Contractor	SITE HSE supervisor	Field supervision	Contractor costs (included in bid price) ALCOM ENERGY management costs

Impact	Mitigation Measures	Responsibility of Mitigation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Mitigation / Supervision
	Prevent fueling, lubricating and any activity that would entail production of hazardous materials empty containers	Contractor	SITE HSE supervisor	Field supervision	Contractor costs (included in bid price) ALCOM ENERGY management costs
	Transfer empty hazardous waste containers to Alexandria facilities (Nasreya or UNICO) and landfill(s)	Contractor	SITE HSE supervisor	Field supervision and review of certified waste handling, transportation, and disposal chain of custody	Cost to be revised and included in contractor bid
	Adequate management of asbestos and any possible hazardous waste	Water Authority + Contractor	SITE HSE	Field supervision + review of Water Authority manifests	Contractor costs (included in bid price) ALCOM ENERGY management costs
Health and Safety	<p>All soil piles will be stored a minimum of (60) cm from the sides of the excavation.</p> <p>For excavation 122 cm or deeper, stairways, ramps, or ladders will be used. For trenches, the employee must not exceed 750 cm of lateral travel to reach the stairway, ramp, or ladder.</p> <p>No employee will work in an excavation where water is accumulating unless adequate measures are taken.</p>	Contractor	ALCOM ENERGY HSE	Field supervision	Contractor costs (included in bid price) ALCOM ENERGY management costs

Impact	Mitigation Measures	Responsibility of Mitigation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Mitigation / Supervision
	Ensure the provision of the appropriate personal protective Equipment				
Water Utilization	Perform groundwater resource assessment or Assess E&S impacts and prepare ESMP	Investors association & NREA	ALCOM ENERGY HSE	Field supervision	Negligible additional cost borne by all investors

2.3. Environmental Monitoring Matrix during Construction Phase

Environmental Monitoring during CONSTRUCTION

Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency of Monitoring	Location of Monitoring	Methods of Monitoring	Estimated Cost of Monitoring
Air Emissions	HC, CO% and opacity	ALCOM ENERGY HSE	Once before construction + once every six months for each vehicle	Vehicles licensing Department	Measuring exhaust emissions of vehicle, electrical unit, or heavy equipment in documented reports	\$100/ project area
Noise	Noise intensity, exposure durations and noise impacts	ALCOM ENERGY HSE	Regularly during site inspections and once during the night in every residential area or near sensitive receptors such as hospitals	Construction site	Noise Meter	ALCOM ENERGY management costs
	Complaints from residents	ALCOM ENERGY HSE	During construction. Monthly reports	Construction site	Documentation in HSE monthly reports	ALCOM ENERGY management costs
Risk of damaging underground utilities and infrastructure	Official coordination reports with relevant authorities Accidents documentation	ALCOM ENERGY HSE	During construction. Monthly reports	Construction site	Documentation in HSE monthly reports	ALCOM ENERGY management costs

Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency of Monitoring	Location of Monitoring	Methods of Monitoring	Estimated Cost of Monitoring
Waste Management	Observation of accumulated waste piles	ALCOM ENERGY HSE	During Construction. Monthly reports	Construction site	Observation and documentation	ALCOM ENERGY management costs
	Observation of water accumulations resulting from dewatering	ALCOM ENERGY HSE	During construction. Monthly reports	Around construction site	Observation and documentation	ALCOM ENERGY management costs
	Examination of chain-of-custody documents and implementation of waste management plans	ALCOM ENERGY HSE	Zonal reports	Construction site and document examination	Site inspection and document inspection	ALCOM ENERGY management costs
Water	Supply of water to the solar park	NREA	As needed	Construction site	Site inspection	ALCOM ENERGY management costs

2.4. Environmental Monitoring Matrix during Construction Phase

Environmental Management Matrix during OPERATION

Impact	Mitigation Measures	Responsibility of Mitigation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Mitigation / Supervision
Waste disposal	Identify distances to disposal sites and facilities nearest to the work area Classify disposal sites and facilities by type of waste accepted by the disposal. Estimate the amounts expected from each type of wastes Identify and contract certified hazardous waste handling and transportation contractors. Estimate handling and disposal fees according to type and amount of waste Estimate size of fleet required to transport wastes. Estimate tipping fees according to specific disposal sites Design a comprehensive handling and transportation plan for all waste types	ALCOM ENERGY HSE	NREA/Governorate HSE	Field observations	ALCOM ENERGY management costs
	Prevent fueling, lubricating and any activity that would entail production of hazardous materials empty containers	ALCOM ENERGY HSE	NREA/Governorate HSE	Field observations	ALCOM ENERGY management costs

Impact	Mitigation Measures	Responsibility of Mitigation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Mitigation / Supervision
	Transfer hazardous waste containers to Alexandria facilities (Nasreya or UNICO) and landfill(s)	ALCOM ENERGY HSE	NREA/Governorate HSE	Field supervision and review of certified waste handling, transportation, and chain of custody	ALCOM ENERGY management costs
Water Utilization	Maximize dry cleaning mechanisms Utilize treatment unit to improve quality of the water supply	ALCOM ENERGY HSE	NREA/Governorate HSE	Field supervision	ALCOM ENERGY management costs
Fauna and avifauna	Seek expert advice in case of significant risk to health and safety of birds and animals	ALCOM ENERGY HSE	NREA/Governorate HSE	Field supervision	ALCOM ENERGY management costs

2.5. Environmental Monitoring Matrix during Operation Phase

Environmental Monitoring during OPERATION

Impact	Monitoring Indicators	Responsibility of Monitoring	Frequency of Monitoring	Location of Monitoring	Methods of Monitoring	Estimated Cost of Monitoring
Waste Management	Observation of accumulated waste piles	ALCOM ENERGY HSE	Monthly reports	Construction site	Observation and documentation	ALCOM ENERGY management costs
	Observation of water accumulations resulting from dewatering	ALCOM ENERGY HSE	Monthly reports	Around Project site	Observation and documentation	ALCOM ENERGY management costs
	Examination of chain-of-custody documents and implementation of waste management plans	ALCOM ENERGY HSE	Monthly reports	Project site and document examination	Site inspection and document inspection	ALCOM ENERGY management costs
Water	Supply of water to the solar park	NREA	As needed	Project site	Site inspection	ALCOM ENERGY management costs
Biodiversity	Behaviors during migration seasons (Autumn and Spring)	ALCOM ENERGY HSE	Daily during migration seasons	Project site	Site inspection and bird observation	ALCOM ENERGY management costs

2.6. Social Management Plan (SMP) during the Construction Phase

2.6.1. Management of impacts related to Health and Safety (H&S)

Potential impacts on workers and community health and safety during construction of a project are those associated with any construction project involving earthmoving, use of large equipment, transportation of overweight and oversized materials, and construction and installation of industrial facilities. Additionally, health and safety issues include either working at heights or in trenches. The practices of electricity companies in Egypt reflect that the health and safety procedures are relatively not abided to by laborers. That might result in injuries and death.

Mitigation Measures:

- In accordance to Labor laws related to occupational health and safety No. 12 of year 2003, workers should be oriented about health and safety procedures.
- The contractor and subcontractors should assign a health and safety supervisor who ensures the workers are abided to the H&S procedures
- The contractor should make all health and safety facilities (i.e. firefighting equipment, first aid materials, protective tools...etc.) available in the project site
- Contracts should be signed with the health facilities close to the construction site
- A guard should be assigned to assure that the community people are not stepping into the project sites.
- A daily and weekly training should be made to laborers in order to refresh their information

Monitoring Activities:

- The resident health and safety supervisor should follow the commitment of workers to use the protective clothes. That should be kept in daily checklists.
- He should follow on day to day bases the accidents occur among the community people and record them in accident log.
- The lists of injured workers and community people should be documented and reported to the H&S supervisor on daily bases
- The Grievance log should be monitored, particularly, the cases regarding injuries among the community and the workers
- All workers should attend an orientation session about health and safety procedures. All training and capacity building related to H&S should be kept with the H&S.

