Environmental and Social Compliance Audit Report (Main Report - Part 1)

Project No.: 52229-001
January 2019

AFG: Kandahar Solar Power Project

Prepared by Dynamic Vision for 77 Construction Contracting and Trading Company and the Asian Development Bank.

January 2019




ENVIRONMENTAL AND SOCIAL COMPLIANCE AUDIT REPORT

15MW Solar Project in Kandahar

Lender
Asian Development Bank (ADB)

The Company
77 Construction Contracting and Trading Company, Turkey

Lender's Independent Environment and Safeguard Consultant

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Executive Summary

The Environmental and Social Audit was conducted to examine the compliance of various Environmental and Social issues during the construction stage of the project. The construction activities would last for about 12-18 months. As of Nov 2018, 61% of work has been completed. The earthwork was completed 95%, the perimeter wall was 100% completed, excavation of mounting structures was completed 49 %, and installation of mounting frames was completed 36% during audit date of site activities. However, following construction activities are to be done as part of the project implementation.

- Construct the site access roads with gates and temporary fencing and excavate the foundations;
- Construct the panel foundations;
- Install the transformer and grid connection; Lay power and instrumentation cables;
- Construct the control station;
- Erect and connect the panels;
- Erect weather station;
- Commission the panels/transmission lines; and,
- Carry out land reinstatement, remove temporary compounds and clear the site.

This Audit was conducted to examine the compliance and gaps of the Environmental and Social Impact Assessment (ESIA) including the Environmental and Social Management Plan (ESMP) carried out for the Project by Greentech in April 2018, and the compliance of environmental and social management measures during the construction phase. The audit was done based on site visits, observations, consultations and review of the documents. The issues and gaps identified are as follows:

The gaps in ESIA and EMP were identified against ADB safeguards and social requirements as well as the National Environmental Policy are as follows and to be addressed in the corrective action plan:

The generic impacts have been discussed in the ESIA with an EMP; but it was not prepared referencing to ADB safeguards and social requirements;
The basic national and funding agency requirements of ESIA study have not been covered in ESIA;
There is no Grievance Redress Mechanism (GRM) provision in the ESIA
Gaps in the EMP includes GRM and stakeholder engagement, organizational structure, monitoring and reporting during operation, health and safety plans with emergency response during operation stage, training and specific procedures in hazardous waste management, ecology management and water quality monitoring.
No budgetary provisions have been indicated for EMP implementation during operation;

The followings are observed in the Audit:

- Measures of air pollution control, noise control, wastewater disposal, solid waste disposal, ecological protection are implemented;
- Safe drinking water is available at the site.
- No conflict has been identified between project workers and the surrounding communities so far; however, some local people are claiming that they are the landowners of the project site of the Kandahar Solar Power Plant.
- Health, Safety and Environment (HSE) policy of 77 construction company is in place;
- Workers' health and social protection measures are implemented;
- No gender issue is evident as no women workers have been employed for work.
- No child labor issue; as no child labor was observed during the site visit.
- The contractor is monitoring water quality and noise levels during construction by their own staff and equipment. No environmental monitoring for air quality.

- There are complaints on land rights, but no GRM in place or system for recording these complaints in order to redress these grievances.
- The contractor lacks in providing dust protection mask and noise protection equipment to all its workers.
- Valid Environment Permit is obtained from the concerned authority.

Project Status Description

Introduction

The project titled "15 MW ON-GRID SOLAR POWER PROJECT, KANDAHAR, AFGHANISTAN" is implemented in Kandahar Province of Afghanistan. The power plant will utilize solar technology processes for power production of 15 MW of electricity.

The 'Power Purchase Agreement' has been signed between Da Afghanistan Breshna Sherkat (DABS) and 77 Construction on 18 Feb 2018. 77 Construction is responsible to implement this project, generate power, to be dispatched to DABS, the Afghan national utility entity, under a Power Purchase Agreement of 20 years. 77 Construction received the notice to proceed (NTP) for Kandahar Solar Project on 13 June 2018.

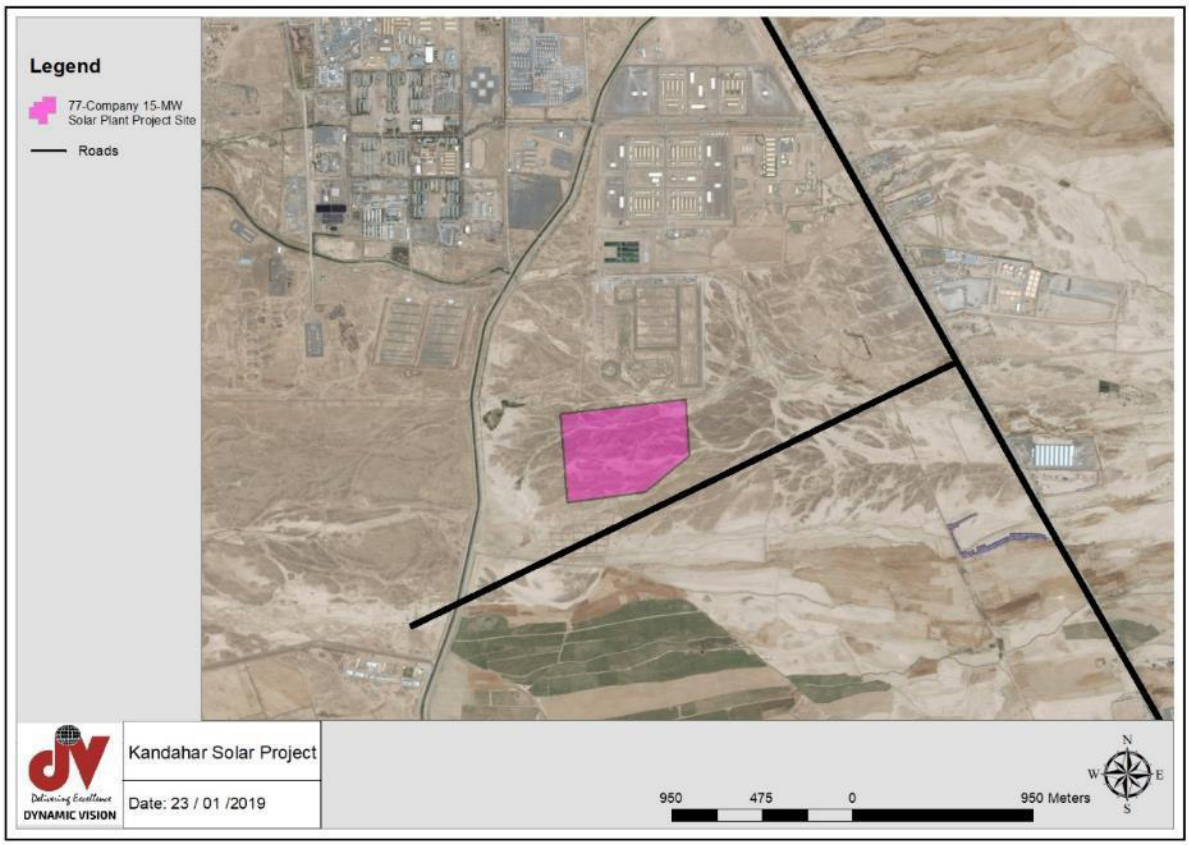
An Environmental and Social Impact Assessment (ESIA) has been carried out including an Environmental and Social Management Plan (ESMP) by Greentech Consultant during the design stage of the project. The project is in the construction stage as of November 2018, therefore Environmental and Social compliance audit is being carried out for on-site assessment, to identify past or present concern related to the impact on environment and the compliance audit is to determine whether project implementation has been in accordance with the ESMP, Afghanistan regulations and the Asian Development Bank (ADB) Safeguard Policy Statement 2009 (SPS) and social requirements. In addition, the Environmental and Social Audit assesses compliance of the project to the above-mentioned requirements and recommends environmental and social actions in the Environmental and Social Action Plan (ESAP) to ensure compliance.

Project Location

The proposed project is located in Daman District of Kandahar province **(Figure 1**). The coordinates of the solar power plant area are as follows:

Table 1: Project Site Coordinates

Point Table UTM- Grid-41N		
Point #	**Northing**	**Easting**
1	3485008.05	774058.84
2	3484712.63	774071.51
3	3484505.99	773826.48
4	3484475.72	773437.66
5	3484946.61	773397.12



Source: Dynamic Vision

Figure 1: Location map of the project

Figure 2: Project site before construction

Figure 3: Project site during construction

Project Objectives

The proposed project has the following short-term and long-term objectives.
To generate environment-friendly power using renewable energy resources;
To provide electricity supply for industrial parks of Kandahar city as well as for Kandahar city dwellers and establishments;
To create employment opportunities, increase business, local productions and incomes of the people in the area; and
To save on the diesel cost through harnessing alternative energy source, thereby effecting a saving on the foreign exchanges of the national exchequer.

Alternative Study

Land is provided by the Government of Afghanistan (GoA) to 77CC. Regarding the technology and components all the alternatives are evaluated. In the feasibility stage of the project the facility was designed with 15 arrays, central invertors and 3 seasonal tilt configurations, however, after evaluation of other alternatives the facility design was finalized with 13 arrays, sling type invertors and 2 seasonal tilt configurations.

Technology selection was based on modeling several technologies and configurations to determine which should be used. The evaluation was primarily based on a cost - benefit analysis between alternatives.

All module technologies - monocrystalline, polycrystalline and thin film - could be used in the Project. These technologies were compared and was concluded based on cost and benefit analysis which includes review of the module costs, land requirements i.e. land costs and mounting system costs. Benefit analysis includes review of estimated performance or in general revenue streams.

Thin film modules have lower temperature coefficient which decreases losses and thus increases annual energy yield. However, there are limited suppliers for high quality thin film modules which may cause delays due to longer delivery times. Although thin film modules may perform slightly better than mono- or poly-crystalline modules, they were not reviewed in detail due to time constraints both on amending PPA which specifies the use of thin film modules and supply of modules. After eliminating thin film modules, the use of polycrystalline and monocrystalline solar cells was reviewed for the Facility. Moreover, number of cells in a module is to be either 60 or 72.

Polycrystalline solar panels are not as efficient as monocrystalline solar panels due to lower silicon purity in polycrystalline cells. The more efficient modules are, less area is required for modules thus decreases land costs. However, regarding the specific case of the Project, the land was provided free of charge and is large enough to place more cells. The conceptual arrangement plan of polycrystalline modules has even larger pitch distance, which is 8.5 m, than many other Megawatt-scale solar projects. Due to the specific conditions of the PPA, land requirement of modules and related land costs are not considered as a factor in technology selection.

The Term of PPA is 20 years which is less than guaranteed economic life of both polycrystalline and monocrystalline solar panels. Therefore, lifetime of solar modules is not considered as a factor in technology selection.

Single most important capital cost item in a utility scale SPP arises from module costs, which is around 40%-50% of total capital costs. Sost of monocrystalline modules is around 5.0% higher than polycrystalline modules; which increases total capital costs around 2.0-2.5%.

Polycrystalline solar panels tend to have slightly lower heat tolerance than monocrystalline solar panels so they perform slightly worse than monocrystalline solar panels in high temperatures. Rough energy yield estimations show an increase of less than 1% for monocrystalline modules over polycrystalline modules.

Cost-benefit analysis between polycrystalline and monocrystalline modules shows very close results. 60-cell polycrystalline modules have relatively high efficient ($\geqslant$16.5%). Based on all considered factors, the 60-cell polycrystalline modules was selected as the most suited technology.

Project Components

The project consists of only solar power station development. The laying of the transmission line has been awarded by DABS as a separate project. The transmission line for power supply is under progress by DABS Line extension.

The length of the transmission line is 28 KM from 15 MW SPP to Kandahar Breshnakot, while 22 KM Transmission Line exists and for connecting the power generated in the Kandahar Solar Plant only 6 KM Transmission Line is required to be connected to the Shurandam thermal PP. This 6 KM line, which is being built, goes through state land along an existing road and is expected to have low impact on flora and fauna. Please see **Figure 4**

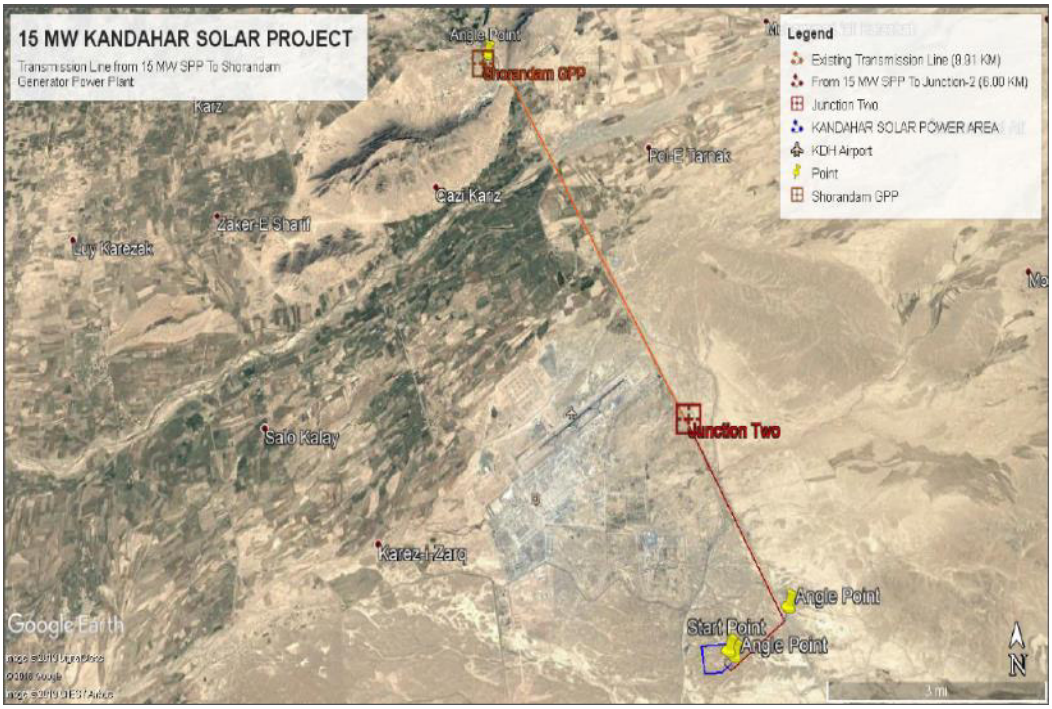


Figure 4: Transmission Line Route

The major components of the project are as follows:
55776 PV Modules Hanwha Q Cells / Q Power – G5 275 Wp to be mounted
Module Mounting Structure;
The balance of System consists of the junction box; power conditioning unit; transformers; plant monitoring desk; cable and wires; switchboard, DC distribution box panel; AC distribution box panel, lighting protection and over Voltage protection,
Power Conditioning Unit,
Control Room.
Weather Station.
On-site staff accommodation and sanitary facilities

The location of Transformers, Control Station and Weather station is indicated in Plant layout. The plant layout is shown in **Annex 7 (The Plant Layout).**

Project Activities

Construction activities have been planned for about 12-18 months. The expected date of completion is 13 April 2019. As of November 2018, 61% of work has been completed. The

earthwork completed 95%, the perimeter wall completed 100%, excavation of mounting structures completed 49 % and installation of mounting frames completed 36% during as on audit date of site activities.