Reporting

- Monthly reporting should be prepared by the H&S supervisor and handed to the H&S manager within the PMU
- Orientation session reports should be prepared by the H&S consultant
- A report should be prepared by the H&S manager within the PMU and shared with the funding agencies on quarterly bases. That report should include the following parameters:
 - Total injured workers distributed by their type of work, age and project site

- Total injured people among the community people distributed by age category, gender and area

Total complaints related to H&S procedures. The type, area and the aggrieved person gender should segregate grievances.

2.6.2. Management of impacts related to Employment Process

It is recommended to provide as many job opportunities as possible to the community, especially the ones to be provided to unskilled laborers. Community people are easily get furious if they do not benefit from jobs. Therefore, job opportunities must be handled carefully and transparently.

Mitigation Measures:

- Minimizing the number of workers from outside the project areas is highly recommended. The contractor should be advised to employ construction labor from the areas where construction works will take place. The incentives to contractors for such measure include reducing accommodation and transportation for his workers.
- Community leaders could take part in the process of employment in terms of informing their local community about job opportunities. This will fall under the responsibility of the Social Development Officer.
- Enable grievance and redress mechanism in order to receive people concerns about such impact.

Monitoring Activities:

- The contractor should provide lists of construction workers and their governorates of origin on quarterly basis.
- The Social Development Officer should provide reports about any stakeholder engagement activities (meetings- interviews- group discussions) conducted with the communities in case of any problem occurred with the residence of project areas.
- The SDO should provide reports about any training sessions conducted with the workers, particularly, those who were employed from the surrounding areas
- A community-based committee should be formulated in order to track job opportunities suitable for their young people.

Reporting:

- The contractor should present reporting on percentage of labor recruited from local governorates to the supervisor consultant and to EEHC on quarterly basis.
- Reporting on meetings conducted with the community people.
- Reports about training sessions conducted with the workers.

2.6.3. Management of impacts related to Traffic

Short-term growth in the use of local roadways would occur during the construction period. Heavy equipment would need to be continuously moved as construction progresses of the project. Overweight and oversized loads could cause temporary disruptions to the pedestrians and drivers. That requires developing traffic diversion plans.

Mitigation Measures:

- A traffic diversion plan should be prepared in cooperation with traffic department inside Ministry of Interior Affairs
- A careful turn (if needed) for the heavy trucks or loaders due to the high-speed vehicles passing by the highway.
- The contractors should make sure that the employed drivers of construction machinery (such as trucks and loaders) have received sensitization/training on safety utilization of their machines in order to minimize accidents risks.

Monitoring Activities:

- Reviewing accidents log related to equipment moving
- The grievance log should be reviewed in order to identify the complaints raised due to traffic related problems
- Capacity building conducted with the drivers

Reporting:

- Unusual traffic delays or accident caused during construction or any complaints received should be reported in the monthly report prepared by the construction supervisor consultant.
- A quarterly report should be prepared in order to present the level of commitment with traffic management procedures

2.6.4. Management of impacts related to the risks on existing infrastructure

As there is a probability to affect the underground existing facilities pipeline that are not mapped. Therefore, any excavation activities might affect those facilities.

Mitigation Measures:

- The Information Center within the governorate should provide the contractor with updated maps. (If available)
- In case of no available maps, excavation holes should be dug prior to the construction activities.

- In case of any damage to sewage, electricity, etc., the contractor should repair the damage in cooperation with the facility owners.

Monitoring Activities:

- Visits to be paid to the project areas.
- Total damaged infrastructure inside each project site.
- Grievances log should be reviewed in order to verify if any complaints were raised due to damaging of the infrastructure.

Reporting

- The contractor should inform about any damage occurred during the implementation of the project. Reports should be developed on monthly bases.
- A quarterly report should be prepared in order to present the level of commitment with infrastructure management procedures.

2.6.5. Disturbance of community due to the misconceptions

The community people and project stakeholders reported concerns and misconceptions.

Mitigation Measures:

- Consultation activities with the community during the ESIA are the starting point that established communication channels with the community. Continuous dialogue with the community might provide a better idea about the impacts of the project.
- Community based communication channels (NGOs or women leaders) will maximize their involvement in the project by informing the community about the project and the potential impacts/ hazards; therefore, to understand it properly.
- Conduct orientation sessions at schools, social clubs and youth centers within the project nearest areas in order to minimize community concerns.

Monitoring:

- Consult community through different meetings, Focus Group Discussions, and workshops on the current situation, perceived impacts, service providers...etc. This is being undertaken through the activities of the ESIA.
- Involve some selected members from the local community to be part of the assessment and scoping phase.
- The grievance and redress mechanism should be adequately reviewed, particularly, in case of any complains are raised due to the misconceptions.
- Reviewing the minutes of orientation meetings

Reporting:

- Consultation reports documented in the ESIA will be a sample of how to document consultation activities. Any additional citizen/stakeholder engagement activities should be documented and reported on quarterly basis
- Reports to be developed about all activities conducted in schools and centers.

Social Management Plan Matrix during Construction Phase

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility For Implementation	Responsibility of Direct Supervision	Means of Supervision	Potential Cost
Health and Safety	<ul style="list-style-type: none"> Restrict application to the health and safety procedures The contractor should make health and safety facilities available in the project site Contracts should be signed with the health facilities close to the construction site A guard should be assigned to keep community people out of the construction site 	Construction contractor	Construction supervisor	<ul style="list-style-type: none"> Review of contractor's reports related to health and safety measures as well as the lists of injured workers Capacity building reports and orientation sessions related to health and safety measures 	No cost
Employment Process	<ul style="list-style-type: none"> Job opportunities to be provided to the community workers Integration of community leaders during the employment procedures 	Contractor and sub-contractors in cooperation with the community leaders	Site engineer and the SDO	Reports about the workers employed Complaints raised about employment	No cost
Traffic	<ul style="list-style-type: none"> Prevent storage of construction materials, equipment and machineries on traffic lanes Capacity building of the drivers about safety utilization should be assured 	Construction Contractor	Construction supervisor consultant	Site supervision and grievance log related to traffic impacts	No additional cost

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision	Means of supervision	Potential cost
Risks on the existing infrastructure	<ul style="list-style-type: none"> Obtain information about the infrastructure maps from the information centers Excavation holes will substitute the absence of maps Rapid maintenance of the damaged pipes and septic tanks in case of any accidental damage 	Construction Contractor	Construction supervisor consultant	Site supervision and grievance log related to infrastructure impacts	No additional cost
Disturbance of community due to misconceptions	<ul style="list-style-type: none"> Inform the community about the different stages of the project, safety measures and transportation route 	Construction Contractors in cooperation with the SDO and the community based entities and individuals	Construction Contractors and SDO	Construction Contractors	10000 \$ to be allocated for awareness raising activities

Social Monitoring Plan Matrix during Construction Phase

Potential Impact	Monitoring Indicator	Monitoring data	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Potential cost
Human health and safety	<ul style="list-style-type: none"> Efficiency of applying health and safety procedures 	<ul style="list-style-type: none"> Total number of injured workers Total number of injured community people Total received grievances related to health and safety Total number of attendance to the orientation sessions about health and safety 	<p>Construction site</p> <p>Desk work</p>	<p>Site visits to the construction site</p> <p>H&S monthly reports</p> <p>Reports about stakeholder engagement activities</p> <p>Reports about H&S capacity building activities</p>	Quarterly during the construction phase	Site engineer and SDO	No cost
Employment process	<ul style="list-style-type: none"> Efficiency of handling employment activities Commitment of subcontractors to employ community people 	<ul style="list-style-type: none"> Number of jobs provided to the community people Total number of complaints raised by workers Total number of complaints raised by community people 	<p>Construction site</p> <p>Desk work</p>	Reports about the workers and employment	Quarterly	SDO	No cost

Potential Impact	Monitoring Indicator	Monitoring data	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Potential cost
Traffic	<ul style="list-style-type: none"> Effectiveness of traffic plan Efficiency of capacity building with the drivers 	<ul style="list-style-type: none"> Complaints related to traffic Total number of drivers attended training about safety utilization Total number of complaints raised due to traffic problems 	<p>Construction site</p> <p>Desk work</p>	<p>Reports about the capacity building received by drivers</p> <p>Complaints reports</p> <p>Reports about capacity building to the drivers</p>	Quarterly	<p>Site supervisor consultant</p> <p>SDO</p>	No cost
Risks on the existing infrastructure	<ul style="list-style-type: none"> Avoidance of damaging infrastructure 	<ul style="list-style-type: none"> Total damaged infrastructure inside each project site Total complaints raised by the community due to damaging the infrastructure 	<p>Construction site</p> <p>Desk work</p>	<p>Reports about the damage of infrastructure</p> <p>Complaints reports</p>	Quarterly	<p>Site supervisor consultant</p> <p>SDO</p>	No cost

Potential Impact	Monitoring Indicator	Monitoring data	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Potential cost
Disturbance of community due to misconceptions	<ul style="list-style-type: none"> Efficiency of community communication strategy 	<ul style="list-style-type: none"> Stakeholder engagement activities conducted Total beneficiaries of information sharing session Total complaints raised by the community. 	Desk work	<p>Reports about any conflict of interests and misconception</p> <p>Reports about complaints raised due to the misconceptions</p>	Quarterly	<p>Site supervisor consultant</p> <p>SDO</p>	No cost

2.7. Social Management Plan (SMP) during the Operation Phase

2.7.1. Human Health and Safety

Possible impacts to health and safety include exposures to particulates, accidental injury to workers during operation and maintenance activities. Additionally, health and safety issues include working at heights, working around energized equipment, working in potential weather extremes, and possible contact with natural hazards and either working at heights or in trenches.

Mitigation Measures:

- In accordance with Labor law related to occupational health and safety No. 12 of year 2003 the workers should be oriented about the health and safety procedures.
- All safety procedures reported in the Law should be abided to by the workers and the top management.
- The contractor should assign a health and safety supervisor who ensures the workers are abided to the H&S procedures
- The contractor should make health and safety facilities available in the project site
- Contracts should be signed with the health facilities close to the construction site

Monitoring Activities:

- The resident health and safety supervisor should follow the commitment of workers to use the protective clothes.
- He should follow on day to day bases the accidents occur among the community people.
- The lists of injured workers should be documented and reported to the H&S supervisor on daily bases
- The Grievance log should be monitored, particularly, the cases regarding injuries among the workers

Reporting:

- Monthly reporting should be prepared by the H&S supervisor and handed to the H&S manager
- A quarterly report should be prepared by the H&S manager within the PMU and shared with the funding agencies on quarterly bases. That report should include the following parameters:
 - Total injured workers distributed by their type of work and project site
 - Total complaints related to H&S procedures. The type, area and the aggrieved person gender should segregate the grievances.

2.7.2. Management of Employment Impact

The potential loss of economic wellbeing might result in because temporary workers will lose their jobs after the construction, consequently, their source of income will be affected. That might result in severe impact on their social status. Additionally, the workers might resort to raising conflict with the project.

Mitigation Measures:

- Workers should be fully informed about the duration of work.
- Two-month notice to be given to the workers in order to search for another work
- The subcontractors should transparently inform his workers about the project duration

Monitoring Activities:

- Total number of workers who complain due to losing their temporary work.

Reporting:

- Quarterly report to be developed by the compensation committee during the construction phase
- Quarterly report of the grievances received by the Social Development Officers

Mattari@acwepower.com
CRONUS/16:02:2017

Social Management Plan Matrix during Operation Phase

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision	Means of supervision	Potential cost
Health and safety	<ul style="list-style-type: none"> Restrict application to the health and safety procedures The contractor should make health and safety facilities available in the project site Contracts should be signed with the health facilities close to the construction site A guard should be assigned to keep community people out of the construction site 	Construction contractor	Site engineer supervisor	<ul style="list-style-type: none"> Review of H&S manager reports related to health and safety measures as well as the lists of injured workers Capacity building reports and orientation sessions related to health and safety measures <p>Reports about the workers employed</p>	No cost
Employment process	<ul style="list-style-type: none"> Workers should be fully informed about the duration of work. Two month notice to be given to the workers in order to search for another work The subcontractors should transparently inform his workers about the project duration 	Contact and sub-contractors	Site engineer and the SDO	Complaints raised by the dismissed workers	No cost

Social Monitoring Plan Matrix during Operation Phase

Potential Impact	Monitoring Indicator	Monitoring Data	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Potential Cost
Human health and safety	<ul style="list-style-type: none"> Efficiency of applying health and safety procedures 	<ul style="list-style-type: none"> Total number of injured workers Total number of injured community people Total received grievances related to health and safety Total number of attendance to the orientation sessions about health and safety 	<p>Construction site</p> <p>Desk work</p>	<p>Site visits to the construction site</p> <p>H&S monthly reports</p> <p>Reports about stakeholder engagement activities</p> <p>Reports about H&S capacity building activities</p>	Quarterly during the operation phase	Project manager, H&S manager and SDO	No cost
Employment process	<ul style="list-style-type: none"> Efficiency of handling employment activities Commitment of subcontractors to inform workers about job durations 	<ul style="list-style-type: none"> Number of jobs provided to the community people Total number of complaints raised by workers 	<p>Construction site</p> <p>Desk work</p>	Reports about the workers and employment	Once after completion of works	SDO	No cost

2.8. Implementing the ESMP

Based on the Institutional Capacity Assessment for the project, the proposed institutional set up for the project management comprises the following main features:

2.8.1. During Construction Phase

1. Egypt New & Renewable Energy Authority NREA: will be responsible for managing the project, as well as, in cooperation with independent consultants they will handle the monitoring activities including but not limited to the environmental measurements (noise, vibration, grievances, etc.)
2. Aswan governorate will be responsible for the provision of the needed approvals to the project.
3. City council of Daraw Markaz will tackle the responsibility of developing the permissions related to cutting the roads.
4. Local Governmental Unit affiliated to Daraw Markaz will be responsible to the transfer of ownership to the lands allocated for water intake.
5. Ministry of Water Utility has already approved to give water to NREA.
6. Water and Wastewater Company will provide permission to construct water intake inside the current treatment plant.
7. EEAA and Environmental Management Unit in Aswan Governorates will be responsible for monitoring all activities related to the environmental protection. In addition, they will provide the approval on the ESIA.
8. Other governmental units of relevance, the army will give permissions in addition to the other ministries that should provide the permissions.