The outstanding major construction activities of the project are as follows:
Construct the transformer and install the grid connection; Lay power and instrumentation cables;
Construct the control station; Erect and connect the panels; Erect weather station;
Commission the panels/transmission lines; and
Carry out land reinstatement, remove temporary compounds and clear the site.

Applicable Standards, Regulatory Bodies and Legal Requirements

The National Environment Protection Agency (NEPA)

The National Environment Protection Agency (NEPA) of Afghanistan is the principal independent government authority responsible for the environment related issues. NEPA is responsible for all-encompassing environmental concerns of national significance, including the development of national policy, development of environmental standards, coordination between government institutions, regulatory aspects, the collection of environmental information and data, monitoring of environmental indicators, licensing, and public awareness (UNEP, 2007).

NEPA is expected to play a vital role in environmental protection, as well as to be the central point in dealing with the management of Afghanistan's environment so that it benefits all the citizens of Afghanistan. Furthermore, NEPA is an autonomous body, responsible for implementation of the Environmental Act, monitoring, conservation and rehabilitation of biodiversity, etc. Table-1 provides further details of NEPA's National guidelines and policies.

Table 2: NEPA's National regulations, guidelines, and policies

Regulation/ Guideline/ Policy	Date	Key areas
Environmental Impact Assessment Regulations	(Official Gazette No. 939, dated 10 March 2008)	These regulations are issued in accordance with Article 22 of the Environmental Law to govern the process of environmental impact assessment. These regulations describe screening (Regulation 5) and environmental assessment (Regulation 7).
Administrative Guidelines for the Preparation of Environmental Impact Assessments	June 2008	These guidelines have been prepared as a companion to the Environmental Impact Assessment Regulations (Official Gazette No. 939, dated 10 March 2008). The guidelines are provided to assist those undertaking development projects that may have a potential impact on the environment and will guide proponents on the various aspects of dealing with the National Environmental Protection Agency as the competent environmental authority in Afghanistan.

Regulation/ Guideline/ Policy	Date	Key areas
Environmental Impact Assessment Policy – "An Integrated Approach to Environmental Impact Assessment in Afghanistan"	November 2007	NEPA with the assistance from UNEP has developed the EIA Policy of Afghanistan. The policy stipulates energy sector guidelines to the project proponents to integrate EIA in the process of development and the procedures to address environmental consequences and involve necessary institutions in the process of project implementation.

Ministry of Energy and Water (MEW)

MEW regulates electricity, identifies water resources and enterprises for generating power. The Ministry also sets energy policy and taxes on energy use; manages the planning and development of water systems for irrigating the land. Furthermore, it develops water policy and administers water rights. In supporting the socio-economic growth of Afghanistan, MEW is responsible for preparing and managing national policies of the energy sector except for those management or implementation policies that are assigned to the yet-to-be-established Afghanistan Energy Regulatory Authority (AERA) by the Electricity Law. The guiding and development direction of the planned energy sector of Afghanistan is subject to the policies under this law.

Da Afghanistan Breshna Sherkat (DABS) - The National Power Utility

DABS is an independent and autonomous company established under the Corporation and Limited Liabilities Law of Afghanistan. Incorporated on 04 May 2008, DABS replaced Da Afghanistan Breshna Moassassa (DABM) and is serving since then as the nation's main power utility. Its equity shares are owned entirely by the government entities. DABS have witnessed tremendous growth in its number of customers nationwide, with the household sector forming most the customers. The expansion of customers has pushed DABS to increase its imports to be able to meet the demands for electricity in the nation. DABS operate and manages electric power generation, import, transmission, and distribution throughout Afghanistan on a commercial basis. DABS is the Executing Agency (EA) of the Project.

National Health and Safety Regulation

Chapter ten of the Afghanistan labor law is dedicated to the Provision of Health and Occupational Safety Conditions. Article 107 of the law states that "The Administration shall be obliged to ensure the preservation of health and labor safety, application of safety techniques to prevent work and production related accidents and to provide healthy conditions to prevent occupational diseases of Employees" (Afghanistan Labor Law, 2007). The labor law is approved based on the Official Gazette, 2007-02-04, No. 914. In 13 article (from 107 to 119) the Labor Law covers relevant occupational health and safety concerns. Furthermore, Regulation on Protection of Health Workers at Risk (2015) was adopted by the Ministry of Justice as another legislative document for occupational safety and health.

IFC Environmental, Health, and Safety (EHS) or general EHS guidelines are designed to be used together with the relevant Industry Sector EHS Guidelines which provide guidance to

users on EHS issues in specific industry sectors should also be applied.

Government Environmental Policies, Laws, and Regulations

The regulations on environmental impact assessment are based on the Environmental Act of Islamic Republic of Afghanistan (GazetteNo.873), dated 29 Jadi, 1384 (19 January 2006). The National Environmental Protection Agency (NEPA), as an independent institutional entity, is responsible for coordinating and monitoring conservation and rehabilitation of the environment, and for implementing this act. Other Government legislative documents relevant to environmental management in the country are as follows:

Environment Law 2007

Water Law 1981

The Law of Land Ownership 2000

Nature Protection Law 1986/2000

Agricultural Quarantine Services Law 2000

Hunting and Wildlife Protection Law 2000

Range Management Law 1970/2000

Agriculture Cooperative Development Law 2000

Charter for Development of Fertilizer and Agro-Chemicals 2000

Clean Air Regulation of Afghanistan in 2010

National Ambient Air Quality Standard of Afghanistan (2011) is as per WHO guidelines.

Table 3: National acts/laws of Afghanistan

Act/ Law	Date	Areas where Law is Applicable
Environmental Act	2007	This act has been promulgated to give effect to Article 15 of the Constitution of Afghanistan and provide for the management of issues relating to rehabilitation of the environment and the conservation and sustainable use of natural resources, living organisms, and non-living organisms.
Law on the Protection of Historical and Cultural Properties	2004	This law was adopted pursuant to article (9) of the Constitution in order to protect the historical and cultural properties.
Water Law	2009	Afghanistan's new Water Law became effective in April 2009 and is one component of the country's strategy to integrate its water systems and institutions. The Water Law adopted a river basin approach under which natural river basin boundaries (versus administrative boundaries) govern all aspects of natural resources management and planning (Wegerich 2009; GIRoA, 2007b). Customary law tends to govern the use of water on private land and in private systems, the resolution of conflicts over water, and water resource conservation. The customary law generally governs the allocation of water through the Karez system, which is constructed and maintained on a community basis (McMurray and Tarlock, 2005).

Act/ Law	Date	Areas where Law is Applicable
Law on Managing Land Affairs	2008	The 2008 Law on Managing Land Affairs sets out definitions for various land types and classifications, requirements for land deeds, and principles governing allocations of state land, land leasing, land expropriation, settlement of land rights, and restoration of lands.
Draft Rangeland Management Law	Draft 2009	The Rangeland Law is currently under development. Its purpose is to create a framework for community custodianship and management of rangeland resources to provide for the sustainable use and management of the rangeland resources, to maximize the productivity of rangeland resources and to maintain ecological functions and evolutionary processes of Afghan rangelands, conserve soil and water resources, maintain biological diversity, and combat desertification.
Draft Forest Law	Draft 2009	The Draft Forest Law reflects the principles of community-based natural resource management enshrined in the Cabinet-endorsed National Strategy for Forests and Rangeland. The draft is currently with the Ministry of Justice for processing.

As per National law, the following documents and permits are required for the project.

Screening and Impact Assessment	An environmental screening report needs to be submitted as a first stage report, per the checklist provided by NEPA for Environmental Screening. Under NEPA's regulation on Evaluation of Environmental and Social Impacts, the project lies under category "2" which requires Initial Environmental Examination (IEE). An ESIA has been conducted by Greentech and accepted by NEPA with permit granted.
Environmental Permit	An Environmental Permit No. 0047 based on the ESIA study and its acceptance was issued on 23/2/1397 and valid until 22/2/1400. The Gregorian calendar date of issue 13/5/2018 and valid up to 12/5/2021.
Land Lease	Land location was jointly approved by ARAZI and DABS for 15 MW solar power project and provided to 77 Construction Company based on a Land Lease Agreement(**Annex 5 (Land Lease Agreement)**). The land was barren and uncultivated prior to the construction of the project. Land location approval was obtained by the 77-construction company. However, it is stated in a monthly progress report that during the commencement of the construction work, that there was some dispute on the land of project site where local people were claiming the ownership of land. As discussed with the project manager of 77 construction company the issue has already been settled by DABS and now there is no issue about land. As per the 77 Construction Company, the land has been provided to them by DABS and they were responsible to the settle the issue and they settled it themselves.
Energy Generation License	License for Energy Generation. The License was issued to 77 Construction Company until 04th May 2043.
Waste Collection and Disposal	77CC has an agreement with the Kandahar Municipality for waste collection and disposal. There is no other permit or license required for waste management.

The copies of above-stated permits are enclosed as **Annex 1 (Environmental Permit)**, **Annex 2 (Land Location Approval)**, and **Annex 3 (Power Generation License)**

International Treaties

Afghanistan is a signatory to the follow interantional treaties and conventions:

The United Nations Framework Convention on Climate Change (UNFCCC)

The United Nations Convention to Combat Desertification

The Convention on Biological Diversity:

The Convention on International Trade in Endangered Species of Wild Fauna and Flora

The Paris Agreement (French: Accord de Paris)

ADB Safeguards Requirements

ADB's Safeguard Policy Statement (SPS, 2009) sets out the policy objectives, scope and triggers, and principles for three key safeguard areas: (i) environmental safeguards, (ii) involuntary resettlement safeguards, and (iii) Indigenous Peoples safeguards. ADB adopts a set of specific safeguard requirements that borrowers/clients are required to meet in addressing environmental and social impacts and risks. ADB will only finance projects that comply with its safeguard policy statement and with the host country's social and environmental laws and regulations, including those laws implementing host country obligations under international law. In addition, ADB will not finance activities on the prohibited investment activities list.

According to ADB SPS (2009), the Project is classified as **category "B" for environment** and an Initial Environmental Examination (IEE) is required. ADB uses a classification system to reflect the significance of a project's potential environmental impacts. A projects' category is determined by the category of its most environmentally sensitive component, including direct, indirect, cumulative, and induced impacts in the project's area of influence. Each proposed project is scrutinized as to its type, location, scale, and sensitivity and the magnitude of its potential environmental impacts. A project is classified as one of the four environmental categories (A, B, C, or FI) based on the most environmentally sensitive component. As such, projects are screened for their expected environmental impacts and are assigned to one of the following categories:

Category A: This category project is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required.

Category B: A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of Category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases, mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.

Category C: Projects unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are still reviewed.

Category FI: A proposed project involves the investment of ADB funds to or through a financial intermediary. The financial intermediary must apply and maintain an environmental and social management system unless all of the financial intermediary's business activities have minimal or no environmental impacts or risks.

As per ADB's SPS (2009) the project is classified as **category "C" for involuntary resettlement** as there are no involuntary resettlement impacts and therefore it requires no further actions. The project land is state land and provided to 77 co. based on a Land Lease Agreement **(Annex 5 (Land Lease Agreement))** between 77 co. as lessee and DBAS as lessor. The involuntary resettlement impacts of an ADB-supported project are considered significant if 200 or more persons will be physically displaced from home or lose 10% or more of their productive or income-generating assets.

For those involving involuntary resettlement, a resettlement plan is prepared that is commensurate with the extent and degree of the impacts: the scope of physical and economic displacement and the vulnerability of the affected persons. Projects are classified into the following categories:

Category A. A proposed project is likely to have significant involuntary resettlement impacts. A resettlement plan, which includes assessment of social impacts, is required.

Category B. A proposed project includes involuntary resettlement impacts that are not deemed significant. A resettlement plan, which includes assessment of social impacts, is required.

Category C. A proposed project has no involuntary resettlement impacts. No further action is required.

According to ADB SPS (2009) the project is classified as **category "C" for indigenous people** and therefore no further action is required. The impacts of an ADB-supported project on indigenous peoples is determined by assessing

the magnitude of impact in terms of

customary rights of use and access to land and natural resources;

socioeconomic status;

cultural and communal integrity;

health, education, livelihood, and social security status; and

the recognition of indigenous knowledge; and

the level of vulnerability of the affected Indigenous Peoples community.

Projects are classified into the following categories:

Category A. A proposed project is likely to have significant impacts on indigenous peoples. An indigenous people plan (IPP), including assessment of social impacts, is required.
Category B. A proposed project is likely to have limited impacts on indigenous peoples. An IPP, including assessment of social impacts, is required.

Category C. A proposed project is not expected to have impacts on indigenous peoples. No further action is required.

The above discussed National, International Laws, Safeguard Policy of ADB and Health and Safety guidelines of IFC are the applicable standards for this Audit.

Documents Reviewed

The Environmental and Social Compliance audit is being carried out for the Project under the Term of Reference (ToR) attached as **Annex 4 (Term of Reference (ToR))**. The scope of work is defined in TOR. Other documents reviewed during the study are as follow:

The Regulations of National Environmental Protection Agency (NEPA) of Afghanistan;
The Safeguard Policy of Asian Development Bank (ADB) SPS 2009. The potential funding agency.
Environmental, Health, and Safety (EHS) Guidelines by International Finance Corporation (IFC); April 2007.
Environmental and Social Impact Assessment (ESIA/EMP) report prepared by Genentech Consultant;
Land Lease Agreement (**Annex 5 (Land Lease Agreement))**
Site Specific Environmental Management Plan Prepared by 77 Construction company;
Health and Safety Plan of 77 Construction Company;
Monthly Progress Reports (August 2018 to November 2018) of 77 Construction company;
Monthly Safety Meeting notes of 77 Construction Company; October, November and December 2018. **(**October, November and December 2018 safety meeting notes **Appendix 1.1, 1.2 & 1.3)**
Emergency Plan of 77 Construction Company prepared in February 2018.
Record of employees of 77 construction company;
Environmental Permit from NEPA;
Personal Protective Equipment (PPE) inventory record of 77 construction company;
Formats for notice of Non- Compliances by workers

Methodology for Environmental and Social Audit

The Environmental and Social Compliance audit is being carried out for the project based on the understanding of Term of Reference (ToR) attached as **Annex 4 (Term of Reference (ToR))**. The scope of work is defined in TOR. The following methodology was used to conduct the Environmental and Social Audit of the project:

Documents Review

The documents reviewed during the study has already been discussed in Section-3 of the report.

Meeting with Project Proponents

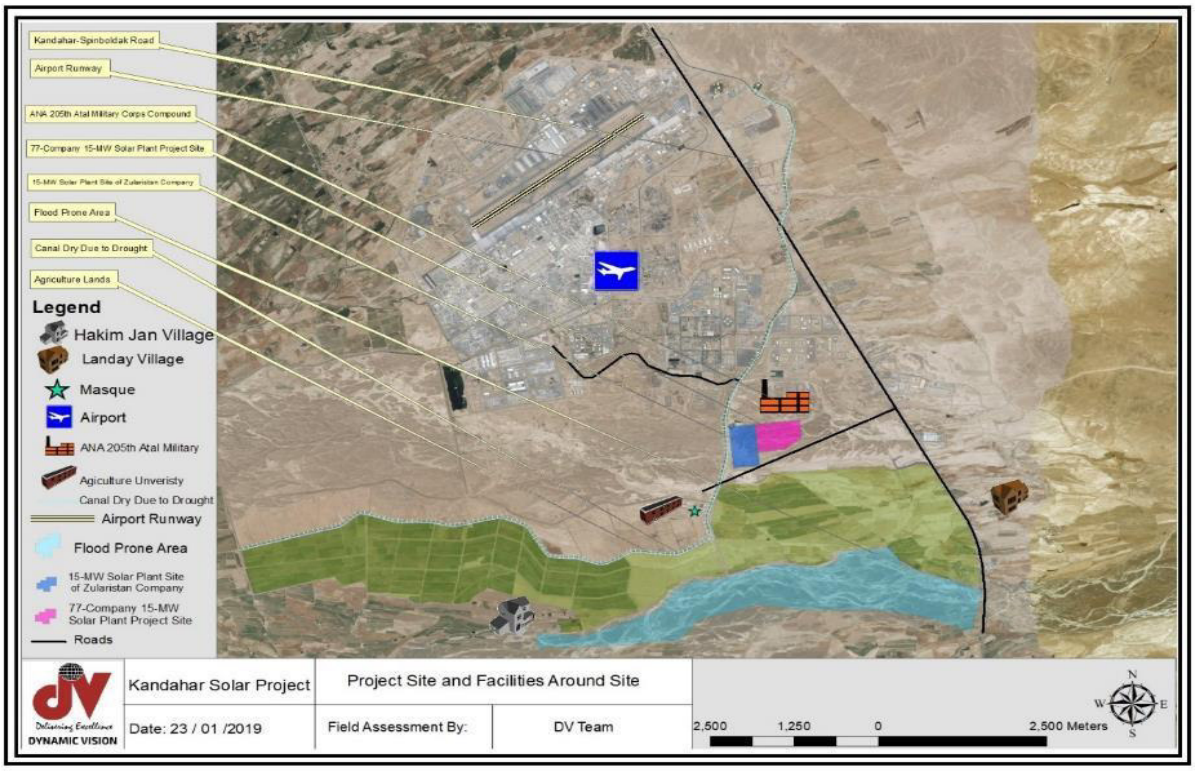
The consultants visited 77 Construction Company Head Quarters in Kabul. The purpose of the visit was to conduct a compliance review of the company at a Governance level in Afghanistan. They met with their officers at the Senior Management level, reviewed the procedures and documentation in place, and went through their operations and management systems. The consultants provided 77 Construction Company with a checklist of documents to be shared with the consultants for review and in response; the company had shared all the available documents with the consultants for the required assessment.

Site Visit

The consultant visited the Project site in order to get information about the surroundings of project site and ground level facts related to the construction activities, construction camp and workers camp. There are two villages close to the project area. Landay Village locates over 3km on the southeast side of the project area and Hakim Jan Village is over 4km on the Southwest of the site. There is also the Kandahar airport at 3 km north of the project area. For more details please see the **Figure 5 Facilities Around Project Site**.

During the site visits, the following issues were audited: air and noise pollution due to material transportation and construction activities; any kind of direct and indirect impact on any ecosystem; impact of project activities on surrounding localities; water source and wastewater disposal; source of waste generation and provisions of waste disposal by the contractor. The consultants had undertaken site visits of the area allotted for workers' accommodation and assessed the facilities available within the accommodation area. The gender and child labor issues were specifically examined during the site visit. Also, the health and occupational safety issues were similarly monitored during the site visit.

Figure 5: Facilities Around Project Site



Baseline Summary

The proposed solar power plant, 15MW Kandahar Solar Project, is located in Daman District of Kandahar province. There was no use of this land for any residential/commercial purpose as this land parcel is near Kandahar Airport and controlled by Afghan National Army (ANA). As per site survey, there is ANA 205th Atal Military Corps Compound, adjacent to the project site and Agriculture faculty, located at a distance of about 500 meters to project site also there is agricultural land close to the project site in which wheat has been grown[1].

The source of Baseline data in the ESIA report prepared by Genentech is not mentioned, The primary and secondary data collected for ESIA preparation was limited particularly environmental monitoring for air, noise and water was done at one location only. Also ecological and social data was very limited for ESIA study. Therefore, more data from public

[1] Source: ESIA report prepared by Genentech and Consultation.

sources and standard reference has been supplemented in this report. The summary of the baseline environment is discussed in the following sections.

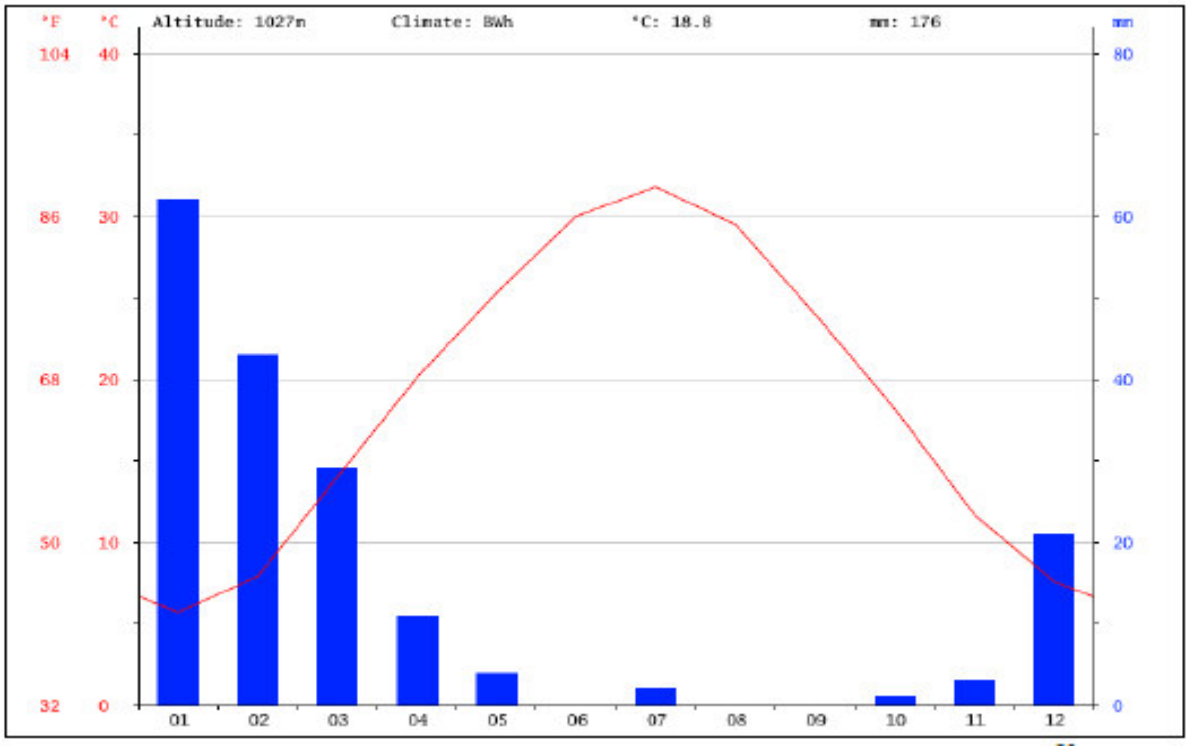
Physical Environment

The physical environment of project area is described in following sections.

6.1.1 Climate

The Site is located in Kandahar City in Kandahar Province of Afghanistan. Kandahar City and the Site are located respectively at about 1,010.0 m and 1,015.0 m above sea level. Kandahar City is the nearest district to the Site; therefore, data for average climate of Kandahar City represents the Site's climate. The Site has a desert climate. Kandahar has very little rainfall during the year where average annual precipitation is 176 mm. There is more rainfall in the winter than in the summer. The driest month is June, with no rainfall. With an average of 62 mm, the most precipitation falls in January. The average monthly January to December, temperatures and precipitation is given in **Figure 6** below.

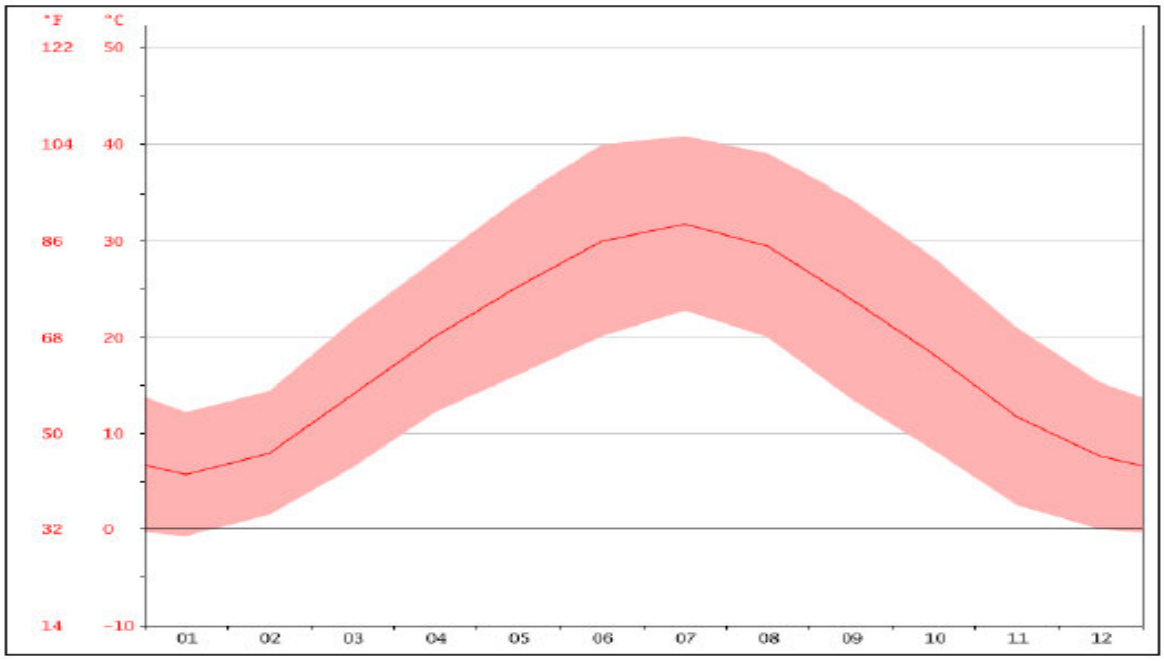
Figure 6: Average Monthly Temperatures and Precipitation in Kandahar



The average annual temperature in Kandahar is 18.8°C. The warmest month of the year is July, with an average temperature of 31.8°C. January has the lowest average temperature of the year that is 5.7°C. The average temperatures vary during the year by 26.1°C.[2] The Temperature Graph for Kandahar is given in **Figure 7** below.

Figure 7: Temperature Graph for Kandahar

[2] Technical and Financial Feasibility Report for 15 MW Solar Power Plant in Kandahar, Afghanistan



Surrounding Land Use

Prior to the project implementation, the land was barren and uncultivated while, there were some establishments in the vicinity of the project area, such as Military Corp and airport on the north and Agriculture University on the southwest of the project area. The land on the east and south side of the project area was barren and uncultivated. However, on the west side of the project area the land was used for agriculture. There were also two villages close to the project area which are Landy and Hakim Jan villages with the distance of around 3 km and 4 km respectively from the project area.

Road Access

The project is located adjacent to the existing main public road, so no new roads would be required as a part of this project.

Soil

The soil in the project area primarily consists of sediments eroded from the mountains and comprises alternating layers of gravels, sands, silts, and clays. Adjacent to the mountains, the sediments are dominated by coarse deposits such as gravels and pebbles, deposited by the runoff water from the mountains. Further, away from the mountains, the deposits would be expected to become increasingly dominated by finer sediments such as fine sands/silts.

Earthquake

Kandahar province is considered as moderate earthquake-prone and the size of the earthquake intensity in this province reaches 7 to 8 degrees. The solar power project site is considered as a moderate earthquake and the size of the earthquake intensity in this province reaches 7 to 8 degrees.

Water

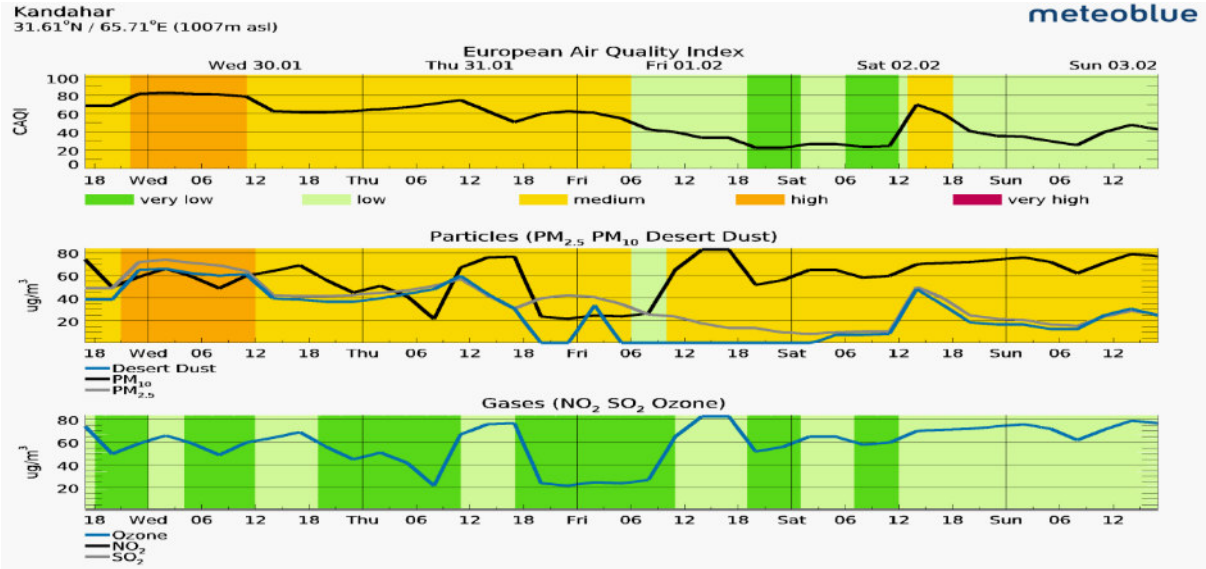
The project area is drought prone. There is no surface water in the project area; however, ground water is available in the project area. The local people are also using bore well water for drinking and other domestic use. As discussed with the project manager of 77 construction company, the quality of water is clean and drinkable. Local people are having their own bore wells, which has an average depth of 18-20-meter. As informed by local people the taste of water is salty. There is a contradiction in the statement of people consulted and information mentioned in the ESIA report. As stated in the ESIA report surface and ground water samples were collected from the project area (from the bore well inside

Agriculture University which is about 500 m from the project site) and tested for water quality.