2.8.2. During Operation Phase

1. Egypt New & Renewable Energy Authority NREA: will be responsible for managing the project, as well as, in cooperation with independent consultants they will handle the monitoring activities including but not limited to the environmental measurements (noise, vibration, grievances, etc.)
2. EEAA and the Environmental Management Unit in Aswan Governorates will be responsible for monitoring all activities related to the environmental protection.

2.8.3. Proposed Grievance Redress Mechanism (GRM)

Grievances are an important process that should be tackled carefully. NREA receives grievances from the petitioners, and through any other channels.

All grievances and communications received by NREA social officer will be registered and the actions taken / responses given will be tracked and recorded for each. Proper administration and internal records of stakeholder complaints and communications are essential for transparency and quality of NREA responsiveness and reporting to stakeholders on the resolution of grievances.

First Tier of Grievances

First tier grievance management mechanism is strongly advanced, which will be a function of the Project, to provide aggrieved people with an avenue for amicable settlement without

necessarily pursuing a court case.

The absence of first tier mechanism denies project affected groups the direct channel for grievance and delays resolution of disputes in an appropriate time prior to resettlement.

In order to avoid delay in dispute resolution, it is essential for the government to consider adopting the first tier grievance redress mechanism advanced by the EBRD and IFIs standards. If need arises, aggrieved people would however remain free to open a Court case without having registered their grievance with this first-tier mechanism.

1. NREA in cooperation with developers will form Developer Association that will assign a Social Development Officer (might be more than one) who will be responsible of receiving all grievances from all different stakeholders.
2. The SDO will inform the community about grievances mechanism, whom to address to solve the complains, solution for the problems and document all grievances received. Moreover, he will follow up the problem until it is solved. The turnaround time for the response /resolution should be **15** days.

Second Tier of Grievances:

In case of having unsolved complain, the affected person might follow the second level of grievances:

1. A Grievance Mediation Committee should be formed among the municipalities and other entities. It will be responsible for the discussion of the unsolved complains, propose solutions, as well as, take decision and play a mediation role with the project-affected persons.
2. A regular meeting should be assigned by NREA social officer with the mediation committee. The complainants might attend these meetings.

Grievances Channels

Due to the diversity of the socioeconomic characteristics of the PAPs the communication channels to receive grievances were locally tailored to address all affected groups. The following are the main channels through which grievances will be received:

1. Hotline (a mobile number for the SDO to be informed to project affected areas).
2. The second channel is through religious institutes in the area (mosque or church)
3. NGOs will be appropriate channel among rural areas
4. Regular meetings with the Community Association to be conducted and applied by the influence stakeholders
5. Website for educated people who have access to the internet
6. Influence people and Mediation Committee.

Response to Grievances

Response to grievance will be through the following channels:

1. The response of the grievance will be through the same channel used to submit the problem.
2. The second channel is through religious institutes in the area (mosque or church)
3. Response to grievances should be handled in appropriate timing limits in order to give the community people the feeling that their worries are responded to quickly and efficiently, that might put limitation to the problems.

Monitoring of Grievances

All grievances activities should be monitored in order to verify the efficiency and transparency of the process. Given the fact that the developers will form an Association, such association will be responsible of monitoring. Monitoring will be for the following indicators:

Examples of the proposed indicators needed for external monitoring and evaluation activities

Indicator	Means of verification	Source of information
Capacity of NREA and developers staff is enhanced	<ul style="list-style-type: none"> - Training and workshops conducted with NREA staff <ul style="list-style-type: none"> o Lists of participants o Photos o Pre and post evaluation o Training report - Social Performance Indicator of NREA 	<ul style="list-style-type: none"> - Training reports - SPI indicators - EIB mission reports
Efficiency and accessibility of the grievance and redress mechanism	<ul style="list-style-type: none"> - Total number of grievances received from each channel segregated by gender, age, educational level and area. - Total number of solved complaints - Total number of unsolved ones - Obstacles and constrains met to solve the problem (to be segregated by the interested entity) - Strategies adopted to inform PAPs about grievance mechanism. - Total number of PAPs who have no access to the GRM. - Reasons for not having access to the GRM segregated by gender, age, educational status and area. 	<ul style="list-style-type: none"> - Grievance log - NREA quarterly report - Meetings with various PAPs - Quarterly report of developer association

Disclosure of Grievances

All grievances activities should be disclosed in the municipalities. A monthly report should be prepared for the most frequent grievances faced and how they were solved. This report will be disclosed through municipalities and Community Mediation Committee.

Based on the nature of community people, it is of importance to react as quickly as possible to the grievance of the citizens.

A best practice standard is to acknowledge all complaints within 10 days. Due to the different character of the complaints, some of them cannot be resolved immediately. In this case medium or long-term corrective actions are required, which need a formal procedure recommended to be implemented within 30 days:

1. The petitioner has to be informed of the proposed corrective measure.
2. In case if a corrective action is not required, the petitioner has also to be informed accordingly.
3. Implementation of the corrective measure and its follow up has to be communicated to the complainant and recorded in the grievance register

2.8.4. Institutional Responsibility for the Grievances

The responsible entity that will handle the grievances will be the PMU within the implementing agency (NREA). The Social Development Officer (SDO) working within Developers Association in cooperation with the municipalities and NREA will address all grievances raised by community people. The main tasks related to grievances of the SDO are:

1. Raise people awareness about the exact grievances mechanisms

2. Collect the grievances received through different communication channel
3. Document grievances received (verbally or written)
4. Transfer the grievance to the responsible entity to solve i.e. the contractor, NRE, etc.
5. Follow up how the problem was addressed and solved
6. Document, report and disseminate the grievances results
7. Ensure that each legitimate complaint and grievance is satisfactorily resolved by the responsible entity
8. Identify specific community leaders, organizations and citizen groups for enhanced dialogue and communication by public liaison office to avoid or lessen resentments and respond effectively to general concerns and issues
9. Monitoring of grievances activities

All grievances received verbally or in written shall be documented in a grievance register. The following table represents the main contents of such form:

Grievance Form

Grievance form
a. Serial Number
b. Markaz
c. Gender of the person reporting a grievance
d. Age of the person reporting a grievance
e. Education of the person reporting a grievance
f. Topic of grievance
g. Actions to be taken (short term- long term)
h. The referral of grievance
i. Monitoring for grievance

- × Raising community awareness about the grievance mechanism should be handled as follow: brochures should be developed and sent to the main stakeholders, PAPs, NGOs, municipalities, mosques and churches.
- × Documentation of the activities should be handled carefully and thoroughly. A monthly report should be prepared about received grievances, how they were solved and the level of satisfaction of the affected person towards the solution. This report should be published. The names of petitioners should be eliminated in order to guarantee their confidentiality.

2.8.5.ESMP Institutional Set Up

The Project Management Unit, during construction of the project components shall include an Environmental Manager (PMU-EM) who will have the overall responsibility for implementing the ESMP and shall report directly to the PMU Director. The PMU-EM will have a supervisory role over different stakeholders and will be responsible to include the proposed mitigation measures and monitoring activities in the tender documents and equipment supply contracts.

Efficient implementation for the social management plan should involve tailored efforts for maximizing the positive social impacts and ensuring that they are reaching the local communities and minimizing the negative impacts that may hit the poor and vulnerable groups. The potentially affected groups (particularly farmers and villagers and communities surrounding the project component and landowners) should be consulted along the process in order to ensure that their views are considered and that suitable measures are in place to eliminate the severity of negative impacts. Efficient consultations with stakeholders and high level of participation are seen as a prerequisite for a successful ESMP. It is strongly recommended to appoint a Social Development Officer (SDO) within the PMU. The SDO should be leading the various participatory activities.