Air and Noise

Air emissions in the area are generated by vehicle movement and are not very critical since the project area lies in a remote area. Air quality was monitored at one location during ESIA preparation for SO2, NO2, CO2, and PM10. The 24 hour average value of PM10 is higher than the ANSA standard; however gaseous pollutants are well within the limit. Also, the noise level measured during ESIA study at one location is within the limit.

[3]**Figure 8: Air quality of Kandahar**



The top panel shows the forecast for the Common Air Quality Index (CAQI) in Kandahar used in Europe since 2006. It is a number on a scale from 1 to 100, where a low value (green colors) means good air quality and a high value (red colors) means bad air quality. CAQI colour-coding is used in all air pollution forecast panels of the meteogram to indicate the level of pollution. The Air Quality index is defined separately near roads (“roadside” index) or away from roads ("background" index). meteoblue uses the background index, because weather models cannot reproduce small-scale differences along the roads. Therefore, measurements along roads will show higher values than forecast here.

The second panel shows the forecast of particles (PM and desert dust) for Kandahar. Atmospheric particulate matter (PM) are microscopic solid or liquid matter suspended in the air. Sources of particulate matter can be natural or anthropogenic. Of greatest concern to public health are the particles small enough to be inhaled into the deepest parts of the lung. These particles are less than 10 microns in diameter (approximately 1/7th the thickness of the a human hair) and are defined as PM10. They are a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. Particulate matter also forms when gases emitted from motor vehicles and industry undergo chemical reactions in the atmosphere. PM10 is visible by eye as the haze that we think of as smog. PM10 includes fine particulate matter defined as PM2.5, which are fine particles with a diameter of 2.5 µm or less. The biggest impact of particulate air pollution on public health is understood to be from long-term exposure to PM2.5: Desert Dust consists of particles smaller than 62µm

[3] https://www.meteoblue.com/en/weather/forecast/airquality/kandahar_afghanistan_1138336

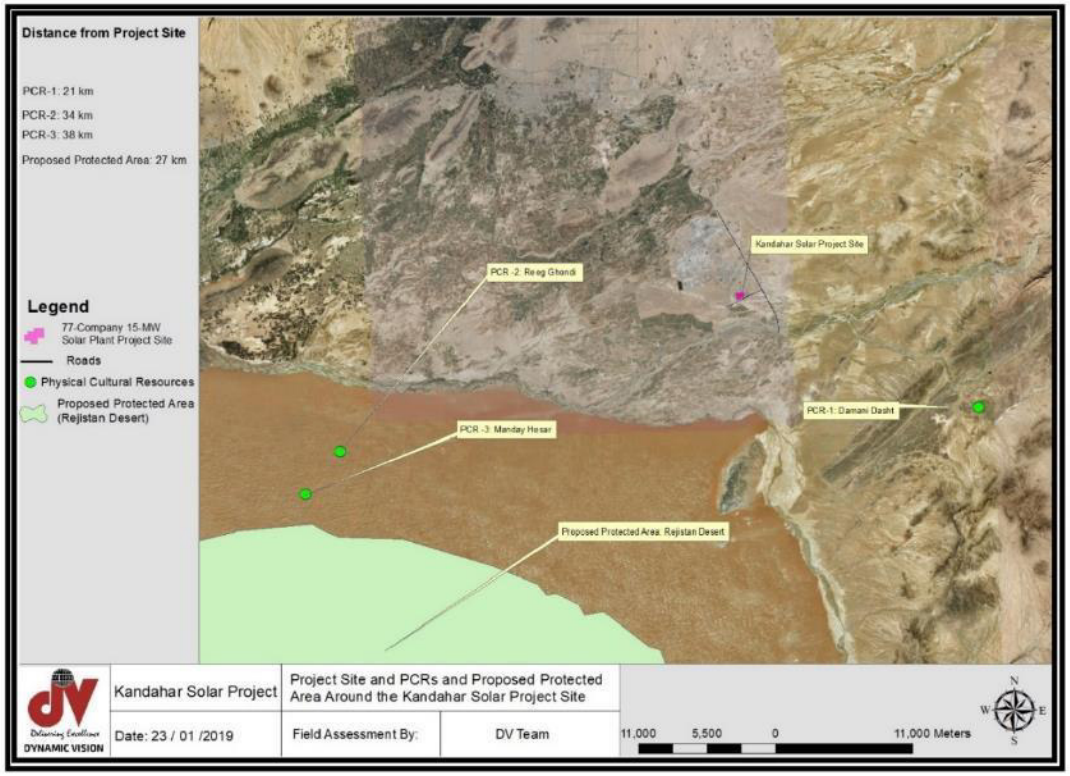
originating in deserts. Often, the dust particles are small, leading to high concentrations of PM10 and PM2.5 and all related health impacts[4].

The results of PM10 shown in table 12 of the ESIA report is insufficient to be representative as it was only measured once and not carried out as per international standard procedures. The high level of PM10 measured can be the result of high traffic or change of wind direction and does not provide a conclusive baseline of air quality.

Physical Cultural Resources

Historic and cultural resources include monuments, structures, works of art, the sites of outstanding universal value from historical, aesthetic, scientific ethnological and/or anthropological points of view, including unrecorded graveyards and burial sites. Afghanistan is rich in historic and cultural resources. The responsibility for preservation, maintenance and assessment of historical and cultural monuments in Afghanistan rests with the Archaeological Committee under the Ministry of Information and Culture (MOIC). There are some historical and cultural resources in Kandahar Province from which three sites which are 20-38 km away from the project site, the project will not have any impact on them. The list of physical cultural resources and coordinates were provided by the Ministry of Information and Culture. For details please see **Figure 9**.

Figure 9: PCRs Around the Project Area



Ecological Environment

There is no site-specific data of flora and fauna and no protection area is available in ESIA report. Only fauna of Kandahar province is discussed in the ESIA report. The fauna mentioned in ESIA report is jackal, fox, cat, dog, wolf, rabbit, and squirrel, mice that some of them are common and some of them are not much common. Reptiles and amphibians are

[4] https://www.meteoblue.com/en/weather/forecast/airquality/kandahar_afghanistan_1138336

snake, lizard, scorpion, crab, spider, frog, Natrix, and crab. Afghanistan's National Environmental Protection Agency (NEPA) issued a Protected Species List[5], March 22, 2018, that is given in **Table 4**. None of the above-mentioned fauna (available in project area) is in the list of protected species.

Table 4: Protected Species of Afghanistan

#	Species name	Scientific Name
01	Snow leopard	*Panthera uncia*
02	Gray wolf	*Canis lupus*
03	Asiatic brown bear	*Ursus arctos*
04	Paghman salamander	*Paradactylodon mustersi*
05	Goitered gazelle	*Gazella subgutturosa*
06	Saker falcon	*Falco cherrug*
07	Markhor	*Capra falconeri*
08	Himalayan elm tree	*Ulmus wallichiana*
09	East Himalayan fir	*Abies spectabilis*
10	Large-billed reed warbler	
11	Eastern barbastelle	*(Barbastella leucomela)*
12	Bactrian deer	*Cervus elaphus bactrianus*
13	Indian gazelle	*Gazella bennetti*
14	Striped hyena	*Hyaena hyaena*
15	Stone marten	*Martes foina*
16	Mehely's horseshoe bat	*Rhinolophus mehelyi*
17	Blanford's fox	*Vulpes cana*
18	Large-billed reed warbler	*Acrocephalus orinus*
19	Eastern imperial eagle	*Aquila heliaca*
20	Pallas' fish eagle	*Haliaeetus leucoryphus*
21	White-rumped vulture	*Gyps bengalensis*
22	Marbled teal	*Marmaronetta angustirostris*
23	Dalmation pelican	*Pelecanus crispus*
24	Sociable lapwing	*(Vanellus gregarious)*
25	Marco Polo sheep	*Ovis ammon polii*

As already discussed in physical environment section that due to drought in the area there is no surface water available in the area. However, there is one irrigation canal about 500 meters from project site, but it was dry and there was no water in this canal Therefore, there is no fish or aquatic life in the project area.

As far as flora is concern, the important fruit trees of Kandahar Province are discussed which are Grape, Pomegranate, Walnut, Apple, mulberry, Common fig, Apricot, Nectarine, Prune, plum, Peach, Lemon, Orange, Bitter Orange and Almond.

The deserts of the Kandahar contain active sand dune areas and dunes fixed by a rather open vegetation. The main plants are Haloxylon persicum, Calligonum spp. and perennial

[5] Flora and Vegetation of Afghanistan Siegmar-W. Breckle Department of Ecology, University of Bielefeld, Wasserfuhr 24-26, 33619 Bielefeld, Germany Email: sbreckle@gmx.de Received 28 May 2007; original version accepted 9 September 2007

Aristida spp. Halarchon vesiculosum, a south-Afghan endemic halophytic Chenopodiaceae, south of Kandahar, 1000m asl.[6]

Also, some medicinal plants are discussed in the ESIA report. These medicinal plants are They Cinnamon, Plantago major, Eremurus, Merendera, Gagea, Absinthium, Cousinia, Lactuca Orientalis boiss, Alhagi, Astragalus, Arundo, and Thymus.

The Registan Desert in the southern part of Kandahar which is a proposed protected area and it can be declared as protected area in near future. The distance of this proposed protected area is approximately 27 Km to the south of the project area, see **Figure 9.**

Priority Zone Identification[7]

The Olson et.al (2001), classified the earth into 867 terrestrial ecoregions. The ranking was also given for vulnerability of each ecoregion depending upon on the status of the habitat and species it contains. According to this method, 38% of Afghanistan land is comprised of ecoregions that are globally endangered, 61% as vulnerable, and only 1% as stable.

Central Afghan mountains xeric woodlands are critically endangered ecoregion, found in southeastern Afghanistan only and have approximately area of 139,400km2.

The largest desert area of Afghanistan, due south of Kandahar at 800-1,200 m; it extends over a vast tract of southern Afghanistan to the borders of Pakistani Baluchistan, bordered by the Helmand river to the west and its tributary the Arghestan to the north. The desert contains a wide cross-section of desert biotopes from free-moving sand to gravel plains. The area is very cold in winter, very hot in summer. There is no precise information available on habitats and vegetation, but these are potentially rich and varied.

This vast region is virtually unstudied ornithologically, and species listed are based on observations made during the nineteenth century, so no confident comments can be made on present status. Other breeding species probably include Francolinus pondicerianus (possibly), Cursorius cursor, Pterocles coronatus, P. senegallus, P. alchata, Caprimulgus mahrattensis (possibly), Ammomanes cincturus, Alaemon alaudipes, Calandrella rufescens, Hippolais rama, Turdoides caudatus, Petronia xanthocollis and Rhodopechys githaginea. Passage and/or wintering species probably include Phoenicurus erythronota and Rhodopechys mongolica[8].

Older reports recorded large herds of Gazella subgutturosa (rare), Equus hemionus onager (V) and possibly Gazella bennetti (V), but these populations have no doubt been decimated. Larger predators included Acinonyx jubatus (V; now surely extinct) and Caracal caracal (rare).

Socio-economic Environment

The total population of Daman is 36,569, the male population is 18,926 and female population is 17,643. The entire population is in rural areas as per record.

There is no detail in ESIA about tribe population of Daman District; however, tribe wise population is available for Kandahar province. The 70% of the people of this city are

[6] Flora and Vegetation of Afghanistan Siegmar-W. Breckle Department of Ecology, University of Bielefeld, Wasserfuhr 24-26, 33619 Bielefeld, Germany Email: sbreckle@gmx.de Received 28 May 2007; original version accepted 9 September 2007

[7] Identifying Priority Zones for a Protected Area Network in Afghanistan, 2009

[8] BirdLife International (2019) Important Bird Areas factsheet: Registan desert. Downloaded from http://www.birdlife.org on 23/01/2019.

Pashtuns, after Pashtuns, Tajik people population is about 20% of the total population. Hazaras, Baluchis, and Arabs are also living in this province, but with a low percentage.

As mentioned above, the two villages in the vicinity of the project area are Landay Village 3 km and Hakim Jan village 4 km from the project area. The total population of Landay village is 900 from which 400 are male and 500 are female. The total population of Hakim Jan village is 1100 which consists of 450 male and 650 females. There are no women-headed household in both villages.

Almost all households are Pashtun and their main occupation is farming and labor work. The main crop grown in the project area is wheat.

There is a high school for boys in Hakim Jan village and children from Landay village also go to this school. For health facilities, there is only one ordinary medical clinic which closer to Landay village. Households in both villages do not have access to electricity and clean water.

Most of information on industry, health, education, agriculture and livestock is of Kandahar area as per ESIA report. There is no specific information about the project area which falls in Daman District of Kandahar.

There is a gap in socio-economic data of the project area. As stated in population section the entire population in the Daman District is Rural, the area is not having many infrastructural facilities. Most socio-economic activities are agricultural and livestock.

There are 3 universities in Kandahar; 2 of them has the Electrical Engineering Department, Kandahar University and Benava University.

It will be DABS decision where to deliver and use the electricity generated by the plant. It is expected that it will be used in both industrial and residential areas.

As far as DV opinion is concern the proposed project will improve the socio-economic facility in the area. The solar power project will, directly and indirectly, generate some jobs. If the contractor may provide some skilled and unskilled workers job to local people, it will improve the living conditions of local people. Presently 75% of the workers are local and all are male. At present there is no female worker at site. During the operation period, the contractor will continue local workers including engineers, electricians, and unskilled laborers.

Environmental and Social Management

77CC has an Environmental and Social management policy at corporate level as well as at project level. The procedures, roles and responsibilities are given in HSE plan.
The organizational structure at Head Quarter (HQ) level and project level are given in **Annex 13 (77 Construction Company HQ Organization Chart)** and **Annex 14 (77 Construction Company Kandahar SPP Organization Chart)** respectively. The revised HSE plan prepared by the 77 construction company for Kandahar Solar Power Project is given in **Appendix 2.**

Identified Impacts[9]

The impacts and level of significance are given in **Table 5.**

[9] ESIA report prepared by Greentech

Table 5: Impacts and Level of Significance

Potential Impact	Description	Level of Significance, scale of impact and affected people
Construction Phase		
Air Quality and Noise Hazard	The activities like site clearing, leveling, excavation and grading, unpaved roads, storage piles and material transfer may generate dust emissions. There will be emissions (NOx, SOx, PM) from heavy trucks, generators, and compressors etc. There will high noise levels in some working zones including the mechanical workshop, the loading and unloading zones. The noise generation will be temporary and localized. The operation of the construction equipment will generate noise ranging between 75–90 dB.	Moderate impact within the project area and its surroundings, and access road. Affected persons would be site workers and visitors and road users.
Soil	The surface topography of the site is almost flat. Hence, limited site preparation/ leveling activity was needed to make the land flat as per the requirements of the solar PV power plant. The entire area is shadow free as there are no shading elements like mountains, large sand dunes, etc. on the site. Site clearing and site preparation activities will result in loss of vegetation cover (grass and shrubs) and topsoil which could lead to soil erosion. An accidental spill of fuel could result in soil contamination.	Significant impact on land use change however the land was barren and unused. The level of impact due to oil spill is insignificant as there is only one diesel generator set using fuel and if there is leakage from vehicles and equipment. It will be managed under the spill control measures of ESMP and HSE Plan.
Waste	Solid waste will be produced by activities of workers and due to construction activities. Waste generated at this site includes household waste, kitchen waste, construction materials, and wastewater from living areas, toilets and office etc. also, there are 3 chemical containers at the site.	The impacts will be insignificant as all solid and liquid waste will be managed under the ESMP and collected by the Kandahar Municipality on regular basis.
Hazardous substance/ Chemical management	The solid and industrial waste generated during construction phase possesses risk for soil / land contamination. Solid and industrial waste will be generated during construction activities. The solid wastes are expected to be non-hazardous and consist of mostly chemical containers and packaging materials, miscellaneous	Moderate impacts within the project area. Impacts could result if hazardous wastes were not properly handled and were released to the environment. It will be managed in the ESMP

	wastes from equipment assembly and presence of construction crews (food wrappers and scraps). Industrial wastes would include minor amount of paints, coatings, and spent solvents. Other hazardous materials would include dielectric fluids in electrical equipment used in substations and compressed gases (for welding), solvents and cleaning agents, and corrosion control paints	and HSE Plan.
Groundwater	Water has been sourced from bore well during the construction phase. There is one bore well with capacity of 0.4 m3/min at the project site. During site preparation, groundwater resources may be impacted from spills and leaks of fuel and oil as a result of improper storage and handling of these materials. Also, there will be more pressure on groundwater resources as no surface water is available in the area.	Limited impact on groundwater use as bottled water is provided for drinking, groundwater is mostly utilized for cleaning and dust control. The impact is temporary and water conservation measures has been employed per the ESMP.
Ecology	The project area locates in an industrial setting. As there is no protected ecosystem in or adjacent to the project area. Also, there is no source of surface water to be used by wild animals. The removal of all kind of vegetation and works related to land preparation; excavation and other construction work may directly impact wildlife in the project area. There is associated facility of transmission line of approximately six kilometers for the Kandahar Solar Power project. The land use of the transmission line was barren and uncultivated. There was no valuable flora and fauna in project area of the transmission line.	The ecological impacts are limited.
Socio-economic	There will be more job opportunities for local people as skilled and non-skilled workers. Also, there will be indirect job opportunities like shops and restaurants in the project area.	There would be significant and long-term positive impacts of the project.
Occupational	During the construction phase of the	Significant impacts and control

Health and Safety	project, there are risks of occupational safety of workers. The actual field works has started in September 2018 and the target completion date of the Project is mid April 2019. Therefore the extremely hot season is avoided for construction of the Project. However following measures and mitigation measures are considered for hazards and risk control. Internal audits of HSE Analysis of all incidents, accidents and unsafe conditions Hazard Identification and Risk Assessment (HIRA) HSE operational instructions have been formulated in the local language Safety talks are carried out Training and practical demonstrations are conducted regularly to increase awareness and understanding about fire and safety procedures Emergency drills are conducted Employees are urged to report unsafe work conditions and non-compliance of our HSE procedures Health and safety training is provided at recruitment of workers and also on a weekly basis. Personal protective equipment (PPE), first aid and fire extinguishers were observed on site. Safe drinking water, dining and sanitation facilities and accommodation are provided.	measures have been considered for HSE risk control.
Community Health and Safety	The local people may also be affected due accident etc. Also there are associated hazard of road accident, electric leakage and fire hazard etc.	Moderate Impacts, however, control measures like project site is surrounded by boundry wall and fence, in adition to that all transformers will be covered by second layer of fence. There are designated routes for vehicle movement and drivers has to strictly follow the designated routes for vehicles movement.
Operation Phase		
Air Quality and Noise	There may be some air pollution due to the movement of vehicles. Also, some noise may be generated due to vehicles	Insignificant impact as very limited vehicle movement during operation stage.

	movement during the operation phase.	
Waste	The waste will be generated by working staff in living rooms, and workplace. Also, there will be food waste during the operation phase of the project.	The impacts will be insignificant as all solid and liquid waste will be of limited volume and collected by the Kandahar Municipality on regular basis.
Hazardous substance/ Chemical management	An accidental spill of fuel could result in soil contamination and broken solar panels need to be disposed.	Moderate Impacts as there are limited amount of chemicals used/ stored on-site and will be managed under the ESMP.
Water	There will be 100 metric cube water will be used for cleaning of solar panel in a week, which would be sourced from ground water. No permit is required for water withdrawal and cleaning of panels. The cleaning will be done by spraying the water which significantly reduces the usage of water. No chemicals are used in solar panel cleaning.	The weekly use of water for solar panel cleaning will have limited impact on ground water resources.
Wastewater	Wastewater will be generated from bathrooms, kitchen, and cleaning of panels. The wastewater from septic tanks will be collected by Kandahar Municipality on regular basis. The cleaning of the modules will not generate any harmful effluent and there will not be any need for recycling or disposal of water, as the water disposed of the module is allowed to seep into the ground.	Insignificant impacts as the quantity will be limited and it will be collected by Kandahar Municipality on regular basis.
Ecological	The ecological impacts of Solar Power station and Transmission line will be there. The birds may be affected during operation phase of the project.	Limited impacts as no protected habitats/ species are in the project area and it will be fenced off. Monitoring of wildlife deaths will be included in the ESMP.
Socio-economic	There will be small job opportunity for local people like security guards, cleaner and other maintenance staff. Also, some indirect job will be generated during the operation phase of the project. The power generation will improve the	Significant positive impacts.

	living conditions of the people. The development of the solar power plant will improve the local infrastructure of the area.	
Occupational Health and Safety	Night shift activities will take place during extremely hot weathers. Other activities that have OHS risks including inspection and maintenance of electrical equipment and emergency situations etc.	Moderate impacts and will be managed by the H&S plan at operation stage.
Community Health and Safety	There are associated hazard of road accident, electric leakage and fire hazard etc. Also Conflicts between labor and local community	Insignificant impacts. The project site is surrounded by boundary wall and fence; in addition to that all transformers will be covered by second layer of fence. There will only about 5-6 staff living on-site and less than 20 staff working.

Stakeholders' Consultation

Stakeholders' Consultation

Formal and informal consultations with various stakeholders e.g. consultation with government officials, workers, women, and local communities (Overall 62 people) were organized by the consultant.. However, community representatives, government departments including NEPA were consulted during the ESIA preparation process.

The positive and negative potential impact of the project on surrounding society and in the local area were discussed with the local people. Separate consultation with women group and civil society has been planned by the consultant to ascertain views of the women residing around the project area.

The following consultations have been carried out with women, men, civil society and Agriculture university:

Table 6: List of Consultations

No.	Type of Meeting	No. of Participants	Date
1	Consultation with DABs	3	12 Nov, 2018
2	Consultation with elders of Landay village	7	10 Nov, 2018
3	Consultation with elders of Hakim Jan village	9	10 Nov, 2018
4	Consultation with women in Landay village	15	29 Jan, 2019
5	Consultation with women in Hakim Jan village	15	10 Nov, 2018
6	Consultation with civil society	8	26 Jan, 2019
7	Consultation with Vice chancellor of Agriculture University	5	10 Nov, 2018

Consultations were done at the project site on 10th to 12th November 2018, and 26 and 29 January 2019 involving various stakeholders. The details of these consultations are discussed in the following section.

Consultation with Project Manager of Company:

The consultation was also done with Project Manager of 77 Construction Company. The following information was collected during consultation with PM and his other officials.

Environment:

There are no environmentally sensitive areas near to the project site. There is Afghan National Army (ANA) 205th Atal Military Corps Compound in adjacent to the project site and Agriculture faculty of Agriculture University is near to the project area located at a distance of about 500 meters away from the project site. Also, there is agricultural land near the project site.

Land Acquisition:

The land is jointly given for solar plants to 77 Construction Company and Zolaristan Company which are adjacent to each other with a total land area for both the companies of 300 *Jeribs* (600,000M^2) or (60 Hectares). In this area of land 300,000 M2 or 30 Hectares have been occupied by 77 Construction Company under a lease agreement with ARAZI (AILA) and DABS.

Health and safety:

Rostam Juma Nazar is responsible for health and safety at the site. Mr. Rustam has completed 30 hours OSHA Hazard Recognition training for the construction industry in May 2018. All the workers use (PPE) for safety. There is weekly training of various safety issues related to codisplacenstruction.

Labor Standards:

The Company has labor and worker policy, standards, and guidelines in place. The company provides safety training to workers. There are no child labors at the site and the Company examines the age of the workers by their NID Cards at the time of recruitment. There are no discriminations due to ethnicity, political opinion, and region, national or social origin with regards to recruitment/promotion/access to training/benefits. Also, the workers have the right to organize trade unions and associations.

Pollution prevention and mitigation:

(I) Air Emissions

The main source of air emissions is dust generated by project construction operations machinery and it is prevented/ mitigated by sprinkling water sourced from the water tankers and also by watering project site.

(II) Water use

The main source of water is bore well that exists at the project site. The actual use of water is for construction works, bathing, ablution, and dishwashing.

(III) Waste Water Discharges:

There is a wastewater septic tank for storage of wastewater. There is agreement with the local municipality for the collection of wastewater. The septic tank is emptied on monthly basis by the local municipality

(IV) Solid Waste Management:

There are dustbins in the accommodation area and the trashes, solid waste is dumped in the dustbins. There are arrangements for temporary waste storage within the project site. As there is agreement with the local municipality for the collection of waste. The waste is

collected by the municipality on regular basis. There is no separate land allotted for disposal of solid waste.

Consultation meetings
77 Construction Company organized meetings with government officials. The 77-construction company briefed the project and progress of the project to the officials. The Government officials welcome the project and assure all support for the project.

Mr. Zalmai Wisaa (Kandahar Governor)
Mr. Abdul Hanan Munib (Deputy Kan. Gov)
Mr.Tadin Khan (Security Chief Kandahar)
Mr. Amanullah Farooqi (Dabs Kandahar Director)
Mr. Emam Nazar Behbod (ANA Commander Kandahar)
Mr.Khal Muhammed Ahmadzai (Agriculture Uni. Director)

As the project site is located with no habitation in the vicinity, community consultation meetings were organized in two nearby villages. As stated in the monthly progress report of Construction Company, there is an issue of the ownership of some land. However, when discussed with the project manager, he informed that issue has been settled now.

Workers Accommodation and Cafeteria:
There is an accommodation area for the workers and it is maintained in good condition as far as health, hygiene and safety is concerned. Also, one cafeteria is also available for workers at the project site.

Consultation with VC of the Agriculture University

This consultation was organized with the Vice-Chancellor of National Agriculture and Science & Technology University (Location: Latitude 31.452018 and Longitude 65.863076) which is located near the project area. The participants in the consultation meeting were Vice Chancellor of the University, Operations officer and Environmental & Safety officer (Mr. Rostam Juma Nazar) of 77 Construction Company. Environmental & Safety officer explained the University officials about the project objectives and likely benefits to be accrued to the society.

Than Vice Chancellor of University appreciated such meetings and said that this kind of meetings should be conducted frequently, especially for the coordination of security and environmental issues. Further, he advised 77 Construction Company to follow the following issues.

To facilitate watering of tree plants beside the road which is located in front of the project site.
He also informed that internet cables of the University are laid underground the project area.

In feedback of University's Vice-Chancellor, the representatives of 77 Construction Company promised that they will conduct meetings every two weeks for better security and environmental issues and also said they will assign a tanker for irrigation of trees on regular basis.

Figure 10: Consultation with Agricultural University Vice-Chancellor

Figure 11: Consultation with PM 77 Construction Company

Consultation with People of Landy Village

The second consultation was conducted in Landy village (location at Lat: 31.462900 and Long: 65.917800) which is located at a distance of approximately 3 KM from the project site. The participants were the village representative Mr. Haji M.Qaseem, village residents, workers, and farmers. Also representative of 77 Construction Company was present during the consultation.

Information about the project was presented to the participants.

The villagers were concerned about the distribution of electricity in their village and they informed that most people are very poor in the village. Also, they were asking for more job opportunities as skilled and unskilled labor for the villagers.

In feedback, the 77 Company representatives told them that they will involve village elders to assess the needs of the laborers and they will be employed from the local communities. The representative was also informed that views would be communicated to DABS and to provincial government authorities.

Consultation with People of Hakim Jan Village

The third Consultation was held in Hakim Jan village which is located approximately 3 kilometers to the project site. The participants were village elders and other residents of the village.

The participants were informed about the project and asked about their views about the proposed power project. The villagers welcomed the project and hoped that the project would trigger development in their area.

As desired by people of Landy villagers, the people of Hakim village demanded electricity and some kind of employment for villagers.