An important element of the ESMP is the Employment Committee that will be selected among the community leaders in order to manage the employment activities transparently. The committee should be trained in order to know how to evaluate the candidates.



Organizational Chart for the Proposed PMU

During operation, different authorities responsible for the operation and maintenance of the project components shall appoint the manager who will generally be responsible for implementing mitigation measures and monitoring activities during operation phase. The managers will supervise the ESMP measures at the different project sites in addition to the correspondent cooperation with different authorities for monitoring the operation of the site and will be the staff in charge of implementing the social mitigation measures.

2.8.6. Roles and Responsibilities for Implementation and Supervision

The reporting of ESMP measures should be done on monthly basis either from the Social Development Officer for correspondent phase of the project. The monthly reports will be presented to the PMU-EM who shall make sure that the ESMP measures are implemented in due course according to the progress report. The PMU-EM should report for the PMU Manager on annual basis. In case a corrective action is needed the PMU-EM should ask the PMU Manager for the resources to take this corrective action and should adequately report this corrective action. These reports should include the following components:

- Monthly reports prepared by Social Development Officer and submitted to Project Management Unit - Environmental Manager:
- Annual report prepared by the PMU-EM and submitted to the PMU manager.

The specific roles and responsibilities of the SDO planned to be appointed under the PMU are presented in Box Below.

Key responsibilities of the Social Development Officer (SDO)

- Build a dialogue with project-affected groups, including local communities in the project sites, landowners and farmers and ensure the project is implemented in socially sensitive manners that consider the interests of these groups.
- Monitor the project performance and report challenges and propose measures to improve project performance.
- Design and implement awareness raising campaigns in cooperation with NGOs
- Facilitate the formation of various community-based mechanisms including community-based monitoring committee and social committee as part of implantation of the Involuntary Resettlement Plan (if needed).
- Close facilitation for the execution of the Resettlement Action Plan (RAP) and ensuring that compensations are reaching the PAPs.
- Maintain databases and efficient records for the PAPs as part of the RAP (if needed)
- Ensure adopting participatory mechanisms in monitoring the project impacts and evaluating outcomes
- Prepare quarterly progress reports and raise it to the PMU and report to the World Bank where applicable.

The SDO qualifications are as follow:

1. He /She should have a degree in social science or social development practice.
2. He/she should be familiar with work in projects with similar scope and has very high communication and facilitation skills.
3. Local university graduates, particularly women, should be encouraged to apply.

In order to enable the SDO to efficiently fulfill his/her responsibilities, the capacity building

and training modules presented in Box below are proposed. The SDO should receive these capacity building programs prior to the construction phase of the project.

Proposed Capacity Building Programs for the SDO

- Information about Concentrated Solar Power
- Promotion of Awareness Raising Activities
- Communication Skills
- EBRD PRs, IFIs standards and EIB safeguards
- Egyptian laws related to social aspects (if needed)
- Community Participation Tools
- Consensus Building Techniques.
- Monitoring and Evaluation mechanisms (M&E)

2.8.7. Social Monitoring Guidelines

Monitoring of social related issues (i.e. grievances, awareness raising seminars, land expropriation (if any) necessitates some forms in order to be able to process the management and monitoring system appropriately.

The Social Development Officer is a key player in the monitoring scheme for social activities. He/she will be responsible for the following tasks as part of the monitoring system:

1. Keeping records of all grievances received and how they were handled
2. Recording the project-affected people (if any) who might have their lands expropriated, information dissemination activities, valuation of assets and crops, PAPs approval on the compensation value and receipts of compensation
3. Documentation of all activities related to capacity building and awareness raising activities
4. Documenting the regular meetings with stakeholders in order to discuss the information needed and any potential complains and grievances
5. Document the grievances, classify them, raise them to the head of the project management unit to response on them, inform the people about the responses and document all the process

2.9. Required Resources

It has been concluded from the assessment of the existing practices of NREA Environmental Departments that they are following sound environmental procedures in the operation phase.

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CHAPTER 3 – STAKEHOLDER ENGAGEMENT AND PUBLIC CONSULTATION

NREA management should take procedures to involve the HSE department in the approval and clearance steps of project designs, tenders evaluation, phasing of implementation and construction. The involvement of NREA HSE Department should be reported in their periodic reports.

Recommended Training Courses for NREA

Training course	Type of training	Participating parties		Proposed Scheduling	Cost Estimate (USD)
Information about Solar Power	Workshop + on the job training	Social Officers	Development	Prior to the project	1500 \$
		Community leaders (10 from Fares and Ben Ban)			
Promotion of Awareness Raising Activities	Workshop + on the job training	Social Officers	Development	Once before the project implementation Refreshment course during the implementation of the project	2000 \$
Communication Skills	Two days Workshop + on the job training	Social Officers	Development	- One workshop during the beginning of the project implementation	1000 \$
EBRD, IFI and EB requirements	One day Workshop + on the job training	Social Officers	Development	- One workshop during the beginning of the project implementation	500 \$
Consensus Building Techniques	One day Workshop + on the job training	Social Officers	Development	- One workshop during the beginning of the project implementation	500 \$

Training course	Type of training	Participating parties		Proposed Scheduling	Cost Estimate (USD)
Monitoring and Evaluation mechanisms (M&E)	Two days' Workshop + on the job training	Social Officers	Development	- One workshop during the beginning of the project implementation	1000 \$
		Project unit	management		

CHAPTER 3 - STAKEHOLDER ENGAGEMENT AND PUBLIC CONSULTATION

The public consultation chapter aims to highlight the key consultation and community engagement activities and their outcomes, in addition to outlining the key aspects to be addressed when holding the consultation activities.

IFIs and national authorities consider stakeholder engagement as an essential part of good business practices and corporate citizenship, and a way of improving the quality of projects. In particular, effective community engagement is central to the successful management of risks and impacts on communities affected by projects, as well as central to achieving enhanced community benefits.

Stakeholder engagement is an ongoing process involving (i) the client's public disclosure of appropriate information so as to enable meaningful consultation with stakeholders, (ii) meaningful consultation with potentially affected parties, and (iii) a procedure or policy by which people can make comments or complaints. This process should begin at the earliest stage of project planning and continue throughout the life of the project.

3.1. Regulatory Context

3.1.1. EEAA legal requirements for stakeholder engagement (Public Consultation)

Under the Egyptian environmental law no. 4/ 1994 and its executive amendment no. 9/2009 modified with ministerial decrees no. 1095/2011 and no. 710/2012, a number of institutional stakeholders (representatives of the Egyptian Environmental Affairs Agency "EEAA" and its regional branches, related governmental authorities, governorate where the project is located, local parliaments and influenced groups of nearby institutions or residents) must be represented in the public consultation held prior to the approval for proposed projects that need an Environmental Impact Assessment (EIA). Other parties may participate such as the NGOs and the universities.

3.2. International legal requirements for stakeholder engagement (Public Consultation)

3.2.1. EBRD Environmental and Social Policy (May 2014)

The EBRD's appraisal requires the borrower to classify stakeholders potentially affected by and/or interested in the projects, disclose sufficient information about the impacts and issues arising from the projects, consult with stakeholders in a meaningful, and culturally appropriate manner. In particular, the EBRD requires its clients to engage with relevant stakeholders, in proportion to the potential impacts associated with the project and level of concern. Such stakeholder engagement should be carried out bearing in mind the spirit and principles of the UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters. For projects subject to ESIA that have the potential to have significant environmental impacts across international boundaries, the Bank will encourage the approach of the UNECE Convention on Environmental Impact Assessment in a Tran boundary Context, regardless of geographical location of a project or its potential impacts. The Bank may, in some cases, conduct its own public consultation activities to gauge stakeholder views. Stakeholder identification and engagement may also be built into the Bank's technical cooperation activities, as appropriate.

3.2.2. IFC Performance Standard 1: *Assessment and Management of Environmental and Social Risks and Impacts*

- Stakeholder engagement is the basis for building strong, constructive, and responsive relationships that are essential for the successful management of a project's environmental and social impacts.
- Stakeholder engagement is an ongoing process that may involve, in varying degrees, the following elements: stakeholder analysis and planning, disclosure and dissemination of information, consultation and participation, grievance mechanism, and ongoing reporting to Affected Communities. The nature, frequency, and level of effort of stakeholder engagement may vary considerably and will be commensurate with the project's risks and adverse impacts, and the project's phase of development.
- Clients should identify the range of stakeholders that may be interested in their actions and consider how external communications might facilitate a dialog with all stakeholders. Where projects involve specifically identified physical elements, aspects and/or facilities that are likely to generate adverse environmental and social impacts to Affected Communities the client will identify the Affected Communities and will meet the relevant requirements.
- The client will develop and implement a Stakeholder Engagement Plan that is scaled to the project risks, impacts, and development stage, and be tailored to the characteristics and interests of the Affected Communities.
- Where applicable, the Stakeholder Engagement Plan will include differentiated measures to allow the effective participation of those identified as disadvantaged or vulnerable. When the stakeholder engagement process depends substantially on community representatives, the client will make every reasonable effort to verify that such persons do in fact represent the views of Affected Communities and that they can be relied upon to faithfully communicate the results of consultations to their constituents.

3.2.3. EIB Environmental and Social Practices Handbook (2013)

- The purpose of public consultation in the EIA process is to allow the promoter to identify and address public concerns and issues, and to provide the public with an opportunity to receive information and make meaningful input into the project assessment and development.
- The nature and magnitude of different stakeholder interests should be established. The interests of those most likely to be significantly impacted by the project should be addressed during the public consultation associated with the EIA, public hearings, via the media, or be drawn to the Bank's attention by the promoter, a civil society organization, or a government body.
- The EU EIA Directive defines the term 'public' as: "one or more natural or legal persons and, in accordance with national legislation or practice, their associations, organizations or groups"; and 'public concerned' as: "the public affected or likely to be affected by, or having an interest in, the environmental decision-making procedures for the purposes of this definition, non- governmental organizations promoting environmental protection

and meeting any requirements under national law shall be deemed to have an interest”.

- During appraisal, stakeholders’ concerns or complaints should be established through EIA documents and discussions with the promoter. If necessary the mission should be organized to include meetings with concerned parties and understand better their issues regarding the project

3.3. Stakeholder Engagement Objectives and Methodology

3.3.1. Stakeholder Engagement Objectives

The objective of the Stakeholder Engagement is to ensure safe and successful Project delivery by:

- Informing stakeholders, including persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively;
- listening to their comments, ideas and concerns and recording the same for follow up;
- Avoiding conflict by addressing impacts and issues raised by stakeholders promptly; particularly with the communities that will not be served by the project
- Ensuring that fears and anxieties about the nature, scale and impact of the operation have been properly considered in the development and management of the Project;
- Accessing and making good use of existing local knowledge of the area;
- Avoiding any misconceptions about the project and properly manage expectations;
- Communicating and implementing a viable community feedback mechanism.

Thereafter the results will provide proper documentation of stakeholder feedback and enhance the ESIA accordingly.

3.3.2. Stakeholder Engagement Methodology

The research team for the ESIA has adopted multi-dimensional consultation activities that enable the marginalized, voiceless, youth and women to gain information about the project. As well as, the team managed to collect information about community concerns regarding the project during various implementation phases.

In order to apply comprehensive and meaningful stakeholder engagement activities, a local team from Aswan Governorate and Benban village was mobilized to consult with community people and stakeholders. The study team managed to use the simple dialect that can be comprehended by all community members.

It was recommended to apply most of consultation activities in familiar acceptable areas for the community. Such practices enabled the team to conduct Stakeholder engagement activities free of manipulation, interference, coercion, and intimidation.

Information shared with the community was simplified and photos were added in order to

visualize the project to illiterate groups.

This project adopted rich day to day consultation and community engagement activities since 2013. As Benban village was planned to host another solar project named concentrated solar power project in 2013. Due to financing constrains, the CSP was replaced by the Photovoltaic projects in Benban. Yet, stakeholder engagement plan commenced in 2013.

The adopted methodology for the stakeholder engagement comprised of various phases. The Consultant targeted different relevant stakeholders inside project community. Different groups including men, women, youth, elderly, officials, representatives from the NREA, NGOs, information centres, traders and retailers, natural leaders and key informants were consulted and were informed of the proposed project. Inside each community, both decision makers and the people expected to be affected by the project were consulted, and had the chance to voice their concerns and expectations. A list of the names of the stakeholders who were consulted is attached in Annex A and B for scanned and printed lists respectively.

Participatory Rapid Appraisal tools (PRA) were utilized during the scoping and consultation phases. These varied between group meetings, focus group discussions (FGDs), semi structured interviews (SSI), in depth individual interviews, and observations.

A multi- level approach that outreaches the areas adjacent the project and various stakeholders was adopted. Most of the community people were completely unaware about solar power.

With regards to the ALCOM ENERGY project, stakeholder engagement activities were carried out in parallel to those held as part of the Strategic Environmental and Social Assessment (SESA) being prepared for the whole Benban PV Solar Park.

Following are the main stakeholder engagement activities to date

- The study team visited the project area in order to define the various stakeholders during August 2015.
- Meetings were conducted between the local mobilizers and the consultants during August 2015 in order to develop an engagement plan that is locally tailored for the residential communities with the study team members.
- Based on the identification of stakeholders, various questionnaires and guidelines were prepared in order to engage: i) the residents in the project areas, ii) NREA , iii) the NGOs, iv) Governmental entities, v)health and safety department ,vi)the environmental departments, vii)developers and EETC.
- The study team divided the various engagement activities of the project to:
 - i. Pre-project designing
 - ii. Scoping phase,
 - iii. Data collection phase and,
 - iv. Public consultation phase.
- All activities conducted were documented with photos, videos and lists of participants in order to warrantee appropriate level of transparency.

3.4. Strengths and Limitations of Consultation

3.4.1. Strengths of the Consultation

1. Local mobilizers were recruited in order to facilitate conducting stakeholder meetings and collecting primary data,
2. The local mobilizers proposed the main stakeholders that play role or have interest in the project based on a list of potential stakeholders provided by the consultant. In addition to, the primary list proposed by the EBRD
3. Mobilizers facilitated various meetings conducted with the governmental and non-governmental entities,
4. Prior to each consultation event, the local mobilizers invite the community through distribution of flyers, posters and meeting with the local authorities,
5. Community Needs Assessment carried out as part of the SESA paved the road to additional consultation to be conducted for the ALCOM ENERGY and other projects in the Benban Solar Park.
6. The project was privileged by a dense media coverage that facilitates the discussion about the project itself. Radio and TV interviews with the chairman of NREA, the project manager, ESIA consultant and the residents brought forward lots of information to the community. The social expert also had a full interview in channel 8 (the local channel) about the importance of stakeholder engagement and the contribution of the community. All of those activities encouraged the community to attend all stakeholder engagement activities.
7. The mayor of Benban was supportive to the project by mobilizing people and supports the team in consultation with governmental units.