Figure 12: Consultation with Hakim Jan villagers

Figure 13: Consultation with People of Lunday Village

The List of participants in consultation and Minutes of consultations are enclosed as **Annex 6 (List of Consultation Meetings).**

Women Consultation

There were separate sessions for female consultation which was organized on 13th November 2018 and 29th Jan 2019. Due to the culture of Afghanistan, it was not possible to have a consultation with the local women; therefore, The Social Organizer was trained by Mr. Sayed Irfan, DV social expert who has almost 6 years of similar experience. The trained woman who was also assisted with the content of the consultation, consulted the women from local community of Hakim Jan and Landay villages. There were 15 women participants in the women consultation group in each village. The female social organizer informed the women participants about the project and solicited views and opinions of the women about the project. It was heartening to note that one participant suggested for facilitation of women education in their area. The second participant asked for electricity in her village from the proposed solar power plant. Other women participants demanded job opportunity for villagers. One of the women participants informed the women social organizer that school is far from their village and there is the difficulty for children to go to school especially during the winter season. Therefore, she demanded one school in their village. The list of women participants with their thumb impression and minutes of the meetings is enclosed at

Figure 14: Training to the Social organizer for Women Consultation

Figure 15: Women Consultation in Hakim Jan village

Figure 16: Women Consultation in Landay village

Consultation with Civil Society

On 26th Jan, 2019 a consultation was carried out with Paywand civil society and the impacts (positive & negative) of the project were discussed. They were happy for the project and stated that people in those villages which are closer to the project site would have the opportunities to work in the project and probably have access to the power. They also informed that there would be no negative impact on those villages and people. They also informed that there are no vulnerable groups in the area close to the project site, while there are around 35 HHs of nomads (Kuchis) coming to those two villages (Hakim Jan & Landay village) in winter and move back in summer to other places through desert which is far away from those villages close to the project site. They further added that Kuchis are not using the project area and would not be affected by the project.

Figure 17: Meeting with Paywand Civil Society

Environmental and Social Management Plan (ESMP)

Introduction

The Site-specific EMP developed by contractor have some Guidelines for Waste Material Handling (Hazardous/Non- Hazardous) for the project site per Turkish Legislation.
As informed by the project developer, ESMP Budget is hundred thousand (100,000) US$ which is allocated for environmental protection and Social works.

Implementation of the ESMP

The Environmental Management Plan is prepared by Greentech contracted by 77 Construction during the planning and design phase of the project along with the SEMP. As per the EMP prepared during the design stage of the project, the responsibility of implementation is with the contractor and NEPA is responsible for overall supervision. The EMP developed by contractor states that day to day implementation of the EMP is the responsibility of 77 construction company. However, the responsibility of the supervision and auditing is with PIO. In addition, as discussed with the project manager, the responsibility of EHS implementation is with the contractor during construction and operation phase of the project.

Environment Management Activities on site

The following Environmental management activities are underway during the construction phase of the project.

Site Activities and facilities

There are total 70 people engage for work; out of these 70 people five are Turkish and 65 are Afghan. The workers have been employed for the duration of project and employment conditions are as per law of Afghanistan. Before deploying them for work, training is provided to them for health and safety related issues. It is compulsory for workers to use PPE during construction activities. As observed during the site visit, workers are using Helmets and other personal protective equipment's required for site activities. **Figure 18** and **Figure 19** is from site activities where workers are using helmets and hand gloves. The inventory of PPE available at the project site is given in **Annex 8 (PPE in the site).** The First Aid Box and 10 numbers fire extinguisher of each 10 LB is available at the site. The First Aid and Fire Extinguishers are shown in **Figure 20** and **Figure 21**. There is the provision of weekly HSE training for workers. The training consist of various HSE issues like the use of fire extinguishers, safe heavy weight equipment's, First Aid, Electric Safety and lifting and handling techniques etc. The records of PPT presentation and attendance sheet of participants of training are given in **Appendix 1.1, 1.2 & 1.3,** and **Annex 12 (Weekly training provided during November 2018)** respectively. The following measures have been taken to control the HSE risk at site.

Efforts in ensuring workplace safety of its personnel and premises
Ensure continuous awareness of employees about the workplace safety and health issues.
Use regular internal communication channels, transformation forums and internal safety workshops to educate the employees about the best HSE practices, safety rules and cautions in all work activities.
Conduct risk assessments that address all the hazards that might cause harm in workplace.
Effective Management Safety Audits and Tool Box Talks to be carried out at sites to ensure a proactive approach towards HSE.
Training on proper use of PPEs.

Figure 18: Workers with PPE

Figure 19: Workers with PPE

Figure 20: Fire Extinguishers at site

Figure 21: First Aid Box at site

The workers have been provided cafeteria, mosque, washrooms, dining room and restrooms. The provision of rest is after lunch time for the workers. Also, safe drinking water has been provided to workers. Total 85 percent workers living on site during construction, however, there will be maximum of 5-6 workers living on site during operation phase.

The workers' accommodation is having minimum facilities for comfortable living. Toilets and dining space is available for workers. **Figure 22** and **Figure 24** showing washroom facility and living space of for the workers. Also, the dining hall and project office is shown in **Figure 24 and Figure 25.** Free local transport is also available for workers from 77 Construction Company.

The National/local standards for the workers accommodations have been considered by the contractor. Although it is quite unusual to find regulations specifically covering workers' accommodation, there may well be general construction standards which will be relevant. These may include the following standards:
Building construction: for example, quality of material, construction methods, resistance to earthquakes. „
Housing and public housing: in some countries regulations for housing and public housing contain requirements on issues such as the basic amenities, and standards of repair. „
General health, safety and security: requirements on health and safety are often an important part of building standards and might include provisions on occupation density, minimal air volumes, ventilation, the quality of the flooring (slip-resistant) or security against intrusion. „
Fire safety: requirements on fire safety are common and are likely to apply to housing facilities of any type. This can include provision on fire extinguishers, fire alarms, number and size of staircases and emergency exits, restrictions on the use of certain building materials. „
Electricity, plumbing, water and sanitation: national design and construction standards often include very detailed provisions on electricity or plumbing fixtures/fittings, water and sanitation connection/ equipment.

There is no agreement with any hospital for an ambulance; however, an ambulance will be immediately available in case of an accident. The hospital is 30 km away from the project site. There is no accident at project site so far.

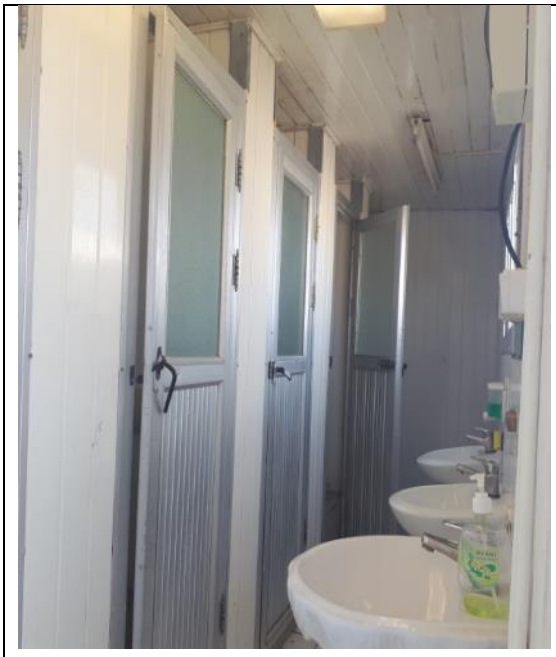


Figure 22: Washrooms

Figure 23: Accommodation

Figure 24: Dining area

Figure 25: Project Office

The boundary wall and erection of ground-mounted structure have been shown in **Figure 26** and **Figure 27**.

Figure 26: Boundary wall

Figure 27: Erection of ground mounting structure

The construction work mainly consists of loading and unloading of construction materials. Prepare concrete foundations for ground-mounted structures. Finally, Solar panels will be mounted on frames. There are a fuel station and Diesel Generator set of capacity 100 KVA as a power back up. Also, there is one concrete mixing plant at the project site. The concrete mixing plant and fuel station are shown in **Figure 28** and **Figure 29**.

77CC use 5000 liter capacity fuel tanker for distribution of diesel to the heavy vehicles and generators. The fuel tanker operator is trained for working with hazardous material. There is a proper safety plan in practice along with secondary containment in case of leakage or damage.

Figure 28: Concrete Mixing Plant

Figure 29: Fuel Station

As a security arrangement at site, 77CC currently have fencing, 24 hour security guard and identity/vehicle security check at the Project site. The CCTV system will be installed before operation phase.

Water Issues

The project area is water stressed there are no surface waters right now due to Drought in past. The local people are also using bore well water for their daily use. The contractor has opened a bore well of Capacity 0.4 m3/min at the project site to meet the requirement of construction activities. The bore water is generally used for toilets, kitchen, water sprinkling etc. However as informed by the project manager, the bore well water is clean and drinkable, but the contractor has provided bottled mineral water for drinking purpose at the project site.

Figure 30: Hand pump water in a village nearby project area

There is one irrigation canal, Dahla Dam, located at a distance of 500 meters from the project area. Also, there is one river located at a distance of 2.3 Kms from the project site. This river is a seasonal river and it receives water only during the rainy season.

Figure 31: Drinking water arrangement at site

As the canal is 500 meters away from the construction site and there are no construction activities near the canal, thus, no withdrawal of any water for construction purpose from the canal is required. Therefore, there is no impact on the canal in terms of quality and quantity of water of the canal.

Waste Management

There are six solid waste bins and locations of these waste bins are in kitchen, warehouse, accommodation area and one main waste bin is kept inside the project site, far from accommodation area.

There is no record of solid waste generation at the site; however, disposal of waste is being done on regular basis. The company has a contract with Kandahar Municipality for the collection of solid waste. The Kandahar municipality is collecting solid waste on regular basis from the site. There is no separate land has been allocated for the solid waste disposal. The contractor has worked out an arrangement. There is no recycling/ reuse of solid waste.

The source of wastewater is Kitchen, Living area, washrooms in office. The contractor has an agreement with Kandahar municipality for the collection of wastewater from the site. The Kandahar Municipality is collecting wastewater from the septic tank on monthly basis.

The copy of the agreement for solid waste and wastewater collection and disposal with Kandahar Municipality is attached as **Annex 9 (Copy of agreement for solid waste and wastewater collection and disposal with Kandahar Municipality).**

There is one fuel station at site and fuel is used for DG set. There are no other hazardous chemicals or paints used or stored at the project site as informed by the project manager of 77 Construction Company.

Figure 32: Waste bins inside Workers Camp

Figure 33: Waste bins outside Workers Camp

Environmental Management

The air pollution is due to vehicles and equipment's operation, operation of Concrete batching plant; DG set operation and particulate emission due to exposed soil and earth related work and movement of vehicles on exposed soil.

To control air pollution vehicles and equipment used for construction purpose are maintained on regular basis. To control dust water is sprinkled at site one time each day. However, water sprinkling shall be twice in a day. The first time in the morning and the second time in the afternoon. Also, the speed of vehicles is slow when moving on the exposed surface. Masks are not available at the site as per the PPE record; however, some workers use clothes as a mask during working hours.

The contractor is monitoring Noise levels by its own noise level meter (see Annex 15). The noise level is 85 decibels at the monitoring station where the diesel power generator set operates.

There is a mechanical workshop, 75 meters far from DG set, which make noise. In addition to that, loading and unloading activities also generate high noise levelDuring DV team field visit, it was obsereved workers use ear plugs and other noise protection measures during working in locations having high noise levels. There is no proper information about Environmental Monitoring by the Contractor,.

Figure 34: Water sprinkling at the project site

Figure 35 : Workers using ear plugs during work

Ecology of Site

As per the ESIA report, not much information has been provided about the ecology of the project site. However, there were some reptiles in the project area as discussed in the Baseline section of the report. As per contractor records and during the review of Monthly progress reports of contractor, no information was found regarding injury or death of any reptile or any other animal as there was no ecological monitoring during pre-construction and construction stage of the project.

Other Project related Issues

The 77 Construction Company is concessionaire for this project. The company will develop the power station and sell the power to DABS. The land is provided to 77 Construction Company through a lease agreement.

The scope of land acquisition and resettlement impacts and its status

The 'Power Purchase Agreement' has been signed between DABS and 77 Construction on 18 Feb 2018. The 77 Construction Company is responsible to implement this project, which will be dispatched to DABS, the Afghan national utility entity, under a Power Purchase Agreement for over 20 years. The 77 Construction received the NTP for Kandahar Solar Project on 13 June 2018.

The entire 30 Ha land belongs to the Government of Afghanistan. There was no private land acquisition for the project. Therefore, no Resettlement Action Plan was prepared during the design stage of the project. Also, there is no requirement of temporary land acquisition for construction camp and workers' camp as it is already constructed within lease land. Hence, there is no case of loss of land and livelihood in this project.

The copy of the lease agreement is enclosed as **Annex 4 (Term of Reference (ToR)).**

Indigenous people

According to the IFC Performance Standard 7, Indigenous Peoples are defined as social groups with identities that are distinct from mainstream groups. As such, they may be more

vulnerable to the adverse impacts associated with project development and their culture and needs must be considered with special care.

ADB Policy defines IPs as "people with a social or cultural identify distinct from the dominant or mainstream society, which makes them vulnerable to being disadvantaged in the process of development". In addition to this general definition, the policy lists several features for the identification of IPs and the assessment of their degree of vulnerability during project preparation. These are: (i) descent from groups present in specific areas prior to the establishment of modern states and relative borders; (ii) maintenance of distinct self/non-self-ascribed identities; (iii) use of distinct languages; (iv) active maintenance of socio-cultural systems/institutions that differ from the socio-cultural system/institutional-political tradition of dominant societies; (v) pursuit of livelihoods at the margins of the market system; and, (vi) unique ties/ attachments to natural resources and ancestral territories.

The above definitions apply directly to the populations classified in Afghanistan as "tribal". These groups: (i) have special attachment to ancestral territories; (ii) maintain specific cultural/social traits including language, belief, production patterns, and especially law and social institutions, which make them different from the national mainstream; (iii) they are recognized by mainstream groups and government as having unique features that the territories where they live are administered in specific ways and according to specific charters; and finally, (iv) because of their difference and isolation they may experience deprivation of rights, marginalization, and discrimination.

The Kuchi are in southern and eastern Afghanistan – 1. 5 million (CSO, 2018) and as mentioned before, they are part of a Pashtun group and are the largest nomadic tribe (ADB, 2013). They are highly vulnerable to absolute poverty, confirmed by poverty rates of approximately 54% (CSO, 2014). There are three types of Kuchi: purely nomadic members who have no fixed home and are dependent on animals; semi-sedentary members who can no longer support themselves with livestock and have taken to a more sedentary lifestyle; nomadic traders who transport goods. This aspect of transport is a key aspect of their cultural heritage, as the Kuchi were known to be the primary traders connecting South Asia with Middle East. While once among the wealthiest due to ownership of a majority of the country's livestock and known for trading tea, sugar, and matches for wheat and vegetables with settled communities, the Kuchi are now among poorest groups in the country. Members of this group have begun to settle in cities or farms in northwest Afghanistan and they comprise a large percentage of those internally displaced. Of the 2.4 million Kuchi in Afghanistan, 60% are still entirely nomadic and more than 100,000 have been displaced (CCWA, n.d).

There are no indigenous people in the area. but there are around 35 HHs Kuches (nomads) who normally come to the nearby villages during winter and then move to other places during summer. Their travelling route is in the desert which is around 20 km away on the south of the project area. No impact is anticipated on the nomads due to project.

Other Social Issues

Direct Employment

The employment was given to the local people for skilled and unskilled jobs and labor based on suitability of local people for work. Most of the employment profiles in nature are mechanic, surveyor, plumber, loader, JCB operator, crane operator, drivers, helpers, electricians, cleaners, steel fixers and cooks. These workers and technicians are from two nearby villages. There no information about the ratio of local and non-local workers. However, there are five Turkish and 65 Afghan workers at the site.

Indirect Employment

There would be some opportunities for local people as indirect job creation including self-employment in small shops, businesses, provision of goods & services for the workers of the 77 Construction Company and visitors of the site.

Complaints
During a discussion with the officials of 77 Construction Company, it was informed by them that there were few complaints regarding the ownership of the project area. There is no GRM system at the project site and no system for record of complaints so far.

Land Acquisition
The entire 30 Ha land belongs to the Islamic Republic of Government of Afghanistan. There was no private land acquisition for the project, therefore, no Resettlement Action Plan was prepared during the design stage of the project.

Cultural Site
During the site visit, it was noted that there is no impact on any cultural sites due to project activities as there is no such site nearby. However, there is one mosque near the project area within 500 m distance. There is no direct and indirect impact on this mosque. The workers and labor are visiting this mosque for prayer, particularly on Friday.

Social Conflict
No case of social conflict was observed during meeting and site visit. As mentioned earlier, workers and local people are joining together on a few occasions like Friday prayer, and on other religious occasions, signifying cultural integration with the local habitats.

Gender Development

General
Kandahar is located in the Southern region of the country, and it is bordered by the provinces of Zabul and Urozgan in the North, Helmand in the West. It has common borders with Pakistan in the East and South. Kandahar covers a land area of 54,845 square kilometers, representing 8.40 percent of the total Afghan territory. It is the third largest province in Afghanistan in terms of land area, after Helmand and Herat. The province is divided into16 districts—the provincial center, Kandahar, Daman, Shah Wali Kot, Arghandab, Khakrez, Ghorak, Maywand, Zhire, Panjwayi, Shiga (Reg), Shorabak, Spin Boldak, Arghistan, Maruf, Miyanishin, and Nish.

Population
The project area is under Daman District of Kandahar Province. The total population of Daman District is 36,569 from which 18,926 are male and 17,643 females. There is no women headed household in the project area.

Gender and development

There is no discrimination in the family based on gender. However, some outside activities are not encouraged for females, which are related to cultural practice in Afghanistan.

Women are not active in any activity which is performed outside their houses. Generally, males are responsible for outdoor activities like livelihood, farming, business etc. Women are allowed for getting religious and modern education. However, as informed during women consultation the schools are far from the village, hence there is difficulty in attending schools. no other opportunities are available for them for women in those two villages. For uplifting the status of women and for their better health, some educational and health facilities must be provided by the project proponent in the project area. The local women may be consulted further for any specific requirements for their development.

As around the society of nearby project area, women are not willing to work, so there is no specific requirement in policy for women's rights and ensuring women's participation in the project activity. According to the opinion of the women, "helping our family members through providing them employment opportunities should be considered as contractor's contribution to our families as earnings will be used to meet the requirement of the entire family".

Most of the women in the project area are not having a formal education. So, some arrangement may be undertaken to provide local women, modern education. The action plan required for women education may be discussed with local people. As per 77 CC, they are considering to support any on-going scholarship programs in the nearby villages.

Labor and Social Protection

There are total 70 people engaged for work at construction; out of these 70 people, five are Turkish and 65 are Afghan. The workers have been employed for the duration of project and employment conditions are as per law of Afghanistan. The facilities of the cafeteria, restroom, dining hall, and mosque have been provided to workers. Transport from the living facilities to worksite is safe and free.

The living facilities built by contractor are of quality materials and are, clean and free from rubbish and other refuse. Heating, air-conditioning and ventilation have been provided in living facility, so that workers can live in a comfortable and healthy environment to rest and spend their spare time. Both natural and artificial lighting are provided and maintained in living facilities. It is best practice that the window area represents not less than 5% to 10% of the floor area. Emergency lighting is provided.

The provisions are made for their health, safety, and for protection of their rights. These measures which are either part of the policy of Construction Company or provisions are made by the Government of Afghanistan. These protection measures are described in the following sections.

To prevent dehydration, water poisoning and diseases resulting from lack of hygiene, workers have easy access to a source of clean water. An adequate supply of potable water is available in the same buildings where bedrooms or dormitories are provided.

Health and Safety

There are total 70 persons working at the site with no observations of child labors and female workers at the site. All workers use Personal Protective Equipment (PPE) during work.

The company has employed Mr. Rostam Juma Nazar as Health, Environment and Safety officer at the project site who carries out regular monitoring of EHS. He has completed 30 hours OSHA Hazard Recognition training for the construction industry in May 2018. All the workers use (PPE) for safety and receive weekly training of various safety issues related to construction. During the walk through, a few verbal warnings are occurred to workers. Daily safety report is available on safety incidents. There is no information available in monthly progress report about any non-compliances during work either, while the format of notice of non- compliance is available in the record of the company. The template of the notice of non-compliance is enclosed as **Annex 10 (The notice of non-compliance).** The following incident assessment and reporting procedure is in place.

All kinds of incidents which cause injury, illness or equipment and materials loss as well as all possible dangers and environmental incidents shall be reported and filed by the HSE Engineer with the Incident Report. Subcontractors are responsible to inform (verbally)

immediately any incident involving subcontractor's personnel, equipment, materials or Environment to the Contractor's HSE Engineer.

Contractor's HSE Engineer immediately informs verbally the Contractor's site manager about the incident in the case that the incident resulted in an injury or damage. Client's representative shall be also informed by the Contractor's HSE Engineer and/ or Contractor's Site Manager. Subcontractor's HSE responsible person will draft a report and submit it to the Contractors HSE Engineer for review and signing off. For fatal incidents report submissions to the authorities within the 48 hours, for other incidents a report will be prepared within 4 days.

A copy of the incident report is submitted to the site manager and from him to the Client, another copy for the HSE File. An accident investigation report shall move in the following order.
To go to accident place without wasting time
Receipt of name, address and expressions from the person involved in the accident.
To Express the names and address of witnesses
Evidence of identifying (if needed photography)
To record the information obtained
Determination of the accident cause or causes (root cause analysis)
To specify corrective measures
Accident report preparation

An incident register and incident statistics is maintained by the HSE Engineer in monthly periods. Incident register and incident statistics is available to Contractor and Client.

The HSE officer is responsible for all HSE issues of the project. The facility of first aid box is available at the project site in health and safety officer's office. Recently on 10th November 2018, a total of 28 workers attended the training for the safety toolbox. There are ten fire extinguishers available at the project site. The locations of those extinguishers are near warehouse kitchen, workshop generator room and near storage of flammable liquids.

In case of any accident or injury, emergency contact numbers for contacting 77 CC POC, H&S Officer, Police and Fire Fighting Departments are also available at the site.

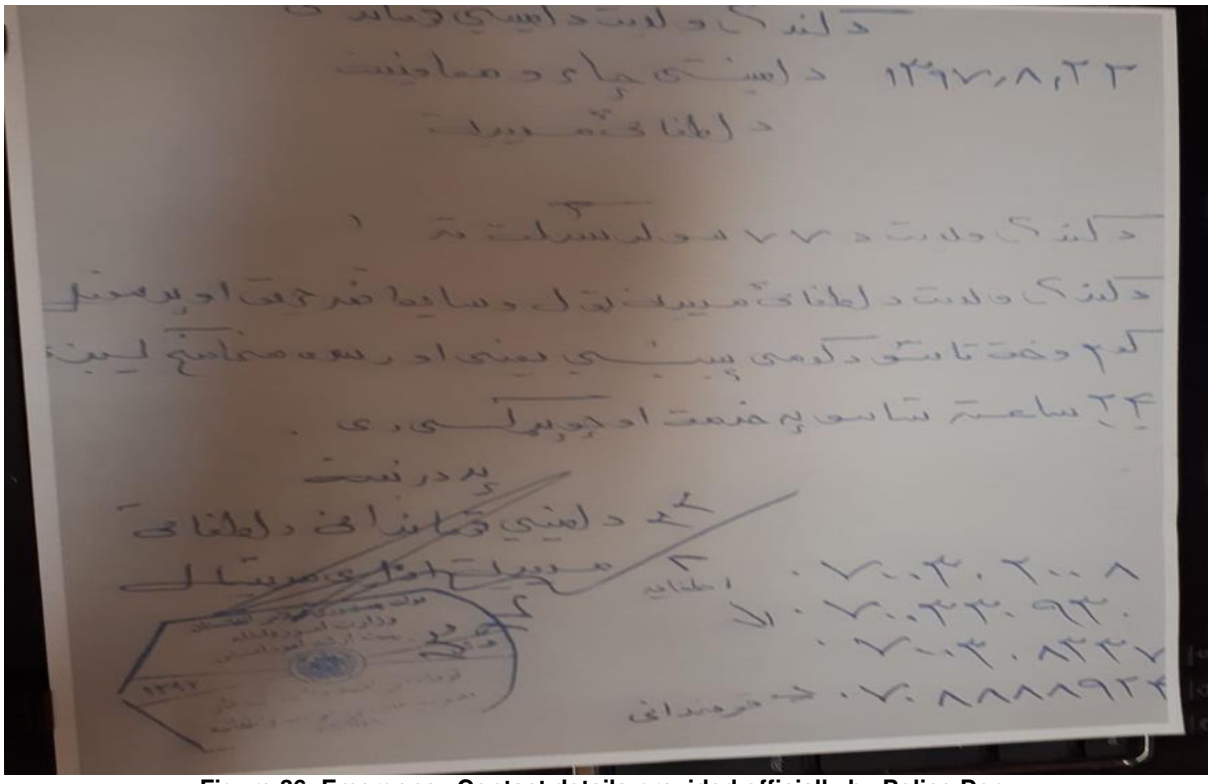


Figure 36: Emergency Contact details provided officially by Police Dep.

Medical Facilities to Workers

77 Construction Company will have agreement with hospital for ambulance which is 30 km from the project site, and in case of emergency/accident or Injury, the Company calls them from the site. There was no record regarding the coverage of medical and ambulance cost, however, the project manager assured that he will officially issue a notice and letter for the coverage of medical and ambulance cost, bore by the contractor company.

Overtime

As per the company HR policy, average 9 working hours per day with one weekly off is signed with all employees working in the project. Copy of one such contract agreement is enclosed as **Annex 11 (Copy of the Employees Agreement).** The company provides safety training to workers. There are no child labors in the site and the Company working rule. If there is a requirement of overtime work, then there is provision

Labour and Social Protection

The Company has labor and worker policy and standards. The written agreement is signed with all employees working in the project. The company provides safety training to workers. There are no child labors in the site and the Company checks it by checking NID Cards when they recruit workers. There are no discriminations due to ethnicity, political opinion, and region, national or social origin with regards to recruitment/promotion/access to training/benefits. They don't have the right to bargain after the agreement with the company. A complete training Manual is available with 77CC. Monthly meetings October, November and December records are also available.

Capacity Building

Training has been provided to workers on HSE issues like use of fire extinguishers, safe heavy weight equipment's, First Aid, Electric Safety and lifting and handling techniques etc. The ESMP indicates a total budget of 15,000 US$ has been allocated for capacity building and training of the workers. The training is provided on weekly basis. The issues are related to safety and health during work. The HSE training provided by the contractor is already

discussed above. The weekly training provided during October, November and December 2018 are given in **Appendix 1.1, 1.2 & 1.3** for reference.

Enhancement Measures

The contractor has planted trees in front of the Project site, accommodation area and administrative area of the project site. There is no initiative with Agriculture University in any aspect so far. However, the contractor is in touch with Agriculture University and facilitating them irrigate the plantations along the access road to the University. Furthermore, the contractor is helping Agriculture University in providing them crane or other machinery when it's required.

Corrective Action Plan

The consultant has examined gaps in report and working conditions at the site and propose Corrective Action Plan (CAP) to ensure compliance with ADB Safeguards Requirements. The CAP has been prepared as in **Table 7**.