3.4.2. Limitation of the Consultation

1. Community stakeholder activities began in 2013 and some stakeholders have become saturated with information about the on-going solar project. Hence, the team applied unconventional methods of consultation and stakeholders activities.
2. Female representation in engagement activities was limited. Thus, the team tried to integrate more females to the extent possible.
3. As Benban village comprises of three sub-villages that are governed by three mayors, it was a concern that the consultation activities focus on one sub-village. In order to avoid such constrain, all three sub-villages were targeted and the majority of community people were informed

3.5. Stakeholder Identification

In compliance with IFI requirements for stakeholder identifications, the first step in successful stakeholder engagement is for the ALCOM ENERGY to identify the various individuals or groups who (i) are affected or likely to be affected positively or negatively (directly or indirectly) by the project (“affected parties”), or (ii) may have an interest in the project (“other interested parties”). Resources for public information and consultation should focus on affected parties, in the first instance.

Stakeholders were classified into two categories, directly and indirectly affected, the first category are the main affected groups and collaborators with the project. The second category is those who might support the project. Additionally, a separate group was identified. They are

those who have an interest of the project or might benefit from it. Stakeholders are categorized as follow:

Stakeholder Groups	Stakeholders Bodies	Relevance To Project
<i>Directly Affected Groups</i>		
Local Project Affected Communities	Local community around the plant in Benban and its sub- villages	Direct receptors of the project impacts. Thus they are ranked as the most important stakeholders They might also benefit from job opportunities and might get affected due to community resources overconsumption
	The mayors	Opinion formers and decision makers in the community. Their villages will host up to 9000 workers simultaneously.
	Small scale grocery shops and bakery within Benban village	Provide workers with food and amenities. Thus, they will be positively benefit from the project
	Suppliers and whole sale traders	Benefit from supplies contracts in the project side. This includes food supplies, and transportation
	Owners of residential units in Benban or Aswan	Lease to workers and engineers
	Young people	May be able to take advantage of job opportunities or to receive training to upgrade their capacity
	Vulnerable groups (include women)	May be affected negatively by the associated projects (if water intake is implemented)
	Benban Local Unit and Daraw Markaz Authority	Permissions for the road cut during the implementation Permissions for the lands needed for the project Rehabilitation of roads, which is one of the major issues raised by the community, will be performed by the LGU.

Stakeholder Groups	Stakeholders Bodies	Relevance To Project
Developers	All Benban project developers	Key player in this project and will have major roles regarding utilities, labor employment, accommodation, and transportation. ALCOM ENERGY shall ensure participation in collective arrangements
<i>Indirectly Affected Groups</i>		
Governmental Entities	Aswan Governorate Authority	Provision of support to the project through providing various permissions needed.
	Information Centers on the governorate level	Provide the project with the underground utilities and infrastructure maps. As well as, providing information about the surrounding communities
Collaborating Companies	Egyptian Electricity Transmission Company (EETC)	Responsible for providing the new plant with substations As well as, preparation of the electricity code to inject produced electricity into the grid Responsible for the transmission of produced electricity through an overhead transmission line. They are responsible for the preparation of an ESIA to the OHTL
Environmental Institutes and Agencies	Environmental Affairs Agency (EEAA)	Responsible for reviewing and approving ESIA's, and monitoring implementation of the Environmental Management Plan
	Environmental Office within the governorate	Responsible for monitoring the compliance to environmental requirements and attending consultation activities
Ministries and General Authorities	Ministry of Water Resources and Irrigation	Responsible for provision of permissions for water intake or digging wells
	Ministry of Health and associated health facilities	Provide health facilities to the workers within the site and well act as health service providers
	Labor Department	Monitoring working conditions and commitment to health and safety measures
	Ministry of Social solidarity	Assure the workers receiving social insurance
Army and Police Forces	Ministry of defense	Permitting the location of substations and the routes of overhead transmission line Securing the project area in cooperation with police force

Stakeholder Groups	Stakeholders Bodies	Relevance To Project
	Police Force	Securing the project areas. In case of any encroachment or robbery they will interfere
International Financial Institutions	All funding agencies (EBRD, EIB, AFD, AFDB)	Financiers and regulators
<i>Additional stakeholders who have interest</i>		
University and Educational Institutes	Aswan University	Play a major role in ESIA as well as proposing corrective procedures
Industry and Business	All industrial and business within the project Markaz	Benefit indirectly from the enhancement of electricity grid
NGOs and civil society	NGOs in Benban	Consult about rights of residents of the local communities and the environment during the project implementation.
Press and Media	El Youm El Sabea Newspaper El Ahram Newspaper El Watan newspaper Akheralanbaa website El Nahar website	Disclosure of information about the project

3.6. Suggested Stakeholder Engagement Program

A Stakeholder Engagement Plan is necessary to ensure that stakeholders are kept well informed about the project throughout its lifecycle. Stakeholders should have the opportunity to express their views about the project and also to raise complaints.

In order to assure proper implementation of such a stakeholder engagement program, it is strongly recommended defining roles and responsibilities of the entity that will handle this program. For the time being, there is no establishment or entity implementing any kind of stakeholder engagement activities. However, some actions have been initiated by the Consultant during the Kom Ombo CSP ESIA phase and during the preparation for this ESIA .

During the previous years some unofficial meetings with community people, developers and stakeholders took place. These activities are not documented.

As it was previously mentioned there is a need for effective management of the Benban PV project as a whole. It was proposed to form a 'developers' association' that will handle all activities related to the project, including stakeholder engagement.

A developers' association had not been formally established at the time of completion of this ESIA. However, at least 50% of the developers have collectively agreed to form a standalone association. Based on that action, the Consultants for this ESIA assume that such a 'Developers Association' will be formally established.

The following are recommendations by the Consultant on the proposed duties of this Developers Association:

Recommendation 1:

The Developers Association will need to carry out stakeholder engagement activities as one of its main tasks. It should assign a Community Liaison Officer who will be responsible for communication with the community. A social Development Officer should also be assigned to handle the grievance and redress mechanism.

Recommendation 2:

In full cooperation with Community Advisory Committee (CAC) which should be set up with the various tribes, the Community Liaison Officer should share information and respond to inquiries in a monthly meeting. This would result in:

- Facilitating access to information on the project through conducting informal meetings with the community members regularly;
- Informing stakeholders of on-going communications and meetings;
- Informing stakeholder about project progress, issues to expect, construction time table etc.;
- Providing feedback from stakeholders on issues that have been raised through having an active channel with the NREA.

Recommendation 3:

It is recommended that NREA work closely with the committee and the Developers Association. Alongside NREA, the Committee would facilitate implementing community projects as appropriate through mobilizing community members. The Committee would initially meet monthly, though more frequent meetings can be convened if requested by the village members. Minutes of all meetings would need to be taken and follow-up on actions identified and agreed would need to be available on request and monitored.

Recommendation 4:

Additionally, separate focus group meetings should be conducted with women, young people and vulnerable groups in order to be able to voice their concerns and worries. Posters and leaflets about the project and an agreed contact person would need to be published in the main streets of the village, the market place and in the vicinity of the power plant. Women- oriented NGOs should be engaged in order to cooperate with them to pass information in simple dialect to poor marginalized women. Young people could be reached via informal meetings in the Youth Center.

Recommendation 5:

It is proposed that the Developers Association forms a project management unit (PMU) to carry out the following:

- Raise worker's awareness about:
 - Environmental management on site
 - H&S requirements
 - Grievance mechanism for project affected people
- Establish information sharing channels
- Provide information to the community about the construction program and timing.
- Inform directly affected stakeholders in advance of construction works

Initiate disclosure of the ESIA, SEP and ESAP reports on the website of the Ministry of

Electricity, the NREA and funding agencies. This is aimed at having information available for the village community and all other stakeholders and interested groups. Regarding the illiterate people, they should be informed about the main contents of the reports through meetings with the community leaders and NREA.