Table 7: Corrective Action Plan

#	Description	Corrective Action	Evaluation criteria for successful completion	Responsible Party	Resources	Time Frame
1	**ESMP OVERALL**					
1.1	**ORGANIZATIONAL STURCTURE AND HUMAN RESOURCES**	Define roles, responsibilities and required qualifications (eg for EHS officer/ manager) to ensure the implementation, monitoring and supervision of the ESMP at site-level and corporate-level for operation. Ensure EHS officer at operation phase receive sufficient training, and appoint officer responsible for community engagement and grievance redress mechanism (GRM). Sufficient resources and efforts allocated to ensure all monitoring activities been carried out as per the ESMP.	Documentation of EHS-related roles and responsibilities at corporate and site-level Training undertaken/ qualifications confirmed for EHS officer(s) Appointment officer for community engagement and GRM	77 construction	Management and EHS Staff time	Before ADB first disbursement and maintained throughout loan duration
1.2	**E&S REPORTING**	Construction is expected to complete by April 2019, provide (i) latest available environmental monitoring reports, including health and safety reports and (ii) monitoring report at construction completion. During operation, report annually on project E&S issues and benefits and implementation of action plans to ADB and other stakeholders	E&S reports provided in time and fully completed, including implementation of corrective actions in this CAP. Monitoring reports disclosed.	77 construction	EHS staff time	Latest construction report immediately E&S Report at construction completion Operation E&S report annually throughout project implementation

#	Description	Corrective Action	Evaluation criteria for successful completion	Responsible Party	Resources	Time Frame
1.3	**BUDGET**	Indicate annual budget for ESMP implementation at operation stage	Revised ESMP with annual budget for operation stage	77 construction	EHS staff time and ESMP budget	Before ADB first disbursement
2	**ESMP CONSTRUCTION PHASE**					
2.1	**MONITORING OF AIR, NOISE, WATER QUALITY AND SOIL QUALITY**	Ensure implementation of monitoring per ESMP. Provide latest monitoring results and monitoring results reported at construction completion. ESMP (in ESIA) currently includes: Monthly air quality monitoring for NO2, SO2, CO, and PM Quarterly monitoring of the noise pressure level in dB (A) near noise sources Quarterly monitoring pH, BOD, TSS, TDS, Turbidity, metals, microbiology, oil & grease, nitrate, conductivity & total nitrogen	Monitoring reports and records of internal and external review/ approval (eg signed by management)	77 Construction or its contractor	EHS staff time	Latest construction report immediately E&S Report at construction completion
2.2	**HAZARDOUS WASTE MANAGEMENT**	ESMP should include appropriate measures to manage damaged solar panels, such as by exploring options of recycling and ways of safe disposal including the collection, storage, transportation and options of local service providers. **The same measures can be applied in operation ESMP.** Request contractor to provide waste memos to ensure appropriate disposal location and methods, and to include this requirement with its subcontractor if any.	Hazardous waste management provisions for broken panels Waste chains of custody available	77 Construction	EHS staff time	March 2019
2.3	**STAKEHOLDER ENGAGEMENT & GRIEVANCE REDRESS**	Utilizing stakeholder identification data collected for the ESIA and ESDD, develop an engagement plan to ensure local villagers and others working nearby are	Development of a brief stakeholder engagement plan with a procedure for enabling two-way communications	77 Construction	EHS staff time	March 2019

#	Description	Corrective Action	Evaluation criteria for successful completion	Responsible Party	Resources	Time Frame
	MECHANISM (GRM)	able to effectively communicate with 77Afg. ESMP should add two GRMs separately for workers and for the community, including plans for communication to workers and the surrounding villages. The GRMs should include processes to receive, review, address and provide feedback, time frame, roles and responsibilities, record keeping etc. **GRM can be modified for adoption in operation ESMP.**	between 77Afg and local villagers and organizations. Documentation of GRM processes and procedures with dedicated staff responsibilities Disclosure of GRM to relevant stakeholders and staff Grievance records properly maintained			
2.4	**EMERGENCY PREPAREDNESS**	Ensure fire response plan is developed per construction health and safety plan, and relevant activities including drills and training are carried out and reported.	Emergency Response Plans developed and communicated to relevant employees (eg training, notice boards, briefing sessions). Records of emergency drill	77 Construction Company	EHS staff time	March 2019
2.5	**ECOLOGY AND BIODIVERSITY**	Reporting of deaths of wildlife at the site such as through collision with facilities.	Monitoring reports Include monitoring summary in report to ADB	77 Construction Company	EHS staff time	March 2019
3	**ESMP OPERATION PHASE**					
3.1	**HAZARDOUS WASTE MANAGEMENT**	ESMP should include appropriate measures to manage damaged solar panels, such as by exploring options of recycling and ways of safe disposal including the collection, storage, transportation and options of local service providers. Request contractor to provide waste	Revised ESMP with provisions of hazardous waste management Waste chains of custody available	77 Construction	EHS staff time	Prior to commencement of operation and throughout project implementation

#	Description	Corrective Action	Evaluation criteria for successful completion	Responsible Party	Resources	Time Frame
		memos to ensure appropriate disposal location and methods, and to include this requirement with its subcontractor if any.				
3.2	**WATER QUALITY MONITORING**	ESMP should specific chemical and physical parameters, frequency and locations of the monitoring.	Revised ESMP and monitoring plan Water quality monitoring reports	77 Construction	EHS staff time	Prior to commencement of operation and throughout project implementation
3.3	**ECOLOGY AND BIODIVERSITY**	Procedures for wildlife management and monitoring reporting procedure shall be developed, including the prohibition of hunting and collection of wildlife resources; reporting of deaths of wildlife such as through collision with facilities.	Revised ESMP Monitoring reports Include monitoring summary in annual E&S report to ADB Prohibition of hunting included in staff code	77 Construction	EHS staff time	Prior to commencement of operation and throughout project implementation
3.4	**EMERGENCY PREPAREDNESS**	Develop site-specific emergency response plan(s) based on identified risks, including regular drills and engagement with relevant stakeholders such as local authorities and communities.	Emergency Response Plan developed and communicated to relevant employees (eg training, notice boards, briefing sessions). Records of emergency drill carried out	77 Construction	EHS staff time	Prior to commencement of operation and throughout project implementation
3.5	**STAKEHOLDER ENGAGEMENT & GRIEVANCE REDRESS MECHANISM (GRM)**	Utilize the stakeholder engagement plan developed during construction. ESMP should be updated to include the GRM provision for surrounding villages during operation stage of the project. It should also be communicated to the workers on the site. The GRMs should include processes to receive, review, address and provide	Documentation of communications in and out of 77Afg through channels set out in the stakeholder engagement plan. Documentation of GRM processes and procedures with dedicated staff responsibilities Disclosure of GRM to relevant	77 Construction	EHS staff time	Prior to commencement of operation and throughout project implementation

#	Description	Corrective Action	Evaluation criteria for successful completion	Responsible Party	Resources	Time Frame
		feedback, time frame, roles and responsibilities, record keeping etc. Produce annual report on implementation of GRM.	stakeholders and staff Grievance records properly maintained			
3.6	**OCCUPATIONAL HEALTH AND SAFETY**	ESMP should include the H&S requirements per job function during operation stage. Monitoring and reporting requirements should be specified.	H&S plan developed in compliance to national and ADB SPS requirements H&S monitoring reports on compliance Include H&S monitoring summary in annual E&S report to ADB	77 Construction Company	EHS staff time	Prior to commencement of operation and throughout project implementation
3.7	**CONTRACTOR EHS AND SOCIAL MANAGEMENT**	Include in tender document and contract with contractors a provision on compliance with ADB environmental and social (E&S) requirements, as well as full compliance with national legislation. Monitor contractor's EHS compliance, including implementation of corrective actions if any.	Tender document with E&S requirements, criteria for assessment Monitoring/ audit report of contractor E&S compliance by 77 construction	77 construction	Procurement and EHS staff time	During tender preparation and throughout contractor service duration
3.8	**TRAINING** No training plan on implementation of ESMP has been developed	ESMP should include training plan to ensure ESMP implementation at operation phase. The training should be provided to various officers and workers by qualified staff. Training plan should include training topics, time of implementation and frequency, trainer and target participants.	Training plan developed Training completed and recorded	77 Construction	EHS staff time	Prior to commencement of operation and throughout project implementation
4	**ESMP Decommissioning Phase**					
4.1	**E&S PLANNING AND**	Processes and measures to plan and implement E&S management	Inclusion of decommissioning provisions in ESMP	77 Construction	EHS staff time	Prior to project decommissioning

#	Description	Corrective Action	Evaluation criteria for successful completion	Responsible Party	Resources	Time Frame
	MANAGEMENT	decommissioning phase should be outlined in the ESMP, these include but not limited to: Permits and approvals required from regulatory bodies Generation of solid and hazardous waste, options of reuse and recycling Impact on air, noise, water quality, ground water use and H&S of decommissioning works (could refer to construction phase) Removable and non-removable structures Communications with local communities and other stakeholders about the decommissioning process		Company		

References:

Central Statistics Organization (2018). Afghanistan Living Condition Survey. Retrieved from http://cso.gov.af/Content/files/ALCS/ALCS%20-%202016-17%20Analysis%20report%20-%20pre-print%20for%20web_rev.pdf

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Cleveland Council on World Affairs (CCWA). n.d. UN Human Rights Council Topic A: Rights of Indigenous Peoples. Retrieved at https://www.ccwa.org/wp-content/uploads/2014/03/UNHRC_Topic-A.docx

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Annex 1 (Environmental Permit)

د افغانستان اسلامی جمهوری دولت
د چاپیریال ساتنی مـــــلی اداره

دولت جمهوری اسلامی افغانستان
اداره مـــــلی حفاظت محیط زیست

Government of the Islamic Republic of Afghanistan
National Environmental Protection Agency

Permit No: 0047

اجازه نامه محیط زیستی
Environmental permit

مالک/فعالیت

نوع فعالیت

این سند به منظور تطبیق پروژه یا پلان و انجام فعالیت جهت کنترول، کاهش دهی و جلوگیری از الودگی ها مطابق به قانون و مقررات محیط زیستی به متقاضی اعطاء گردید.

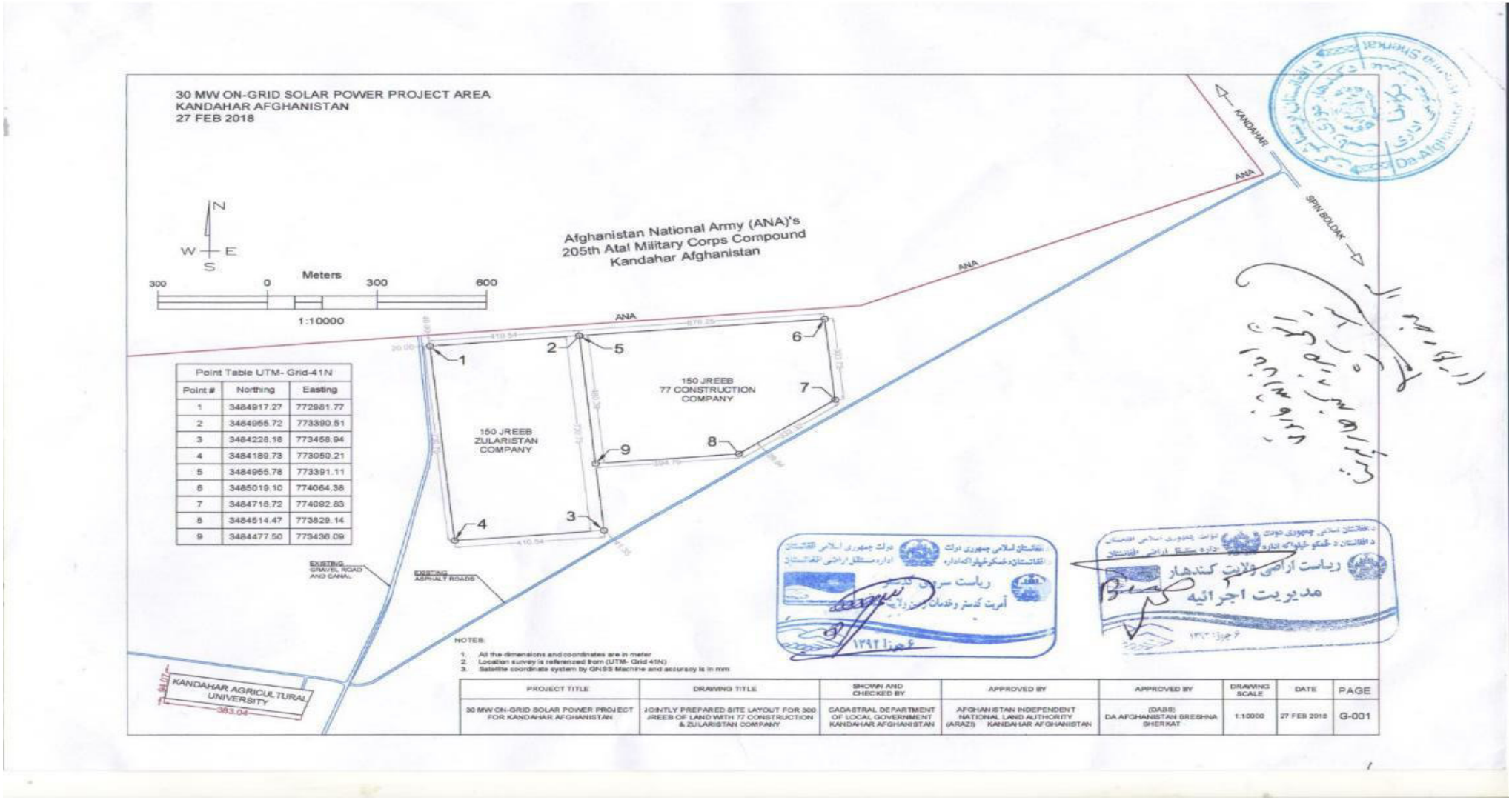
دا سند د چاپیریال ساتنی قانون او مقرراتو سره سم د پروژی یا پلان او پلی شوو کرنو د ککړتیاوو د کمښت او مخنوي په هکله، غوښتونکو ته وکړل شو.

This permit has issued for the implementation of plans, projects and other activities, to control, reduce and prohibit pollutions, in accordance to Environmental law and Regulations.

Date of issue 1397/2/28
تاریخ صدور
Valid up to 1404/2/22
تاریخ اعتبار

امضاء صلاحیت دار
Authorized Issuers signature

Annex 2 (Land Location Approval)



Point Table UTM- Grid-41N		
Point #	Northing	Easting
1	3484917.27	772981.77
2	3484955.72	773390.51
3	3484228.18	773458.94
4	3484189.73	773050.21
5	3484955.78	773391.11
6	3485019.10	774064.38
7	3484716.72	774092.83
8	3484514.47	773829.14
9	3484477.50	773436.09

Annex 3 (Power Generation License)

د ثبت مرکزی اداره
اداره ثبت مرکزی
Central Business Registry
مرکز واحد خدمات

د افغانستان اسلامی جمهوریت
جمهوری اسلامی افغانستان
Islamic Republic of Afghanistan
One-Stop Shop

د انرژی او اوبو وزارت
وزارت انرژی و آب
Ministry of Energy and Water
د خدماتو واحد مرکز

Reg #: 4422
MEW License: 009

د ثبت نمبر: ۴۴۲۲
د جواز نمبر: ۰۰۹

جواز فعالیت انرژی برق
Electricity Operation License

ساختمانی ۷۷
77 Construction

نمبر تشخیصیه مالیه / TIN
9000490467

د بریښنا د تولید دا جواز د انرژی او اوبو وزارت لخوا د بریښنا د خدمتونو د تنظیم قانون د اتمی، نهمی او لسمی مادو پر بنسټ یادی کمپنی ته ورکړل شو.

وزارت انرژی و آب جواز تولید انرژی برق را به اساس ماده های هشتم، نهم و دهم قانون تنظیم خدمات انرژی برق برای کمپنی مذکور صادر مینماید.

Ministry of Energy and Water issues this electricity production license in accordance with articles 8, 9 and 10 of the Power Service Regulary Act to the mentioned company.

Issue Date:	05/May/2018	۱۳۹۷/۰۲/۱۵	د صدور نیټه:
Valid Date:	04/May/2043	۱۴۲۲/۰۲/۱۴	د پای نیټه:
Established:	2009	۱۳۸۸	د تاسیس کال:
Energy Type:	Solar Energy	افتابی	نوع انرژی:
License Type:	Solar Power Generation	تولید انرژی افتابی	نوع جواز:

ادرس نهاد: اطاق 101حدران بلازا کلوله پشته، مرکز کابل، کابل

انجنیر علی احمد عثمانی
وزیر انرژی و آب
Minister of Energy and Water

طارق احمد سرفراز
رئیس عمومی اداره ثبت مرکزی
Central Business Registry