Mattari@acwapower.com
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3.7. Suggested Framework for Disclosure of Information

According to EBRD performance requirement 10 (and similar requirements of IFC and EIB), disclosure of relevant project information helps stakeholders understand the risks, impacts and opportunities of the project. If communities may be affected by adverse environmental or social impacts from the project ALCOM ENERGY will disclose to them the relevant information including:

- The purpose nature and scale of the project
- The duration of proposed project activities
- Any risks to and potential impacts with regard to environment, worker health and safety, public health and safety and other social impacts on communities, and proposed mitigation plans
- The envisaged consultation process, and opportunities and ways in which the public can participate
- Time/venue of any envisaged public meetings, and the process by which meetings are notified, summarized, and reported.

Information will be disclosed in the local language(s) and in a manner that is accessible and culturally appropriate, taking into account any vulnerable people (for example ethnic groups or displaced persons). For projects with potentially significant adverse social or environmental impacts, disclosure should occur early in the environmental and social appraisal process.

3.7.1. During planning phase

The project has good access to media as all news regarding operations is disclosed to the public through national and local media, including state owned etc. Additionally, the social media got accustomed to publishing all news related to solar project in Benban village. Please see published news in Annex 8-1 In the meantime, a technical officer has been assigned to communicate with people and provide information on the site.

The ESIA after being reviewed by the funding agencies and approved will be translated into Arabic and uploaded to the Websites of NREA, EBRD, EIB, and EEAA.

3.7.2. During The Construction Phase (2016-2017)

During construction, ALCOM ENERGY will provide ongoing information to the people of Benban and, if needed, surrounding areas. Information will be provided in a timely manner and will relate to planned, unplanned and ongoing construction activities. This could include safety measures in the vicinity of the construction site, traffic management, employment opportunities, opportunities for service provision (for example, catering, laundry services, etc.) and any other information identified through the development of the ESMP. This information will be provided via a range of methods, including:

- Monthly meeting with the community advisory committee
- Face to face meetings with men and/or women, which could involve the whole community or smaller focus groups. These will be facilitated by the male or female Community Liaison Officers, as appropriate;
- Written updates posted at the local school;
- Via the Community Advisory Committee; and
- Annual project progress reports, including environmental and social impacts, health and safety performance, and implementation of the external grievance mechanism.

3.7.3. During The Project Operation Phase (2018 Onwards)

During operation, the company will continue to provide information on the project as necessary. This will focus on monitoring of operational impacts such as noise and emissions, and any key issues to be raised by stakeholders during the earlier phases of the project. Existing communication channels will continue to operate, including the Community Liaison Committee and grievance mechanism. A summary of the consultation activities is provided below.

Each year a community communication program will be developed and documented.

3.8. Suggested Grievances and Redress Mechanism Disclosure

It is expected that no major grievance issue will arise. However, to ensure that stakeholders have avenues for redressing their grievance related to any aspect that may result from the project, detailed procedures of redress of grievances have been established. The objective is to respond to the complaints of stakeholders in a timely and transparent manner, without resorting to complicated formal channels to the extent possible. The procedure covers stakeholder grievances generated during construction and operation activities.

Anyone will be eligible to submit a grievance to the Project if they believe a practice is having an adverse impact on the community, the environment, or on their quality of life. They may also submit comments and suggestions to the ALCOM ENERGY project through the social development officer assigned by developer association.

- × **Objectives:** The objective of a grievance procedure is to ensure that all comments and complaints from any project stakeholder are considered and addressed in an appropriate and timely manner.
- × **Disclosure of the GRM:** The Community will be fully informed about the Grievance procedures in simple language. Information about grievance mechanism will be tailored according to the community. Community leaders, social entities and the governmental units will be informed about the GRM.
- × **Mode of Grievance:** The Company will accept all comments and complaints associated with the project from any stakeholder. Comments can be made via email, post, fax, on the telephone or in person. The comments and complaints will be summarized and listed in a Complaints/Comments Log Book, containing the name/group of commenter/complainant, date the comment was received, brief description of issues, information on proposed corrective actions to be implemented (if appropriate) and the date of response sent to the commenter/complainant.
- × **Response to grievances:** All comments and complaints will be responded to either verbally or in writing, in accordance to preferred method of communication specified by the complainant. Comments will be reviewed and taken into account in the project preparation; however, they may not receive an individual response unless requested.
- × **Registration of GRM:** All grievances will be registered and acknowledged within 6 working days and responded to within one month. The project management will keep a grievance log and report on grievance management, as part of annual project progress reports.
- × **Grievance channels:** Comments and concerns regarding the project can be submitted in writing in through the following channels until the developer association assigns a social officer. For the time being NREA will be the responsible entity of any grievance:

- Email: reic@nreaeg.com
 - By telephone : 22725891 and /fax 22717173
 - By post or hand delivered to: : Ibrahim Abu el Naga St. Abbas El Aqad, Nasr City Cairo Governorate
- × **Confidentiality:** Individuals who submit their comments or grievances have the right to request that their name be kept confidential, though this may mean that the company is unable to provide feedback on how the grievance is to be addressed.
- × **Management of GRM:** During construction of the ALCOM ENERGY plant, grievances in relation to construction activities will be managed by ALCOM ENERGY and the contractor in full cooperation with the developer association and the construction contractor(s). The Company will provide contact information for the contractor to residents of Benban before construction begins.
- × A separate grievance mechanism is available in the same manner for workers, including employees of ALCOM ENERGY project-and contractors.

3.9. Resources and Responsibilities

Until a permanent Stakeholder Liaison Officer (STL) for project is appointed, NREA will have the overall responsibility for handling the consultation and information disclosure process, including organization of the consultation process, communication with identified stakeholder groups, collecting and processing comments/complaints, and responding to any such comments and complaints.

Depending on the nature of a comment/complaint, some comments or complaints will be given to the appropriate person in the company for a response. In order to ensure that all stakeholders have adequate access to information, NREA will be the primary contact person.

3.10. Monitoring and Reporting

Monitoring of grievances

All grievances activities should be monitored in order to verify the process. The monitoring process should be implemented on the level of NREA. The following parameters will be monitored:

1. Efficiency of grievances recipients monthly (Channel, gender, age, basic economic status of the complainants should be mentioned)
2. Type of grievance received (according to the topic of the complaint)
3. Number of grievances solved
4. Number of unsolved grievances and the reasons behind not solving them
5. Satisfaction levels with proposed solutions
6. Documentation efficiency
7. Time consumed to solve the problem
8. Efficiency of response to received grievance dissemination activities undertaken

All grievances received verbally or in written shall be documented in a grievance register. They should be analyzed and reported to the funding agency

Monitoring of community engagement activities

Once commitments have been made within an SEP, it is important to monitor the company implementation and report on the status of the plan's implementation, along with explanations for delays or changes. The SEP should articulate how the public will be informed of the implementation of the plan.

Given the fact that most of stakeholder activities within this plan are not fully defined yet it will be useful to prepare a time plan on quarterly basis for all Stakeholder engagement activities. The quarterly plan should indicate:

1. Groups to be engaged
2. Objective of engagement
3. Method or tool of engagement
4. Main information to share with them

Having prepared the quarterly plan and implementing the planned activities, all information related to stakeholder engagement should be available summarized and reported to the funding agencies.